Strengthening Education Quality in East Asia

SABER System Assessment and Benchmarking for Education Results

United Nations
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THE WORLD BANK

Strengthening Education Quality in East Asia

SABER: System Assessment and Benchmarking for Education Results

East Asia Pilot

Strengthening Education Quality in East Asia

Edited by

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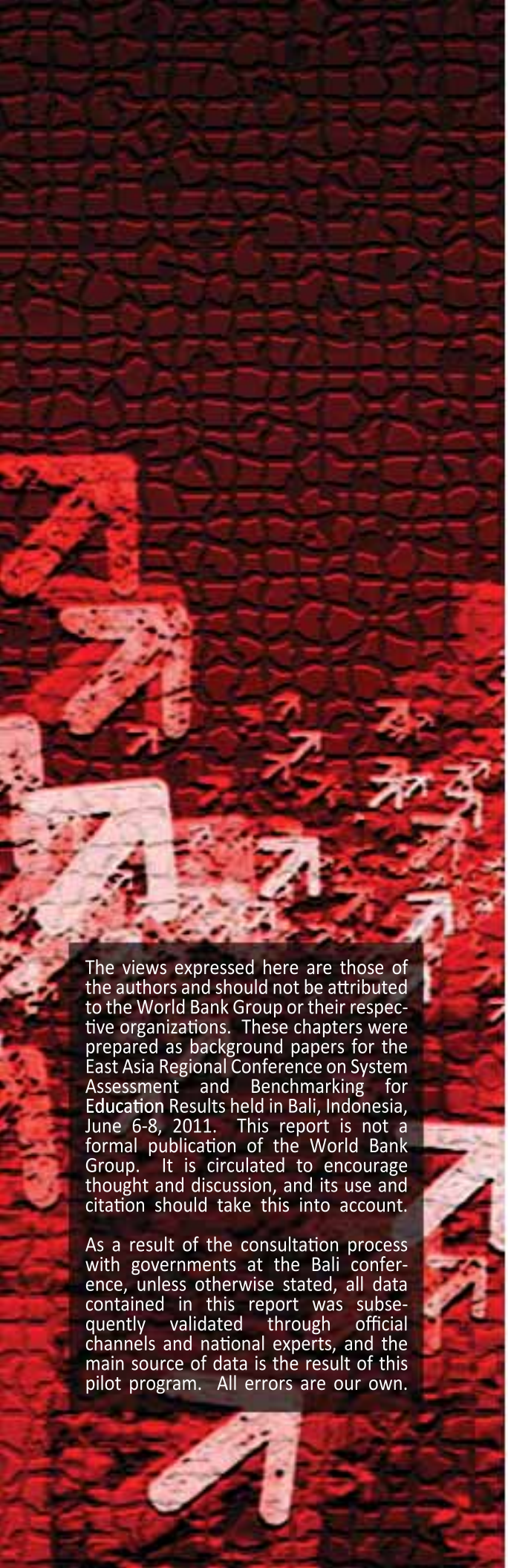

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As a result of the consultation process with governments at the Bali conference, unless otherwise stated, all data contained in this report was subsequently validated through official channels and national experts, and the main source of data is the result of this pilot program. All errors are our own.

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Foreword

Education is vital to social and economic development. It empowers individuals and generates the knowledge and skills which fuel growth, promote peace and reduce poverty. In the dynamic region of East Asia, education is a key element of investment strategies. International donors stand ready to respond to countries' demands to link education to the demands of the international labor market and focus on breaking the cycle of inter-generational poverty by extending educational opportunities to more young people.

While access and equity in education have improved in the region, serious challenges remain for many countries in terms of quality, the importance of which cannot be underestimated. The quality of teaching and learning will determine the pace and sustainability of economic growth in the region. It spurs higher productivity, higher earnings and improved health outcomes. Importantly, it also builds resilience for households and countries, which is crucial for living in an increasingly interconnected and uncertain world.

But to realize the benefits of education, schooling must be of good quality. Above all, to deliver high quality education, education systems must be geared towards results for all: through strong stewardship, better alignment of policies, and enhanced service delivery. And yet international and domestic assessments show that learning and skill levels in many countries are alarmingly low, especially among poor and disadvantaged groups. Learning for all is the overarching message of the new World Bank Education Strategy and has been an important component of UNESCO's education agenda since the release of the Delors Report, Learning: the treasure within, in 1996.

The East Asia region consists of a diverse set of countries at different stages of educational development. While a few East Asian countries are looked upon as educational models, the region also includes countries that need major education reforms, such as:

- ✓ **Improving outcomes for poor and minority groups;**
- ✓ **Ensuring that skills learnt in school enable students to be productive and responsible members of society; and**
- ✓ **Equipping young people with problem-solving and critical thinking skills and communication skills.**

To address these challenges, we need to take concrete steps to improve learning outcomes. First, a system-wide approach to educational reform is needed. Second, decisions must be based on what we know works. SABER (System Assessment and Benchmarking for Education Results) is a tool that policymakers can use to achieve these goals. It is a multi-year program we commit to in order to provide some guidance to improving the quality of education policies in a number of domains. It also enables comparisons between countries and promotes knowledge-sharing.

The World Bank and UNESCO hold a shared commitment to quality Education for All (EFA). Our work will continue to be motivated by the knowledge that equal opportunity to a quality education is not simply a question of fairness; it is vital for generating sustainable economic development. Through this initiative and our ongoing collaborations with member states, we hope to realize that vision.

Gwang-Jo Kim, Director, UNESCO Bangkok
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About SABER

OPENING THE BLACK BOX OF EDUCATION SYSTEMS

Improving education quality remains a major challenge for governments across the world. As a result, the World Bank, in close collaboration with UNESCO and with funding from the Government of Korea, set up a multiyear program to provide guidance to policy makers on how to improve quality by benchmarking their education systems.

This program is known as SABER – System Assessment and Benchmarking for Education Results – and is part of the World Bank's Education Sector Strategy, Learning for All: Investing in People's Knowledge and Skills to Promote Development. SABER enables policy makers to look inside their education systems, and better understand the policy domains that make up the whole. The first SABER pilot was conducted in East Asia where low- and middle-income countries in this region are close to achieving universal primary enrolment. The challenge now is to improve the quality of learning.

System Assessment and Benchmarking for Education Results (SABER) is an initiative that helps countries systematically examine and strengthen the performance of their education systems to achieve learning for all. The World Bank is working with partners around the world to develop diagnostic tools that benchmark education policies according to evidence-based global standards and best practice. By leveraging global knowledge, SABER fills a gap in the availability of policy data, information and knowledge on what matters most to improve the quality of education.

Education systems are classified as being more or less advanced in each of these goals. The four levels of classification are from least to most developed. For each of the outcomes, each country is assigned a level of development gauging the extent to which they have successfully regulated; this scale ranges from Latent to Emerging to Established to Advanced.

Latent	Emerging	Established	Advanced
●○○○	●●○○	●●●○	●●●●
Reflects limited best practices	Reflects some good practice	Reflects good practice, with some limitations	Reflects international best practice

Summary

Benchmarking Education Policy in East Asia

Emily Brearley

The individual benefits of investing in education are large and well known – there is a strong link between what someone knows, and how much they earn. Increasingly the benefits to society of an educated workforce are also better understood, such as gains for economic growth and development, poverty reduction, technological progress and good citizenship..

That said, we still know little about the 'black box' of education systems themselves – the different policy domains and components that make up the whole. In the best case scenario, these should slot together to ensure opportunities for the maximum number of students, and quality instruction that equips them with labor market-ready skills.

This study argues that in order to improve education quality, it is crucial to monitor each policy domain that makes up the whole – after all, we cannot improve what is not measured. To help government's identify best practice policies, the World Bank created a framework to benchmark education system policies across the world. The framework is called **SABER: System Assessment and Benchmarking for Education Results**; which aims to add to our mostly OECD-centric store of knowledge on what works in education, by gathering and analyzing timely and rigorous data from the developing world.

This study presents the first, pilot application of SABER in 14 economies in East Asia – a region where improving the quality of education remains the key challenge. It outlines the SABER framework for eight education policy domains; affording cross-country comparisons, in combination with evidence on which programs work. Under each domain, the latest empirical evidence on how these policies and practices relate to education quality is presented, along with the indicators used to measure them. The report concludes that the key to a successful education system is not just success in any one domain, but an overall alignment of policies in many aspects of the education system. The main messages are:

Policy Matters: Not surprisingly, high income countries often have good education policies; however, in certain policy domains, some developing countries sometimes do better. This suggests that even cash-strapped countries can catch up with their richer peers by focusing on best-practice policy.

There Are No Short-Cuts: All developing countries have to improve education policy in a number of areas. While it is true that developing countries in some areas have advanced policies in place, it is nevertheless the case that they need to focus on several areas at once in order to make their systems uniformly strong.

The results of the East Asia SABER pilot were presented at a joint UNESCO-World Bank conference in Bali in June 2011. The positive response to the SABER tool by education practitioners from the region has ensured that this program will become a permanent service offered by the World Bank, dedicated to monitoring policies and improving education system performance across the developing world.

CHAPTER 1

Struggling with Quality

Kevin Macdonald

SUMMARY

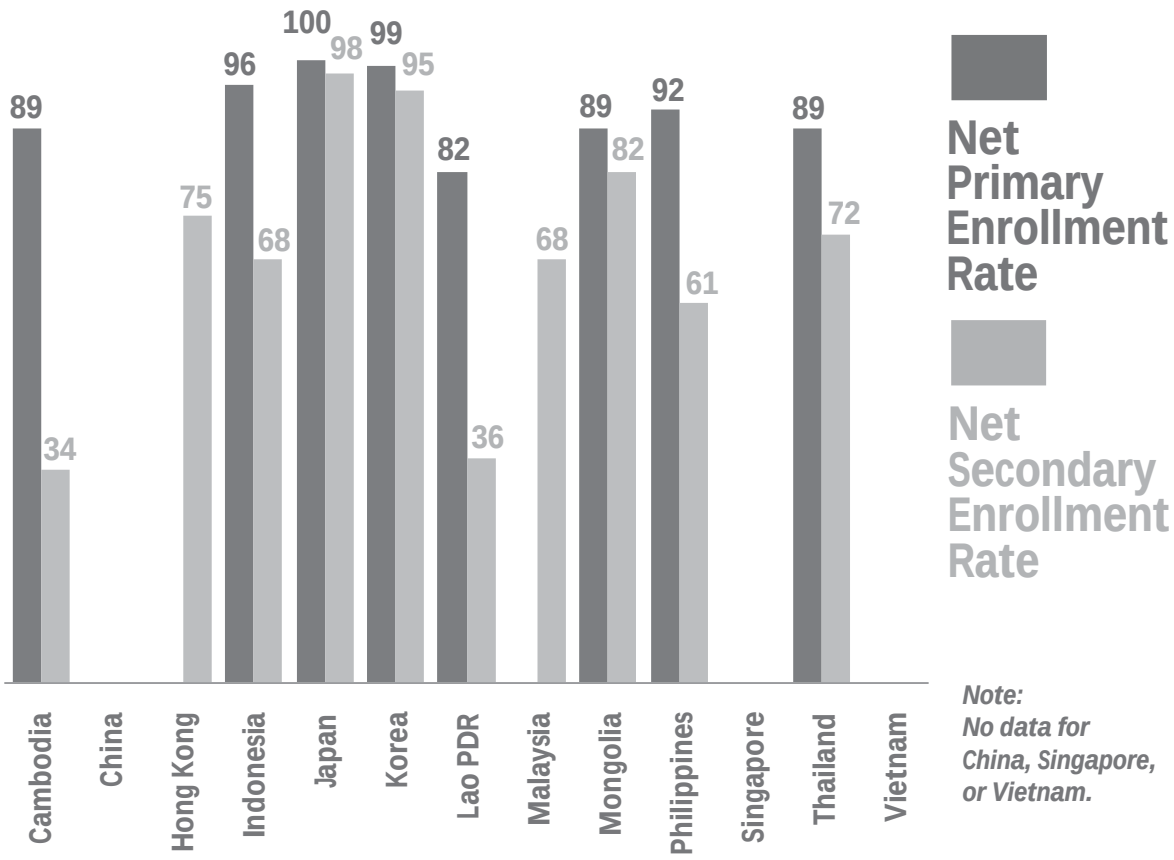
Low and middle income economies in East Asia have made considerable progress towards achieving universal primary education, but quality still remains a challenge. Increasing per pupil spending rarely corresponds to increasing quality; therefore, the education policies and practices that accompany spending are crucial.

Education for All

East Asia's middle- and low-income economies are close to achieving the Education for All (EFA) universal primary education goal – also a Millennium Development Goal. As shown in Figure 1, all economies for which data are available have net primary enrollment rates of 89 percent or higher, with the exception of Lao PDR, which trails behind with 82 percent.

Secondary net enrollment rates stand at just under 70 percent for all middle-income economies except for the Philippines at 61 percent, while low-income economies have secondary enrollment rates of around 35 percent. Mongolia has the highest net secondary enrollment rate among middle-income economies and, among all economies in the region for which data exist; Mongolia only ranks below Korea and Japan.

Figure 1. Primary and Secondary Enrollment Rates by Country/Economy

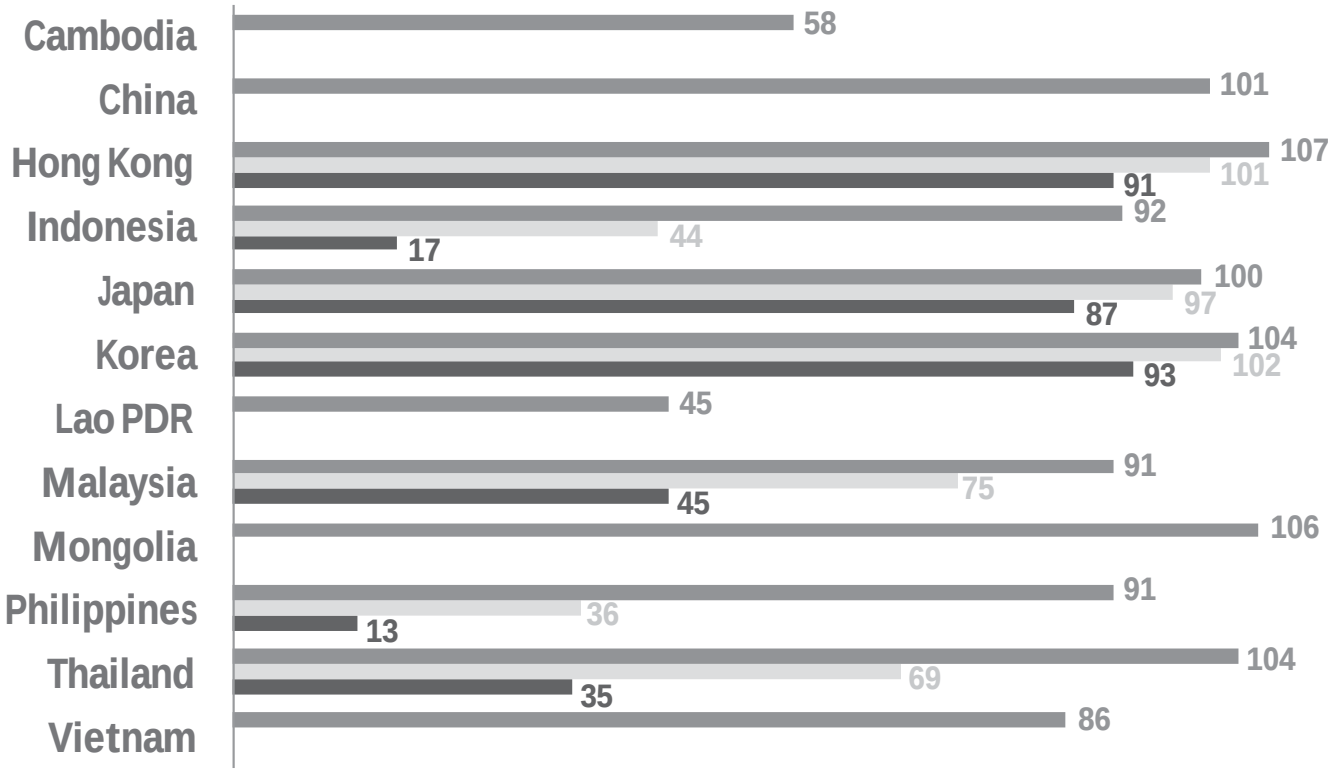


Sources: UNESCO Institute of Statistics and EdStats

Though these enrollment rates are impressive, if we focused in on learning, the picture of success would change dramatically. Cognitive ability - a key measure of education quality – is crucial to a person's labor market opportunities and potential earnings (Patrinos and Sakellariou, 2011; Moll, 1998; Glewwe, 1996; and Murnane et al, 1995). A study of Canadians using data from the International Adult Literacy Survey (IALS) found that a 20 percent increase in literacy among adults increases annual earnings by 35.6 percent, whereas the return on years of schooling after controlling for literacy is either zero or very small (Green and Riddell, 2001). Thus quality, and not just quantity is a vital indicator to gauge the effectiveness of any education system.

For example, Figure 2 presents the gross enrollment rate of grade 8 students –the number of grade 8 students in an economy divided by the number of 14 year olds – and shows very high figures for all middle-income economies. However, when students who, according to the IEA's Trends in Mathematics and Science Study (TIMSS), do not have "*some knowledge of whole numbers, operations, and basic graphs*" are excluded from the calculation, the gross enrollment drops dramatically for Malaysia, Thailand, Indonesia, and the Philippines, all middle-income economies participating in TIMSS.

Figure 2. Gross Enrollment Adjusted for Education Quality



Sources: UNESCO Institute of Statistics, Edstats, and Mullis et al. (2008)

Grade 8 students enrolled as a percentage of all 14 year-olds

Grate 8 students enrolled with a basic knowledge of whole numbers, decimals, operation, and basic graphs as a percentage of all 14 year-olds

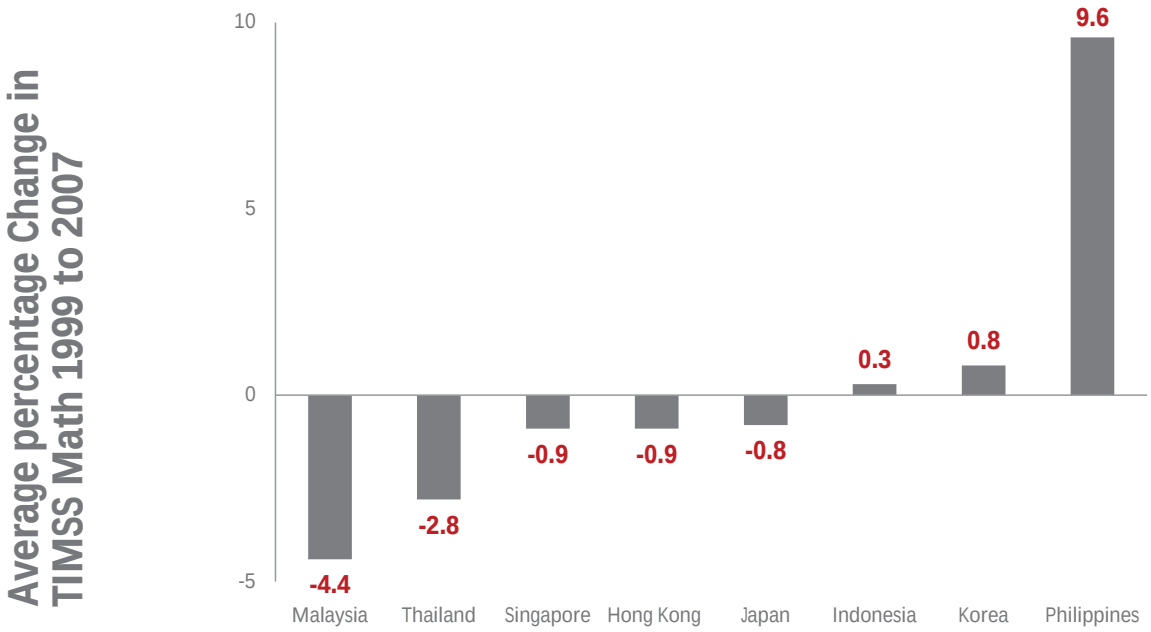
Grade 8 students enrolled who can apply basic mathematical knowledge in straightforward situations as a percentage of all 14 year year-olds

If we raise the standard even higher by excluding those who cannot "*apply basic mathematical skills in straightforward situations*" – which would seem to be a must-have skill for competing in the global knowledge economy – the number drops to less than half of all 14 year olds in those four economies and even as low as 13 percent in the Philippines.

Education quality is not just important in terms of individual returns, but also impacts society as a whole in terms of economic growth and poverty reduction. Hanushek and Kimko (2000), as well as subsequent studies based on their initial research (including Hanushek and Wossmann, 2007 and OECD, 2010), have shown a strong association between economic growth and education quality. The OECD has estimated that if its member countries were to boost their scores on the student assessment, PISA, by 0.25 standard deviations in the next 20 years (a feat Poland accomplished in six years), the net present value of benefits for the generation born in 2010 would be worth $115 trillion (OECD, 2010).

Since 1995, TIMSS has been administered every four years to students who are typically in grade 8, which means it is well timed to capture the quality of basic schooling, a crucial factor for the development of cognitive ability and for future learning. Since 1999, TIMSS math scores have been far from static in East Asia, as is demonstrated in Figure 3. Of all the TIMSS participants in the region, the Philippines increased education quality to a far greater extent than its neighbors—improving its math performance by almost 10 percent between 1999 and 2003—the largest percentage increase of all TIMSS economies over that period. Very small positive changes occurred in Korea and Indonesia, while there were small negative changes in Singapore, Hong Kong SAR, China (henceforth for the sake of brevity referred to as Hong Kong), and Japan and more noticeable declines in Thailand and Malaysia where TIMSS scores decreased by 2.8 and 4.4 percent respectively.

Figure 3. Average Growth in TIMSS Math Scores from 1999 to 2007



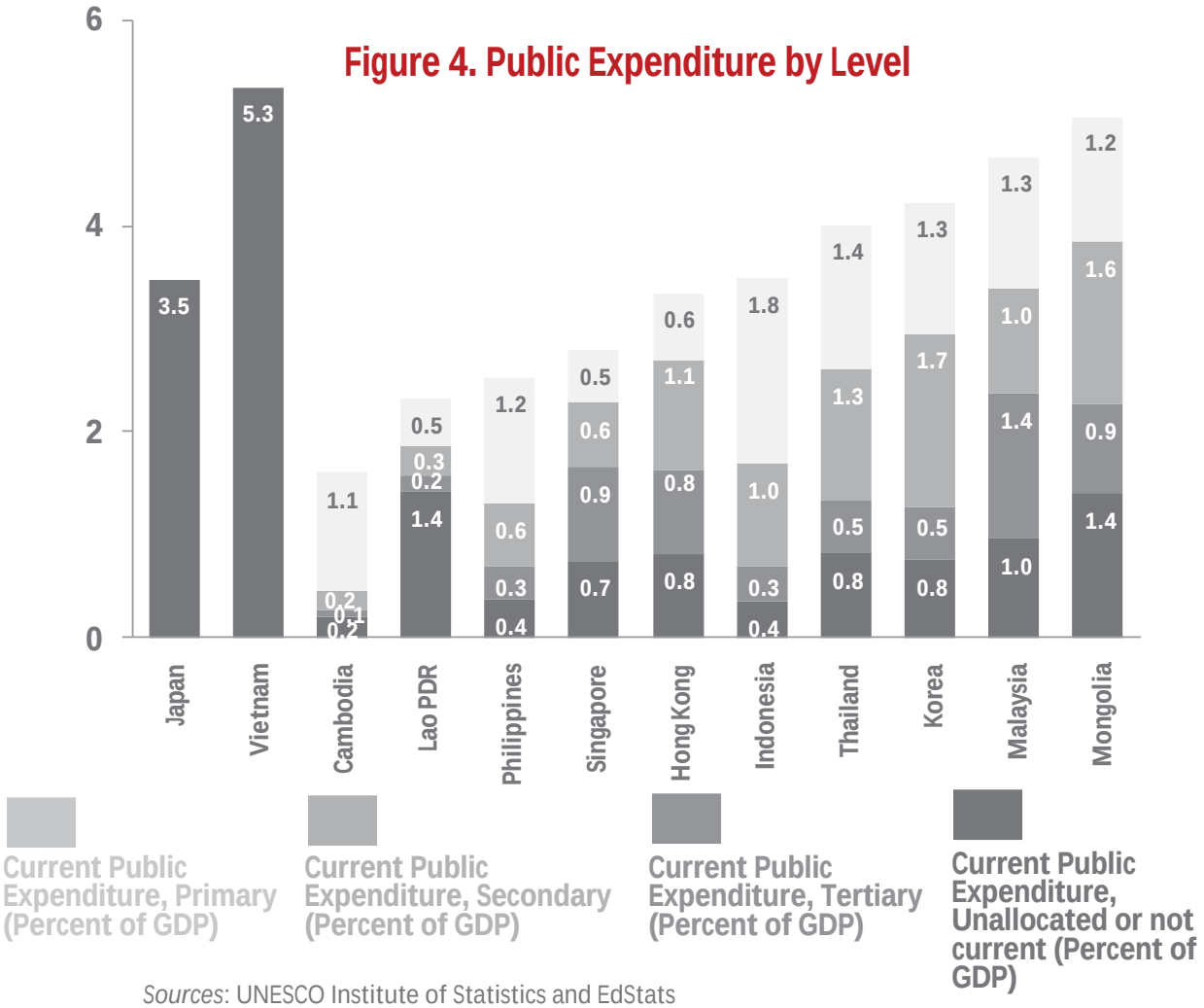
Sources: Mullis et al. (2008) and EdStats

Education Expenditure and Quality

When governments ask themselves how they can improve the quality of education, invariably the first answer that comes to mind is to increase public expenditure. Government spending on education in East Asia varies quite significantly between economies. However globally, we observe that the big spenders do not always achieve the best results in terms of quality.

Figure 4 presents public expenditures on primary, secondary, and tertiary recurrent spending and non-allocated recurrent and non-recurrent spending as a percentage of GDP in the economies of East Asia. Vietnam stands out as the biggest spender of public funds on education overall with 5.3 percent of GDP. Indonesia spends the most public money on primary education with 1.8 percent of GDP followed by Thailand with 1.4 percent. Korea is the largest spender on secondary schooling with 1.7 percent of GDP, followed by Mongolia with 1.6 percent, which also has the highest net secondary enrollment rate of all East Asia middle- and low-income economies.

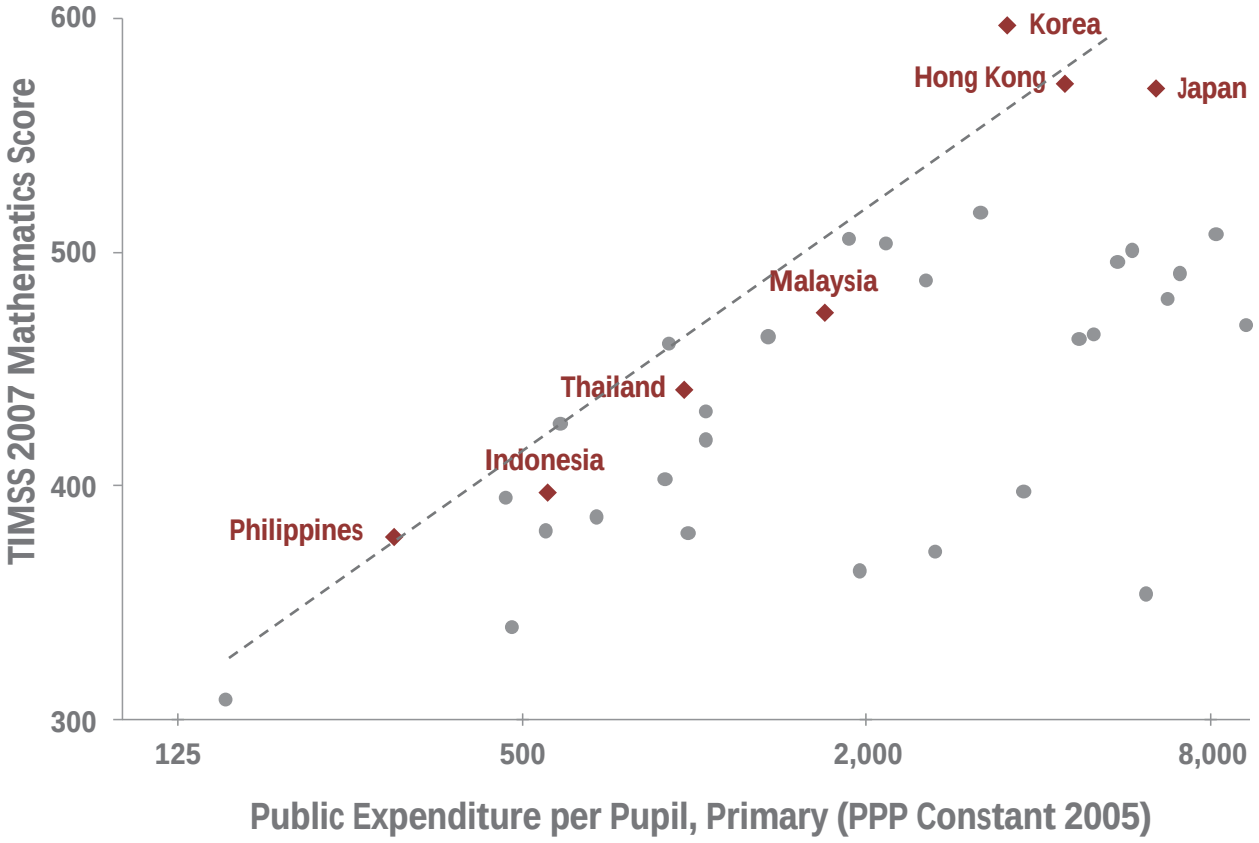
In terms of tertiary education, Malaysia is the largest public financer, with 1.4 percent of GDP, followed by Singapore and Mongolia with 0.9 percent each. Cambodia spends the least public money on education overall with only 1.6 percent of GDP, followed by Laos at 2.3 percent, which ties with Singapore in spending the least public money on primary schooling at 0.5 percent of GDP.



Sources: UNESCO Institute of Statistics and EdStats

Higher per student spending does not always lead to better education quality however. Figure 5 plots TIMSS mathematics achievement and average annual per pupil spending –in PPP adjusted international currency – for primary schooling. The figure shows a natural frontier that indicates which economies achieve the highest scores for their per-student spending. Some East Asian economies are close to this frontier, suggesting that they are getting relatively good returns on their education investments. Others are clustered within the frontier, suggesting that they could spend less to achieve the same results.

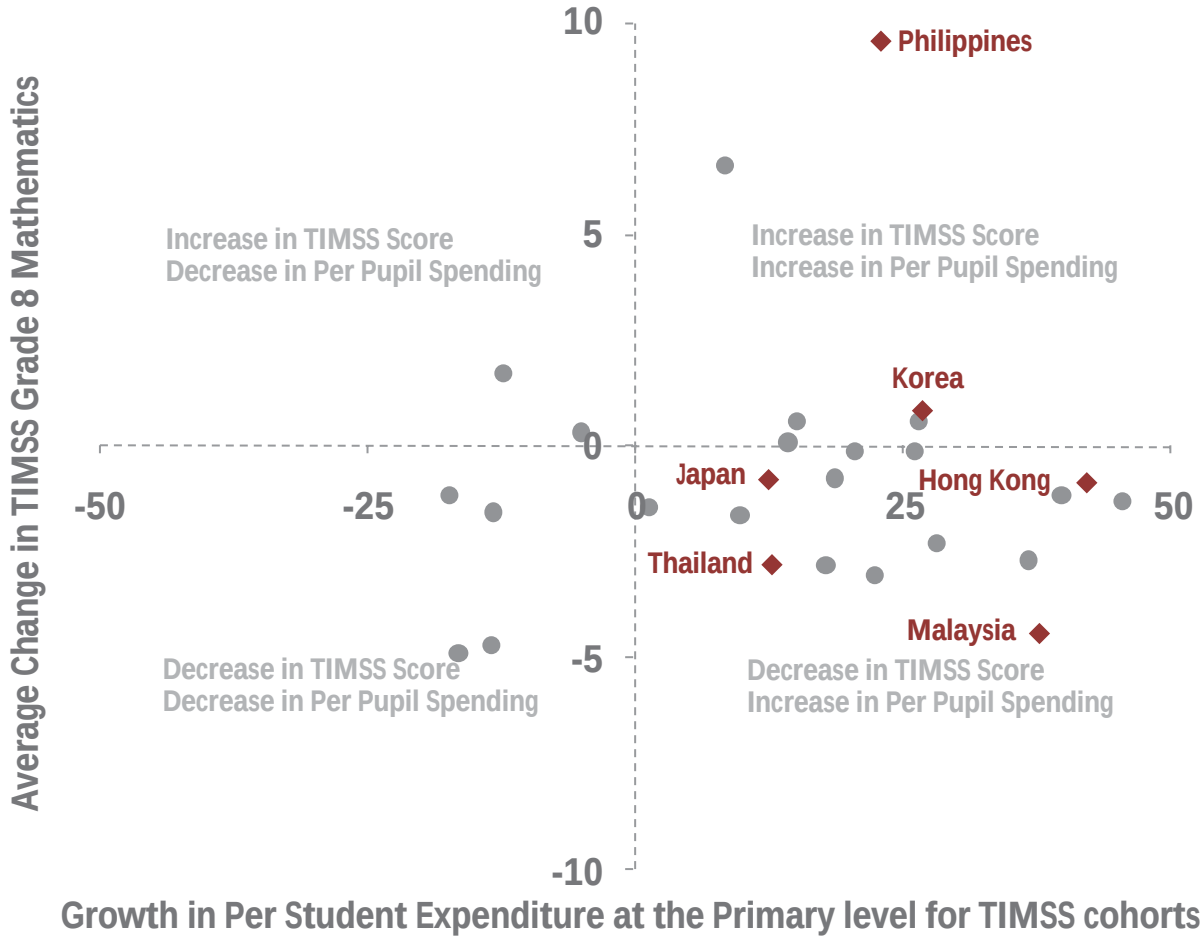
Figure 5. TIMSS Math Achievement and Expenditure per Primary Student



Sources: UNESCO Institute of Statistics, World Bank EdStats, and Mullis et al. (2008). Public Expenditure per Pupil, Primary, is the average from 1999 to 2005; i.e.: average per pupil spending while the tested cohort was in primary school. Data for the Philippines is from 2003.

Increasing spending does not necessarily mean that education quality will increase, especially in the medium term. Figure 6 plots the growth in TIMSS mathematics achievement and the growth in per pupil primary education expenditure for the tested cohorts of students. Most of the economies in the region fall into the bottom right quadrant of the figure, indicating that although per pupil primary education spending has increased, their TIMSS performance has declined – this is despite the fact that the increases in spending in these economies have been quite large. Four out of the six East Asian economies with time-series data on spending who participate in TIMSS fall into this category. The exceptions are Korea and the Philippines, where there have been both high increases in spending and positive growth in TIMSS achievement. Korea and the Philippines are among the minority of economies where higher per pupil expenditure has actually paid off.

Figure 6. Change in Spending and Quality from TIMSS 1999 to 2007



Sources: UNESCO Institute of Statistics, World Bank EdStats, and Mullis et al. (2008). Average change in per pupil primary public expenditure between TIMSS cohorts is the 1999 to 2007 average change from one TIMSS cohort to the next in the average per pupil public primary expenditure that occurred during grades 1 to 6 for the cohort.

How to Improve Quality?

Spending alone has not necessarily improved education quality in East Asia, in fact in many economies it has coincided with a decrease in quality. In other words, policies and practices are crucial to ensure that any increase in spending has a positive impact on quality. But how to decide which policies are best? There are two sources of information available – the experience and practices of other economies, and the results of rigorous evaluations of reforms, programs, and interventions. The purpose of this benchmarking study is to provide policymakers with the best analytical tools, to allow them to make informed investment decisions.

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CHAPTER 2

Learning from High Performing Education Systems

Kevin Macdonald & Harry Anthony Patrinos

SUMMARY

In the previous chapter we saw that in order to improve education quality it is not just a matter of additional resources, but also achieving the right policy mix. This is often difficult since policies and practices fit together to form the education system as a whole – if just one component is weak, it can undermine the whole system. The system may also fail if policy components are misaligned. This chapter examines the interaction between different policy areas in East Asia to understand the effectiveness of education system policies and practices as a whole. It benchmarks a few key components of the education system, as well as the alignment of these components. Generally we see that higher performing economies in international assessments tend to have fewer misalignments between key components than lower performing economies.

A Systems Approach

Policy makers grappling with the challenge of improving education quality face a difficult task due to the lack of evidence on what works. While there is a growing evidence base on specific interventions that can improve learning and other education outcomes, there is less evidence on how these policies fit together to improve quality. Benchmarking education systems can fill this knowledge gap by allowing governments to compare their policies and find out what is working on the ground.

One obstacle to doing this is that the education system itself is large and complex, and policies and practices cannot be pursued in isolation: having excellent policies in every component of the education system except for one, on which the other components rely, could lead to learning failure. The challenge is to find a system that is complete enough to not exclude crucial components, but simple enough to provide clear policy guidance.

One approach is to use the concept of cognitive production functions that are used extensively in the academic literature to model an education system. They treat the production of cognitive achievement analogously to that of a firm: various inputs are combined according to some type of production technology to create cognitive ability. The inputs of a cognitive production function include factors that could affect a child's learning from the pre-natal stage until the present. These could include pedagogical materials found in the home, to support from parents and teachers, to pedagogy at school, motivation, innate ability, and other inputs. The production function is a model of how these separate inputs combine to create learning.

How the production function is modeled is crucial to identifying what distinguishes a high performing education system. One insight from economics (Kremer 1993) is that production tasks must be done together in order for any of them to be of high value. The *O-Ring Theory of Economic Development* uses the metaphor of the space shuttle Challenger disaster in 1986, which was caused by the malfunctioning of a tiny component of the space-ship – the O-ring. This example illustrates the crucial concept of interdependence between components.

Benchmarking Education Systems in East Asia

When applied to education, the O-Ring Theory implies that even if most of the components of a system are excellent, if a single policy on which the success of the other components depends is deficient, then the system as a whole will fail. In the model underlying this chapter, the most important input into the education system are the teachers, because they are the point of contact between the education system and the students. If an education system is unable to attract highly talented individuals into teaching, then the effectiveness of the system as a whole will likely be compromised regardless of the technical strength of the other components.

Within the education system's production function, this chapter focuses on the ability of schools to employ and retain good teachers – in other words, the degree of school autonomy and the decentralization of the hiring process. In particular, this chapter benchmarks the autonomy of schools, student assessment information, and influence by the parents on school progresses; and how these factors interact to shape teacher hiring policy.

Improving Teacher Policies

In order to provide East Asian policy makers with guidance on how to improve education quality, it is useful to look at the policies involving the teaching profession that are in need of improvement. The success or failure of these policies is also dependent on the relative autonomy of schools, and whether the complementary information and accountability mechanisms exist to ensure learning outcomes.

Across the region, there are good levels of development in most of the teacher policy goals. However, there is room for improvement, in particular policies need to be further developed to help: (1) prepare teachers through useful training and experience and (2) empower school principals to lead teachers.

The Role of Decentralization

The decentralization of an organization is a distinguishing factor of any production process, especially an education system. However, moving the locus of decision making away from central government to the school-level, in turn increases the importance of information systems – with added responsibility comes the attendant need for greater accountability. Alignment between the degree of autonomy and the existence of information is crucial for decentralization to be effective.

Figure 1 measures the interaction of these two policies – the extent to which autonomous schools are able to manage their own budget or hire and fire teachers, and the existence of large scale assessment mechanisms that hold the school or teachers accountable for learning outcomes.

We note that Korea, Vietnam, Malaysia and Thailand allow school directors to manage their own budgets, but they also have a census-based assessment to hold schools accountable. Lao and Cambodia, on the other hand, provide schools with the same level of financial autonomy, but do not have an assessment system that is officially designed for school results. This suggests a misalignment. Indonesia, Shanghai (China), and Mongolia, decentralize even further and allow schools to hire and fire teachers, but none of these economies have an assessment that holds teachers accountable. For these five cases therefore, there is an apparent misalignment between the degree of autonomy and the information required to hold schools accountable. Other economies such as Singapore, China, the Philippines and Japan have a more centralized system so the issue of information is less applicable.

Figure 1. Is Student Assessment Information Aligned with Autonomy?

	No autonomy over budget or hiring and firing teachers	School has autonomy to allocate its budget	School has autonomy to hire and fire teachers
A census-based assessment with an official purpose of teacher and school accountability exists		● Malaysia ● Thailand	
A census-based assessment with an official purpose of school accountability exists		● Vietnam ● Korea	● Indonesia
No census-based assessment with an official purpose of either school or teacher accountability exists	● Singapore ● China ● Philippines ● Japan	● Lao PDR ● Cambodia	● Shanghai ● Mongolia

Another type of decentralization is private sector education provision. Figure 2 presents the extent to which public funding supports private schools, and whether the corresponding information exists to hold them accountable. For example, Malaysia and Thailand provide public funding which follows students to the schools of their choice –for example, a voucher scheme. These systems also have a census-based assessment with an official purpose of providing information about school choice. Korea and Indonesia provide public funding to private schools and have an assessment system that is designed to hold schools accountable. Shanghai (China), China and Japan also provide public funding to schools but do not have such an assessment suggesting a misalignment. Cambodia, Lao PDR, Mongolia, the Philippines, and Vietnam do not publically fund private schools.

Figure 2. Is Student Assessment Aligned with Public Financing of Private Schools?

	No publically funded private schools	There exist publically funded private schools	Public funding follows the student to a chosen school
A census-based assessment with an official purpose of promoting competition, orienting demand, school choice			● Malaysia ● Thailand
A census-based assessment with an official purpose of school accountability exisits	● Vietnam	● Indonesia ● Korea	
No census-based assessment with an official purpose of either school or teacher accountability exists	● Singapore ● Lao PDR ● Philippines ● Cambodia ● Mongolia	● Shanghai ● China ● Japan	

The Role of Parents in Ensuring Quality Education

Decentralizing an education system weakens the influence of the central authority. To offset this, the influence of clients, in particular parents, is important. Figure 3 presents the degree of school autonomy as compared to the influence of parents. For example, Shanghai (China) allows school directors to hire and fire teachers, and also gives parents a degree of influence over this process. By contrast in Indonesia and Mongolia where schools are also able to hire and fire teachers, parents have little influence. Malaysia, Korea, Lao, Thailand, and Cambodia all allow school directors to manage their own budgets, and afford a degree of parental influence. In Vietnam, parents do not have such influence even though schools do. The remaining economies do not provide schools with either of these types of autonomy.

Figure 3. Are Accountability Policies Aligned with Autonomy?

	No autonomy over budget or hiring and firing teachers	School has autonomy to allocate its budget	School has autonomy to hire and fire teachers
Parents have some influence over hiring and firing teachers			● Shanghai
Parents have some influence over budget decisions		● Malaysia ● Thailand ● Lao PDR ● Korea ● Cambodia	
Parents do not have influence over specific aspects of school autonomy	● Singapore ● Philippines ● China ● Japan	● Vietnam	● Indonesia ● Mongolia

What characterizes a high performing education system in East Asia?

While many economies in East Asia have well-developed teacher policies, as well as strong decentralization, assessment systems, or the involvement of parents, few economies have all these components properly aligned. In general, higher performing economies tend to have better-aligned policies. For example, Korea, Singapore, Japan, Malaysia and Thailand have relatively well-developed teacher policies and have no more than one misalignment between decentralization and information or parental influence. The other economies have many misalignments in a number of areas.

The economies of East Asia are in a privileged position given that many of the best performing education systems located in the region and several developing economies in the region excel in specific policy domains. Moreover, there are challenges shared by all. There is a clear need to focus on improving several policy areas at the same time in order to further holistic education reforms. It is not sufficient to excel in single policy domains. Different policy domains must be linked and reinforced through:

1) **Accountability mechanisms – rewards and sanctions;**
2) **A solid vision of where the system is headed – good stewardship;**
3) **Feedback loops so that developments and lessons in one policy area are fed into and inform others.**

Without clear rewards and sanctions, good system stewardship, and clear feedback loops, there is a danger that a country develops efficient "islands" of activity while remaining trapped in a low achievement environment.

Towards Leading Indicators

While gainful learning is one of the objectives of an education system, and comparing and benchmarking country systems is a useful exercise, there is still a need for a subset of indicators. Moreover, these indicators should be useful for signaling change and furthering national education goals. In other words, they should be key or leading indicators.

The ***Leading Indicators*** analogy is borrowed from the concept of economic indicators that signal shifts *before* an economy has actually changed. Examples of leading indicators include production workweek, building permits, unemployment insurance claims, money supply, inventory changes, and stock prices. There are also coincident indicators, which change about the same time as the overall economy; and lagging indicators, which change after the overall economy, but these are of minimal use as predictive tools.

While the leading indicator concept has been used in other sectors, notably health; in education the only example that is well known is the Annenberg Institute's approach, which works with central offices and community constituencies of local school system in the United States. Since improving outcomes and closing gaps takes time, policymakers need to assess systems and see progress before results show up in indicators such as test scores. Therefore, leading indicators enable education leaders to make more strategic/less reactive decisions. But leading indicators need to be: timely and actionable; benchmarked to external standards; and if changed have the ability to improve outcomes.

What is proposed here is an approach that attempts to use the concept of leading indicators to gauge national system progress. Leading indicators in education should provide early signs of progress towards academic achievement, and will help governments make informed decisions to make improvements. In the future, the *system assessment and benchmarking education systems for results* (SABER) findings will be used to construct a system of leading indicators.

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CHAPTER 3

Information Systems

Emilio Porta

"Knowledge is power, and information is liberation"
Kofi Annan, Former United Nations Secretary-General

SUMMARY

The development of good *Education Management Information Systems* (EMIS) is an essential part of the effort to improve education quality. Governments must be able to gauge system capacity, and produce and disseminate reliable education statistics to make informed policy decisions. The results of the SABER pilot in East Asia show that overall the rate of available data in the region is higher than the world average, although there was substantial variance across economies indicating opportunities for peer learning. There is still room for improvement and EMIS's across the region can often be improved by filling data gaps – particularly for education finance and higher education – and by focusing on the timely and widespread dissemination of results at the international, national and local levels.

The Need for Reliable Data for School Systems

The production and dissemination of reliable education statistics is an important global public good. Reliable data is essential for effective education sector planning, and for monitoring progress towards meeting national and global education targets such as the Millennium Development Goals (MDGs).

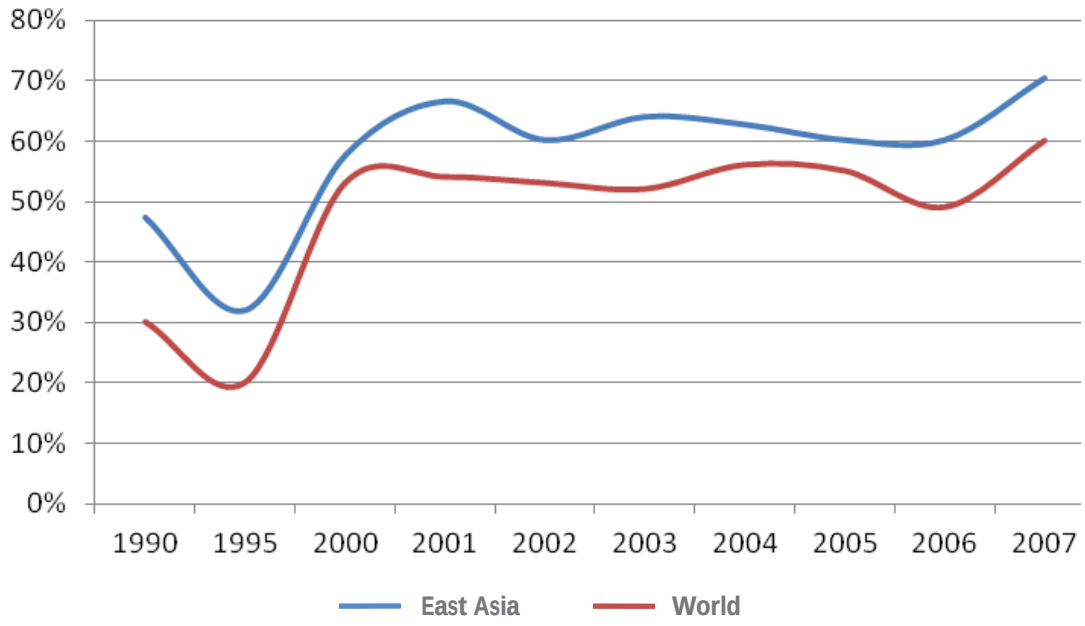
In order to evaluate the education sector in any country, analysts need to have access to performance indicators. They need to know about the education system's internal efficiency, such as intake and completion rates, repetition and dropout rates, and student-teacher ratios. They also need to know about the context in which the system operates – such as educational expenditures by student and education level, or private educational expenditures by households –to evaluate the potential winners and losers of changes in education policy.

Data can also be used to strengthen school and policymaker accountability and to promote better learning outcomes. A recent study by Bruns et al (2011) highlights how data have been used to change accountability relationships among the various actors in the education system to promote changes in

behavior that improve outcomes. The majority of education projects funded by the World Bank over the last decade have included components for strengthening EMIS, or school mapping activities.

Establishing a robust EMIS is no easy task and a considerable number of economies still struggle to gather data on such essential indicators as the education MDGs (Porta and Klein, 2010). As seen in Figure 1, in 2007 just 61 percent of economies worldwide were able to report on their progress towards meeting the education MDGs. Although the situation in East Asia is slightly better, a considerable gap in the availability of information remains.

Figure 1. Data Availability over Time for Education MDG Indicators



Source: World Bank estimates

Data Quality Assessment Framework

The International Monetary Fund (IMF) has developed a *Data Quality Assessment Framework* (DQAF) that can be applied to statistics in a range of different subject areas. The World Bank, in collaboration with UNESCO's Institute for Statistics (UIS), used the DQAF to provide a flexible structure for the qualitative assessment of education statistics. The DQAF covers all aspects of the statistical environment in which the data is collected, processed, and disseminated. It is possible to not only assess the quality of educational statistics, but also identify those areas in need of strengthening. Using this data, the World Bank and UIS are working with governments to develop policies to build their capacity to collect useful and robust education statistics (for a short history of the development of the DQAF and the IMF's efforts to improve data quality, see Carson [1997]. The annotated DQAF used in this manual is based on the framework used by The World Bank and UNESCO. Institute of Statistics (Patel et al, 2007 and Patel et al, 2003), which is an adaptation of the original framework developed by the IMF).

The DQAF assessment has a series of questions organized from the general, to the specific, along six key dimensions:

1. Prerequisites of Quality: measures the legal and institutional environment including the extent of coordination between the Ministry of Education and other line ministries and departments; the adequacy of resources available for statistical work; and the overall awareness of the need for high-quality data for use in government.

2. Integrity: measures factors that insure objectivity in the collection, compilation, and dissemination of statistics; includes the institutional arrangements for ensuring professionalism in statistical policies and practices, transparency, and ethical standards.

3. Methodological Soundness: measures the extent to which country EMIS utilize established methodologies and internationally accepted standards, guidelines, or good practices. Four specific elements are examined: Concepts and definitions; Scope; Classification; and, Basis for recording.

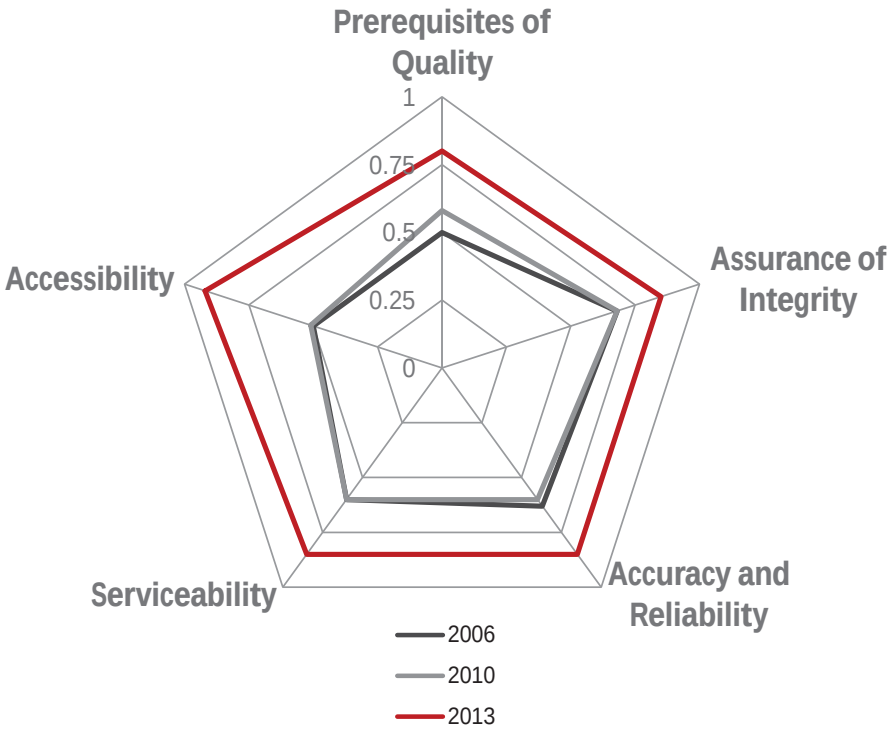
4. Accuracy and Reliability: the extent to which EMIS data accurately reflects reality on the ground and the ability of third party sources – such as teachers – to collect data based on sound statistical methods. Also measures the regularity of assessment, validation, and revision of source data, intermediate data, and statistical outputs. This dimension has five elements: Source data; Statistical techniques; Assessment and validation of source data; Assessment and validation of intermediate data and statistical outputs; Revision studies.

5. Serviceability: measures factors that ensure education statistics are useful and relevant to users such as timely and predictable dissemination, internal and external consistency with other major datasets, and formal revision policies. This dimension has four elements: Relevance; Timeliness and periodicity; Consistency; and, Revision policy and practice.

6. Accessibility: measures the extent to which data and metadata are presented in a comprehensible manner, are easily accessible to all, are regularly updated, and that user support services are readily available. This dimension has three elements: Data accessibility; Metadata accessibility; Assistance to users; and Leading Indicators for Benchmarking EMIS.

Box 1. The Implementation of the DQAF in Lao PDR

The Government of Lao PDR and the donor community have been working together towards the implementation of a sector-wide approach (SWAp) to harmonize their development assistance. Part of this effort involves strengthening the Education Management Information System of the Ministry of Education. The Government used the DQAF to identify those areas that needed strengthening and to put together a detailed action plan for implementing a fully functional EMIS by 2013.



Source: World Bank staff

Past experience has shown that it takes governments about two months to conduct a comprehensive data quality assessment, and since the changes take time to implement, it is not feasible to perform a DQAF annually. Therefore, in order to facilitate the benchmarking and monitoring of the EMIS on a regular basis, the World Bank has developed (Porta and Arcia, 2011) the SABER-EMIS Assessment Tool (SEAT) as part of the SABER initiative. The tool benefited much contribution from UNESCO's Institute for Statistics (UIS) - Assessment, Information Systems, Monitoring and Statistics Unit (AIMS) in Bangkok. The Assessment Scale makes it possible to carry out a rapid assessment of the EMIS and provides clear scoring rules for evaluating data quality.

The World Bank also recommends the use of the *Leading Indicators of Data Quality*, a simple, low-cost tool for the regular monitoring of progress in the development of an EMIS. This assessment is similar to using leading economic indicators, and can be used to monitor data quality between full assessment exercises (For more information about SABER EMIS tools, visit http://go.worldbank.org/PX7O96H8F0). Two of these indicators have been piloted in East Asia:

- ***The percentage of UIS indicators that can be estimated with the data provided by the country.*** This indicator measures a country's capacity to report key education indicators to the UIS. It consists of the ratio of the total number of UIS indicators that can be estimated with data provided by the country, to the total number of UIS indicators. The UIS only publishes indicators for economies that report their data following international standards. Hence, this indicator also captures the quality of the reported data.

- ***Feeding back information to schools and communities to promote accountability and to facilitate school-level planning.*** This indicator measures if economies report information back to schools. Giving statistical information to schools is very important because (i) it helps schools to see why their data is important for the creation of country-wide education statistics, (ii) it gives schools information that they can use to compare themselves to national and regional standards, and (iii) it gives schools information that they can use to increase their accountability to local communities.

Analysis of Leading Indicators for East Asia

We analyzed these two leading indicators using data collected through the UIS for the following economies: Cambodia, China, Hong Kong, Indonesia, Japan, Lao PDR, Malaysia, the Philippines, the Republic of Korea, Singapore, Thailand, and Vietnam. Overall, the rate of available data in East Asia – defined as the ratio of the total number of indicators provided by East Asian economies to the total number of UIS indicators—is higher than the world average. As seen in Table 1, the largest remaining information gaps are in the areas of education finance and ISCED 5-6 (higher education). It is important to note that this indicator is highly variable and that it has been declining since 2007.

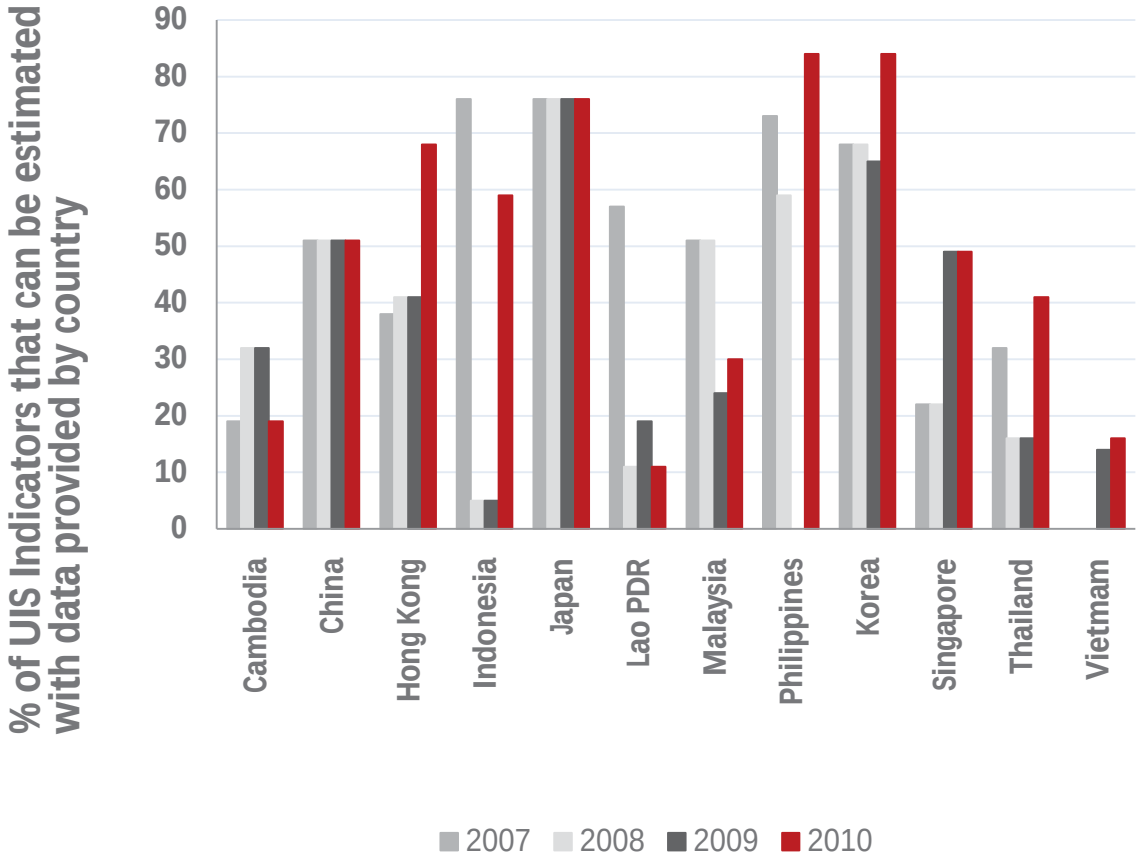
Table 1. Percentage of UIS Indicators That Can Be Estimated with Data Provided by the Country

	Education Finance				Education ISCED 0-4				Higher Education ISCED 5-6			
	2007	**2008**	**2009**	**2010**	**2007**	**2008**	**2009**	**2010**	**2007**	**2008**	**2009**	**2010**
Cambodia	19	32	32	19	67	100	76	76	31	39	70	39
China	51	51	51	51	89	89	82	0	39	39	39	0
Hong Kong	38	41	41	68	85	85	93	93	96	96	96	37
Indonesia	76	5	5	59	100	91	100	96	31	6	98	54
Japan	76	76	76	76	80	80	76	78	91	91	89	89
Korea	68	68	65	84	100	100	100	100	100	100	100	100
Lao PDR	57	11	19	11	100	100	100	100	100	98	61	61
Malaysia	51	51	24	30	100	100	65	98	78	83	0	98
Philippines	73	59	0	84	100	100	100	82	67	63	63	41
Singapore	22	22	49	49	62	69	82	82		4	39	39
Thailand	32	16	16	41	84	93	89	62	28	24	46	43
Vietnam			14	16	91	91	58	58	81	81	91	74
AVERAGE	**51**	**39**	**33**	**49**	**88**	**92**	**85**	**77**	**68**	**60**	**66**	**56**

The biggest challenge faced by economies in terms of providing data to the UIS, is in the area of education finance. In some economies, the Minister of Education is required to request the information from the Minister of Finance, which can cause delays and sometimes even non-compliance. Therefore, it is important to include arrangements for exchanging data as one of the topics in the DQAF. In fact, the availability of data on education finance could also be used as a leading indicator for assessing if these mechanisms are in place.

As seen in figure 2, in 2010 three economies had a full range of data on education finance – the Philippines, the Republic of Korea, and Japan. The Philippines and Korea made significant strides towards making data available in 2010, even moving ahead of Japan, which was the leader until 2008. The three economies with the least data on education finance were Cambodia, Vietnam, and Lao PDR. Also note that Lao PDR had a significant decrease in the availability of data between 2007 and 2010.

Figure 2. Rate of Available Education Finance Data by Country



Providing information to schools is important for promoting accountability and enabling educational planning at the local level (Bruns et al, 2011; Arcia et al, 2011; and Crouch, 1997). Some governments are starting to send information back to schools so that students, parents, and teachers can find out how well their schools are performing compared with similar schools. Feeding information back to schools can improve data quality because the school community can identify and report any inaccuracies. Of the economies included in this analysis, the Philippines, Singapore and Hong Kong, China send information directly to parents, and Vietnam, Malaysia, Indonesia, and Korea send information to schools.

Our analysis of the two indicators suggests that there is room for economies in the region to learn from each other about the process of developing EMIS. Some performed better than others by providing more complete data, and others by having better mechanisms for disseminating the data to parents and schools.

Table 2. SABER EMIS Indicators Summary

	% of UIS Indicators that can be estimated with data provided by the country (2011)			Feeding information back to:	
	EDUCATION FINANCE	PRE-SCHOOL, PRIMARY, AND SECONDARY	TERTIARY	SCHOOLS	PARENTS
Cambodia	Latent ◉○○○	**Advanced** ◉◉◉◉	Emerging ◉◉○○		
China	Established ◉◉◉○	Latent ◉○○○	Latent ◉○○○		
Hong Kong	Established ◉◉◉○	**Advanced** ◉◉◉◉	Emerging ◉◉○○	✓	✓
Indonesia	Established ◉◉◉○	**Advanced** ◉◉◉◉	Established ◉◉◉○	✓	
Japan	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉		
Korea	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	✓	
Lao PDR	Latent ◉○○○	**Advanced** ◉◉◉◉	Established ◉◉◉○		
Malaysia	Emerging ◉◉○○	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	✓	
Philippines	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	Emerging ◉◉○○	✓	✓
Singapore	Emerging ◉◉○○	**Advanced** ◉◉◉◉	Emerging ◉◉○○	✓	✓
Thailand	Emerging ◉◉○○	Established ◉◉◉○	Emerging ◉◉○○		
Vietnam	Latent ◉○○○	Established ◉◉◉○	Established ◉◉◉○	✓	

Latent ◉○○○ = 0-25% | Emerging ◉◉○○ = 26-50% | Established ◉◉◉○ = 51-75% | Advanced ◉◉◉◉ = 76-100%

For example, Japan has high levels of data availability but is not feeding back this information to schools and parents. In contrast, although Vietnam has some challenges on the availability of data, the country is doing a good job of feeding information back into the system at the school level. Economies such as Hong Kong, China, Philippines and Singapore have both high levels of data availability and are also feeding back information to schools and parents.

Conclusion

Oftentimes the development of EMIS can be left as an afterthought, given other pressing needs such as training and hiring good teachers, or updating curriculums to meet real-world needs. EMIS can seem like a chore—an onerous undertaking that requires extra resources and expertise. However, a well functioning EMIS is essential for any top quality education system, it is the oil that greases the whole machine. EMIS provides essential information to policy makers That allows them to take the pulse of the education system as a whole, and discern how existing policies and procedures are working, and what needs to be improved.

Currently East Asian economies are among the leaders in terms of the rate of available data, although there is substantial variance across economies. This means that those economies that need to catch up can learn from the successful policies of their near-neighbors. Oftentimes governments are collecting the right kind of data, but have been less successful at dissemination. As transparency in education systems improves across the region, it is certain that the quality of education will improve as a consequence.

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CHAPTER 4

Student Assessment Systems

Marguerite Clarke
Julia Liberman
Maria-Jose Ramirez

SUMMARY

Assessment is one of the least expensive innovations in education, and a vital tool to gauge whether children are learning and achieving at school. This chapter provides an overview of the relative strength of student assessment systems in East Asia. The four main findings are that: (i) most economies in the region report having a strong enabling context for their student assessment activities; (ii) most economies report aligning their examinations and (where they exist) national large-scale, system-level assessment activities to their official learning standards or curriculum; (iii) while the general quality and stability of international large-scale assessment activity in the region appears good, there is room for improvement in the dissemination and use of results; and (iv) many of the lower-income economies in the region do not yet have mechanisms for monitoring or assuring the quality of classroom assessment activities, something that needs to be addressed if they are to create truly effective student assessment systems that support learning for all.

Why Are Student Assessment Systems Important?

It is not enough for children to be enrolled in school and sitting in classrooms, they also must be learning. To ensure that children are learning, strong systems for assessing student achievement and learning outcomes are vital. Research that links education to economic prosperity is growing, and has found that a one standard deviation increase in scores on international large-scale assessments of reading and mathematics achievement is associated with a two percent increase in average annual growth rates of per capita GDP (Hanushek and Woessmann, 2007).

Assessment is the process of gathering and evaluating information on what students know, understand, and can do in order to make an informed decision about what to do next in the educational process.

An assessment system is a group of policies, practices, and tools for generating and using information on student learning and achievement. Such systems can support a variety of decision-making, such as policy design and evaluation, informing instruction, determining progress, and providing data for stakeholder accountability.

Research has also shown that the right kinds of assessment activities and uses of assessment data, can contribute to better learning outcomes and better-informed policy decisions (Clarke, 2011). Evidence on this has shown causal links between:

- High-quality, formative classroom assessment activities and better learning outcomes, as measured by student performance on standardized tests;
- Economies with exit examination policies and higher performance levels on international large-scale assessments of educational achievement, such as PISA or TIMSS;
- Using results from large-scale, system-level assessments of educational achievement to hold schools and educators accountable, and subsequent improvements in student learning outcomes.

Despite this growing evidence base, many governments have yet to establish fully effective student assessment systems. This is particularly the case in many lower- and middle-income economies, which stand to benefit most from systematic efforts to measure student learning outcomes—particularly as testing is one of the least expensive innovations in education (Hoxby, 2002 and Wolff, 2007).

What Do Student Assessment Systems Look Like?

Student assessment systems tend to be made up of three main kinds of activities that correspond to three key purposes or information needs:

- **Classroom assessments** *that provide real-time information to teachers and students to support teaching and learning in individual classrooms.* These assessments are carried out by teachers and students in the course of daily activities in the classroom. They include a variety of tools and procedures for collecting and interpreting written, oral, and other forms of evidence on student learning and achievement. Research has shown a strong causal link between effective classroom assessment activities and better learning outcomes as measured by students' performance on standardized tests, with the largest gains being made by low-achieving students (Black and Wiliam, 1998).

- **Examinations**, *the results of which are used to make decisions about the progress of individual students through the education system.* Examinations provide information to make crucial "life-changing" decisions about individual students—for example, whether they should be promoted to the next grade level, assigned to a particular type of school or academic program, graduate from high school, or gain admission to university (Heubert and Hauser, 1999). The high-stakes nature of most examinations means that policymakers must carefully monitor the process to avoid unintended negative consequences. For example, some examinations can exert a 'backwash effect' by encouraging such practices as "teaching to the test", rather than focusing on overall learning. This in turn affects the skills and knowledge profile of graduates.

- **Large-scale, system-level assessments**, *which provide policy- and practitioner-relevant information on the overall performance of the education system and the factors that contribute to that performance.* (Greaney and Kellaghan, 2008). The results of these kinds of assessments can inform both educational policy and practice. Examples include international assessments of educational achievement such as TIMSS (Trends in International Mathematics and Science Study),

PIRLS (Progress in International Reading Literacy Study), and PISA (Program for International Student Assessment); regional assessment programs such as PASEC (Programme d'Analyse des Systèmes Educatifs [Program on the Analysis of Education Systems]) in Francophone Africa; national-level assessments, such as ASLO (Assessment of Student Learning Outcomes) in Lao PDR; and sub-national assessments such as the state-level assessment programs in the USA and Canada.

What Are Effective Student Assessment Systems?

The effectiveness of a student assessment system depends on the quality of the information that it generates for decision-making. The key factors governing the quality of information, and ultimately the effectiveness of the assessment system, are (Clarke, 2011):

- **Enabling Context** – *the wider context in which the assessment activity takes place and the extent to which it is supportive of the assessment*. This refers to the broad policy framework within which the assessment is carried out, the institutional structures for carrying out the assessment or using the assessment results, the availability of sufficient and stable sources of funding, and the existence of effective human resources. It is important to get the enabling context right because it is a key driver of the long-term effectiveness of an assessment system and because no assessment system is sustainable in its absence.

- **System Alignment** – *the extent to which the assessment activity is aligned with the rest of the education system*. This involves the connection between assessment activities and the education system's learning goals, standards, and curriculum. Alignment involves more than a simple match between what is tested and what is in the curriculum. For example, while there may be limited correspondence between a given country's curriculum and what is tested on an international large-scale assessment such as PISA or TIMSS, the assessment may still be aligned with, and useful for informing, the overall goals of the country's education system. Indeed, the use of data from TIMSS, PIRLS, and PISA to identify the factors that influence academic performance and to monitor the impact of reforms over time has been key to improving student achievement levels in countries as diverse as Brazil, Jordan, and Poland.

- **Assessment Quality** – the *technical quality of the instruments and procedures used in the assessment activity*. This not only applies to large-scale, system-level assessments but to any kind of assessment activity (AERA, APA, and NCME, 1999). If an assessment is not sound in terms of its design, implementation, analysis, or use, it can contribute to poor decision-making. Two technical issues that are vital for any assessment activity are reliability and validity –does the assessment produce sufficiently precise data, a particularly important feature in high-stakes examinations and for monitoring trends over time; and whether scores represent what they are supposed to, and are used in the intended ways with the intended outcomes. For example, validity might be undermined

by a difference between the language of instruction and the language of testing, which would make it difficult for a child to show what he or she knows and can do. It is important in the context of validity to consider the consequences of how test scores are used, including social, economic, and other effects on different population groups.

Benchmarking Student Assessment Systems in East Asia

Table 1 provides a basis for identifying some key indicators for reviewing student assessment systems and for planning ways to improve them. We selected and then collected data on the following key indicators for economies in East Asia according to a combination of criteria including professional testing standards and empirical research on effective assessment systems:

Table 1. Conceptual Framework for Reviewing Student Assessment Systems

INDICATOR		Classroom Assessment	Examinations	Large-scale, System-level Assessment
Enabling Context	A policy framework for assessment activities	✓	✓	✓
	A regular budget for assessment activities		✓	✓
	Training of teachers in assessment techniques	✓	✓	✓
System Alignment	Evidence of an alignment between assessment activities and official learning standards or curriculum		✓	✓
Assessment Quality	Regular collection of system-level data on student learning levels			✓
	Timely dissemination of data on student learning achievement to stakeholders			✓
	Quality assurance of classroom assessment activities	✓		

The four main findings from the data collected are that: (i) most economies in the East Asia region report having a strong enabling context for their student assessment activities; (ii) most economies report aligning their examinations and (where they exist) national large-scale, system-level assessment activities to their official learning standards or curriculum; (iii) while the general quality and stability of international large-scale assessment activity in the region appears good, there is room for improvement in the dissemination and use of results; and (iv) many of the lower-income economies in the region do not yet have mechanisms for monitoring or assuring the quality of classroom assessment activities, something that needs to be addressed if they are to create truly effective student assessment systems that support learning for all.

Finding #1: Most economies in the East Asia region report having a strong enabling context for their student assessment activities

An important ingredient to create a strong student assessment system is the existence of a system-level framework for assessment activities, for example, a legal document mandating a particular assessment activity. This type of framework better ensures continuity and stability of assessment activities over time as well as consistency in the uses of results. Most economies in the East Asia region report having a formal policy framework for large-scale, system-level assessment and examination activities (Table 2). Approximately half of the economies in the region report having such a framework for classroom assessment activities.

Another important element for securing the continuity and stability of an assessment system is a regular budget for assessment activities. Nine of the economies surveyed report having a regular budget to fund their participation in international large-scale assessments, typically PISA, TIMSS, or PIRLS (Table 3). Eleven economies report having a regular budget for national large-scale, system-level assessment activities. The exception to this trend is Mongolia, which has only a short-term budget funded by loans for carrying out international and national large-scale, system-level assessment activities. Most economies also report having a regular budget for examination activities. In some economies (for example, Singapore, Korea, Japan, and Hong Kong), this budget is supplemented by student examination fees.

In order for effective assessment to take place, especially at the classroom level, teachers must be knowledgeable about assessment techniques. In almost all of the economies that we surveyed, respondents reported that pre-service teacher training programs provide teachers with courses or workshops on classroom assessment techniques (Table 4). In most East Asian economies, respondents reported that pre-service teacher training takes the form of specific required courses or workshops on classroom assessment. In other economies such as Singapore, training programs were reported to also address the topic of classroom assessment in the context of other courses. For example, the course on mathematics instruction covers how to assess mathematics. It appears that in-service teacher training programs in several economies also include courses or workshops on large-scale, system-level assessment, classroom assessment, or examinations. Many economies also offer teachers the opportunity to work on short-term tasks related to national examinations. For example, in eleven out of

the fourteen surveyed, teachers are fully involved in writing examination questions, administering examinations, or scoring them.

Table 2. Type of Document Mandating or Providing a Framework for the Assessment Activity*

	Law, Official Decree, or Regulation		
	Classroom Assessment	Examinations	Large-scale, System-level Assessment (National)
Cambodia		✓	✓
China	✓**		
Hong Kong		✓	✓
Shanghai		✓	✓
Indonesia	✓	✓	✓
Japan			✓
Korea	✓	✓	✓
Lao PDR	✓**	✓	✓
Malaysia	✓	✓	✓
Mongolia	✓	✓	✓
Philippines			
Singapore	✓**		
Thailand	✓**	✓	✓
Vietnam		✓	✓
Total	**8**	**10**	**11**

*This question was not asked for international large-scale assessment.
**Non-binding, but official, document such as a set of assessment principles, standards, or recommendations.

Table 3. Budget Situation for the Assessment Activity*

	There is a regular budget approved by law, decree, or allocated at the discretion of the Ministry or other authority		
	Examinations	Large-scale, System-level Assessment (National)	Large-scale, System-level Assessment (International)
Cambodia	✓	✓	
China			
Hong Kong	✓	✓	✓
Shanghai	✓	✓	✓
Indonesia		✓	✓
Japan	✓	✓	✓
Korea	✓	✓	✓
Lao PDR	✓	✓	✓
Malaysia	✓	✓	✓
Mongolia			
Philippines		✓	
Singapore	✓		✓
Thailand	✓	✓	✓
Vietnam	✓	✓	
Total	**10**	**11**	**9**

*This question was not asked for classroom assessment.

Table 4. Teacher Training Programs on Assessment*

	Teacher Training				
	Classroom Assessments		Examinations		Large-scale, System-level Assessment (National)
	Pre	In	In	Tasks	In
Cambodia				✓	✓
China	✓	**	✓		
Hong Kong	✓	✓**	✓	✓	✓
Shanghai	✓				
Indonesia	✓	✓	✓	✓	✓
Japan	✓	**		✓	✓
Korea	✓	**		✓	✓
Lao PDR	✓			✓	✓
Malaysia	✓	✓	✓	✓	✓
Mongolia	✓	✓**	✓	✓	✓
Philippines	✓		✓		✓
Singapore	✓	**		✓	
Thailand	✓	✓**	✓	✓	✓
Vietnam	✓	✓**	✓	✓	✓
Total	**13**	**6**	**8**	**11**	**9**

Note: *This question was not asked for international large-scale assessment. We also did not ask about the availability of pre-service teacher training in the specific areas of examinations or large-scale, system-level assessment.

** Widespread (covering two-thirds or more of all schools) audit or supervision system to review and evaluate the quality of classroom assessment activities.

Finding #2: Most economies report aligning their examinations and (where they exist) national large-scale, system-level assessment activities to their official learning standards or curriculum.

In general, it is important for examinations and national large-scale, system-level assessments to be closely aligned with official learning standards and curricula since their purposes are to measure or certify attainment at the student and system levels in respect to the stated learning goals of the system. (It is less important in the case of international large-scale assessments, since these tend to serve as an external validity check with respect to the learning outcomes produced by an education system.)

Respondents from thirteen of the fourteen economies surveyed reported that their examinations measure the official school curriculum or learning standards (Table 5), although it appears that only three (Hong Kong, Lao PDR, Mongolia) include information from classroom or school-based assessment activities in a student's final score on the examination.

Twelve of the economies surveyed also reported having a national large-scale, system-level assessment program based on their official school curriculum or learning standards (Table 5). For eight of these economies, respondents reported that an independent review of the alignment between the national large-scale, system-level assessment and the official curriculum or learning standards has been conducted.

Box 1. Improving the Quality of University Entrance Examinations in Vietnam

Prior to 1997, university entrance examinations in Vietnam were set by individual universities and were based on test questions made available ahead of time by the Ministry of Education and Training (MOET). These examinations promoted memorization and repetition as opposed to higher-order thinking skills.

In 1997, the MOET stopped making examination questions available to the public, and in 2002 it took control of the student admission and placement process in universities in an effort to move toward a more holistic and equitable approach to evaluating student learning and achievement. In this regard, the MOET began to promote a "three things in common" policy for all universities: common examination questions, common organization of the examination, and common use of examination results. As a result, a central examination board was established and a single common university entrance examination was introduced.

Today, students in Vietnam must take two examinations for full-time admission to higher education: the university entrance examination and the secondary school leaving certificate. The secondary school leaving certificate consists of a broad range of subjects, while the university entrance examination focuses on the subjects that the student intends to study at university. While the two examinations draw from the same item bank and are similar in format, they serve different purposes and uses. Consolidating the two examinations continues to be a topic of discussion, but a final decision on this issue has yet to be reached.

Sources: Warwick (2009), Asian Development Bank (2010), Vietnamese Ministry of Education (2009) World Bank (2008, 2009, 2010)

Table 5. Alignment of assessment activities with official learning standards or curriculum*

	Assessment exercises are based on official school curricula or learning standards	
	Examinations	Large-scale, System-level Assessment (National)
Cambodia	✓	✓
China	✓	
Hong Kong	✓	✓**
Shanghai	✓	✓
Indonesia	✓	✓**
Japan		✓
Korea	✓	✓**
Lao PDR	✓	✓**
Malaysia	✓	✓**
Mongolia	✓	✓**
Philippines	✓	✓**
Singapore	✓	
Thailand	✓	✓**
Vietnam	✓	✓
Total	**13**	**12**

*This question was not asked for classroom assessment or international large-scale assessment.

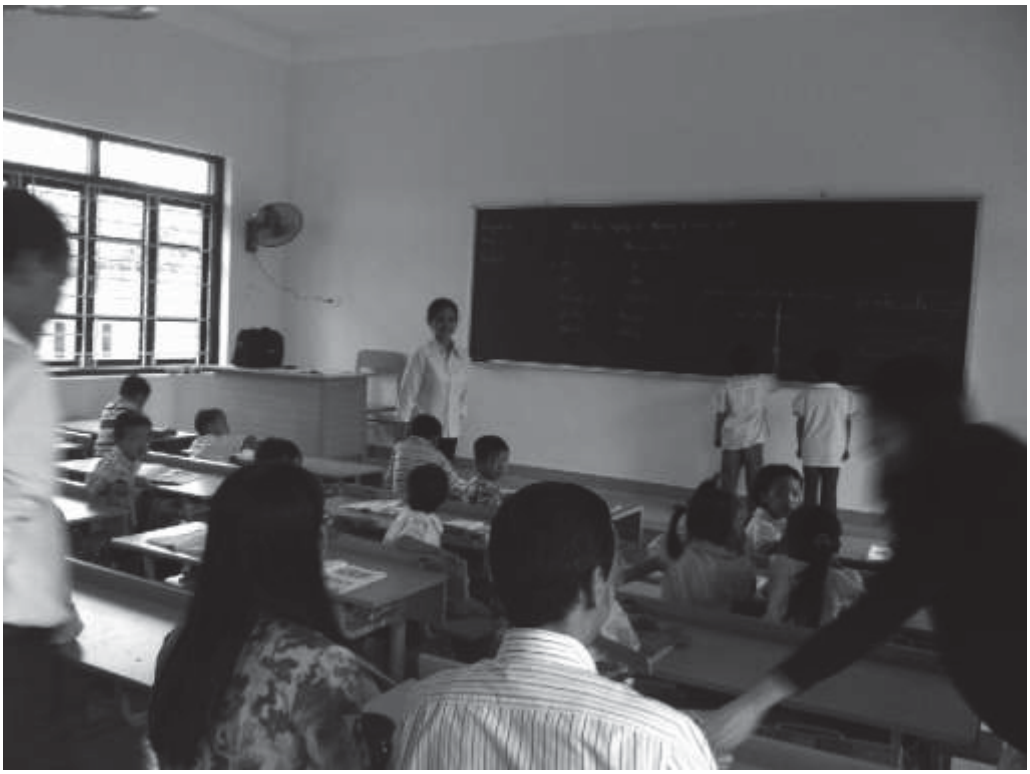
**Independent review of the alignment between the assessment and the official curriculum or learning standards has been conducted.

Finding #3: The general quality and stability of international large-scale assessment activity in the East Asia region appears good, although there is room for improvement in the dissemination and use of results.

One-time assessments may have shock value – particularly if test scores are worse than expected – and therefore create an opening for wider discussions of educational quality. However, only by creating sustained assessment systems are governments able to monitor learning trends over time and gain a full understanding of the contributions made by various inputs and educational practices to student learning outcomes.

Many economies in the East Asia region have participated regularly in the main international large-scale assessment exercises, specifically PISA, PIRLS, and TIMSS, which have yielded a rich source of comparable data on student learning outcomes and trends for the entire region (Table 6). The exceptions have been some of the lower-income economies, which have not participated in these international exercises on a regular basis**.**

In almost all of the economies surveyed, copies of reports containing the results of the international assessment exercise are disseminated to key stakeholders and press releases are issued to the public (Table 7). However, there appear to be fewer mechanisms for ensuring the longer-term dissemination of, access to, and use of results. For example, only four economies make the results available online, and only five provide the results to schools and educators. The same patterns appear to prevail with regards to the results of national large-scale, system-level assessment exercises.



Box 2. Taking a Systems Approach to Improving Assessment Activities in Korea

Under the leadership of President Lee, the Presidential Agenda has been introduced to improve assessment policies in Korea in three key areas:

In order to increase school and teacher accountability, in 2008 the Korean government launched the National Assessment of Educational Achievement (NAEA) to systematically assess student achievement at the national level. The NAEA has been administered to all students in 6th grade, to middle school seniors, and to high school sophomores every year since 2008. The specific objectives of the NAEA are to evaluate the educational achievements of all students in applicable grades, to address weaknesses and formulate strategic plans for improving student achievement, to obtain baseline data to serve as a comparison for future assessments, to investigate the major factors that influence educational achievement, and to provide schools with examples of effective assessment methods.

To enhance the quality of public education and reduce private tutoring expenses, the Korean government is aligning the examination for college admission, the College Scholastic Ability Test (CSAT), with the 2009 revised national curriculum. College and university admissions officers will be given more decision-making power and autonomy during the admissions process as CSAT scores will become one of the most important, as opposed to the most important, admission requirements.

In order to better manage the curriculum and assessment results at the system level, the National Education Information System was launched to enable the electronic storage and management of the School Achievement Records (SAR) of elementary, middle, and high school students. Teachers will use this newly implemented system to record student data electronically, and students' SARs can now be viewed online by students and parents as well as by college admissions staff during the college admission process.

Source: Baek (2010)

Table 6. Participation in International Large-Scale Assessments, 1995-2011

	PISA				TIMSS					PIRLS		
	2000	2003	2006	2009	1995	1999	2003	2007	2011	2001	2006	2011
Cambodia												
China												
Hong Kong	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai				✓								
Indonesia	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Japan	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Korea	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Lao PDR												
Malaysia				✓		✓	✓	✓	✓			
Mongolia								✓	✓			✓
Philippines					✓	✓	✓					
Singapore				✓	✓	✓	✓	✓	✓	✓	✓	✓
Thailand	✓	✓	✓	✓		✓		✓	✓			
Vietnam												
Total	**5**	**5**	**5**	**8**	**6**	**8**	**7**	**8**	**8**	**2**	**3**	**4**

Box 3: Vision and Leadership in Assessment in Singapore

Since 1992, the Singaporean school curriculum has shifted from emphasizing memorization to focusing on higher order skills, such as problem solving and communication skills. Nonetheless, student assessment, especially in the form of national examinations, has continued to play an important role in the education system. With the shift in focus to higher-order skills, however, additional types of assessment tasks have been introduced into the national examination, including school-based assessment. Even with these changes in the competencies being assessed and in how they are assessed, the Ministry of Education of Singapore has continued to provide strong leadership and support for assessing student learning and continues to use assessment data to make the necessary adjustments in the education process and to improve student learning.

Source: Yeap (2009), Yeap (2008), and READ Video (2011)

Table 7: Dissemination of Results from the Most Recent International Large-Scale Assessment Exercise

	International Report Distributed to Key Stakeholders	National Report Distributed to Key Stakeholders	Press Release to Communicate the Results	National Report Available Online	Brochures and Presentations Available Online or Distributed to Key Stakeholders	Clear Plan and Products to Provide Feedback to Schools/Educators
Hong Kong	✓	✓	✓	✓	✓	✓
Shanghai	✓	✓	✓		✓	✓
Indonesia	✓	✓	✓			✓
Japan		✓	✓	✓		
Korea	✓	✓			✓	
Malaysia	✓	✓	✓			
Mongolia	✓	✓			✓	
Philippines	✓	✓	✓	✓		
Singapore	✓	✓	✓		✓	✓
Thailand	✓	✓	✓	✓	✓	✓
Total	**9**	**10**	**8**	**4**	**6**	**5**

Finding #4: Many of the lower-income economies in the region do not yet have mechanisms for monitoring or assuring the quality of classroom assessment activities, something that needs to be addressed if they are to create truly effective student assessment systems that support learning for all.

All fourteen economies reported using classroom assessment activities primarily for supporting or promoting student learning. Despite a strong commitment to pre-service teacher training in classroom assessment, there appears to be less emphasis on in-service training or on actually observing the quality or effectiveness of classroom assessment activities as part of normal school inspection and supervision activities. Where such oversight does occur, it tends to be in the higher-income economies in the region; see Table 4.

Improving Student Assessment Systems in East Asia

The overview of student assessment systems presented in this chapter shows that most economies in the East Asia region have created a strong enabling context for their assessment activities in the form of clear policy frameworks, regular budgets, and opportunities for teachers to learn about, and develop skills in, assessment.

However, findings also show that there is room for improvement in the dissemination and use of results from large-scale assessment exercises, particularly with a focus on informing and supporting schools. For example, to date, economies in the East Asia region seem to have done a better job of informing policymakers and the media of the results of large-scale assessment exercises rather than schools and teachers.

Of all assessment activities, classroom assessment has the biggest potential impact on student learning. However, ensuring the quality of classroom assessment activities in the region has received the least attention from policy makers, particularly in the lower-income economies. Mechanisms to oversee the quality of classroom assessment, such as audit or supervision exercises, are more common in the higher-income economies.

East Asian economies have taken important steps in setting a strong foundation for their assessment systems. By building on this foundation, and by prioritizing improvements in the dissemination and use of assessment results, as well as in the quality assurance of classroom assessment activities, East Asian economies will be well positioned to move towards the ultimate goal of learning and quality education for all.

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CHAPTER 5

Teacher Policies

Emiliana Vegas

SUMMARY

This chapter presents an analysis of teacher policies in six East Asian education systems. Overall, the region has achieved acceptable levels of development in six of the eight core Teacher policy goals that are measured under SABER. This indicates that policymakers in the region have succeeded in setting clear expectations for teachers, attracting the best into teaching, matching teachers' skills with students' needs, monitoring teaching and learning, supporting teachers to improve instruction, and motivating teachers to perform. Yet, the region has room to improve in the goals of preparing teachers with useful training and experience and leading teachers with strong principals.

I. The Importance of Teacher Policies

Research suggests that teacher quality is the main school-based predictor of student achievement and that several consecutive years of outstanding teaching can offset the learning deficits of disadvantaged students (Hanushek and Rivkin, 2006; Nye et al, 2004; Park and Hannum, 2001; Rivkin et al, 2005; Rockoff, 2004; Sanders, 1998; Sanders and Rivers 1996; and Vignoles et al, 2000). However, it is not yet clear exactly which teacher policies can raise teacher effectiveness (Goldhaber, 2002 and Rivkin et al, 2005). Thus, devising effective policies to improve teaching quality remains a challenge.

There is increasing interest in East Asia and other economies to attract, retain, develop and motivate great teachers. While the World Bank has ample experience in supporting teacher policy reforms in the developing world, until recently there was no systematic effort to offer data and analysis that can provide policy guidance on teacher policies.

SABER fills this gap, and collects, analyzes, synthesizes, and disseminates comprehensive information on teacher policies in primary and secondary schools across a range of different education systems. The goal is to enable policymakers to learn about how other governments address the same policy challenges related to teacher management and thus how to make well-informed policy choices that will lead to improved learning outcomes.

II. Overview

***Data is collected on* 10 core teacher policy areas in order to offer a comprehensive overview of teacher policies in each education system.** These policy areas are listed in Box. 1. It is important to highlight that the main focus is on the *policies* formally adopted by education systems. While in some cases the data collected also address how the teacher policy goals are implemented, the nature of the data collection approach (based on interviews with key informants and official document review) does not allow for a thorough assessment of policy implementation. Therefore, complementary research will be useful in most settings.

Box 1. Key Teacher Policy Areas

- Requirements to Enter and Remain in Teaching
- Initial Teacher Preparation
- Recruitment and Employment
- Teachers' Workload and Autonomy
- Professional Development
- Compensation (Salary and Non-salary Benefits)
- Retirement Rules and Benefits
- Monitoring and Evaluation of Teacher Quality
- Teacher Representation and Voice
- School Leadership

The analysis focuses on eight teacher policy goals. Three criteria were used to select the teacher policy goals: (i) policies were linked to performance through evidence provided by research and studies; (ii) there was a high priority for resource allocation; and (iii) policies were actionable. The 8 teacher policy goals are presented in Figure 1.

Figure 1. Teacher Policy Goals

Since the eight teacher policy goals were determined by the existing research, there might well be other objectives that economies want to pursue to increase the effectiveness of teachers. For example, the tool collects information on teacher organizations as part of the policy area of "teacher representation and voice", and will make it publicly available. Yet no clear trend has emerged regarding whether or how governments should engage with these organizations in policy formulation.

To be sure, many studies have looked at the impact of unionization on schools' productivity (Argys and Reese, 1995; Eberts and Stone, 1986; and Hoxby 1996), student learning (Kingdon and Teal, 2008; Kleiner and Petree, 1988; Kurth, 1987; Register and Grimes, 1991; and Steelman et al, 2000), teachers' wages (Ballou and Podgursky, 2002; Baugh and Stone, 1982; Bee and Dolton, 1995; and Dolton and Robson, 1996), working conditions (Eberts, 1984; Murillo et al, 2002; and Zegarra and Ravina, 2003) and education policy (Goldschmidt and Stuart, 1986 and Woodbury, 1985). But even top-performing countries differ widely in how much they engage, to what extent they regulate, and how they organize teachers' unions. Data collected by *SABER* will offer guidance on how to approach these issues in the future.

For a more detailed report on the eight teacher policy goals and the evidence supporting this selection, please see Vegas and others (2010).

III. Regional Findings

Policy data was collected for Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, the Philippines, Shanghai, Singapore, South Korea, Thailand, and Vietnam. Table 1 presents the extent to which each education system has progressed in the eight policy goals. The analysis indicates that each teacher policy system has relative strengths and weaknesses. However, across all of the systems, some general patterns were observed which are discussed below.

Table1: Levels of Development of Teacher Policies in East Asian Education Systems

POLICY GOAL	Cambodia	Indonesia	Japan	Korea	Lao PDR	Malaysia	Mongolia	Philippines	Shanghai	Singapore	Thailand	Vietnam
1. Setting clear expectations for teachers	Established ◉◉◉○	Advanced ◉◉◉◉	Advanced ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○	Advanced ◉◉◉◉	Advanced ◉◉◉◉	Advanced ◉◉◉◉	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Advanced ◉◉◉◉
2. Attracting the best into teaching	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○
3. Preparing teachers with useful training and experience	Latent ◉○○○	Emerging ◉◉○○	Established ◉◉◉○	Latent ◉○○○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Established ◉◉◉○	Emerging ◉◉○○
4. Matching teachers' skills with students' needs	Emerging ◉◉○○	Emerging ◉◉○○	Latent ◉○○○	Latent ◉○○○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Latent ◉○○○	Latent ◉○○○	Emerging ◉◉○○	Emerging ◉◉○○
5. Leading teachers with strong principals	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○
6. Monitoring teaching and learning	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○	Established ◉◉◉○	Advanced ◉◉◉◉	Established ◉◉◉○	Advanced ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Advanced ◉◉◉◉	Established ◉◉◉○
7. Supporting teachers to improve instruction	Emerging ◉◉○○	Latent ◉○○○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Advanced ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Latent ◉○○○	Established ◉◉◉○	Established ◉◉◉○
8. Motivating teachers to perform	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○

Setting clear expectations for teachers.

This aspect of teacher policy is key for several reasons. First, expectations for student and teacher performance influence how potential entrants perceive the profession. Second, expectations guide teachers' work. The more specific they are, the better teachers can organize their time and resources to meet them. Finally, expectations can help align the goals of key aspects of the profession (e.g., pre-service training, professional development and teacher appraisals). The more institutionalized these expectations are, the more likely all of these aspects will be realized. There are three policy levers education systems can use to reach this goal:

- Set clear expectations for what students should know and be able to do;
- Set clear expectations for what teachers are supposed to do;
- Ensure that teachers have enough time to fulfill their duties.

All education systems in the East Asia region are Established or Advanced in this policy goal, which means they have developed: (i) explicitly defined standards for what students should know and be able to do, as well as curricula to guide teaching and learning; (ii) officially stipulated tasks for teachers; and (iii) delineated official time allocations that enable teachers to fulfill their duties. (Shanghai has a slightly lower rating because it does not have delineated official time allocations for teachers.

Attracting the best into teaching is essential (Guarino, Santibáñez & Daley 2006)

First, more able individuals make better teachers. (Boyd et al 2009 and 2010) Second, top candidates maximize the impact of teacher training. If the quality of student teachers is too low, training is likely to focus more on making up for their deficiencies in knowledge and skills, and less on turning them into effective teachers. Finally, luring top talent into teaching has a "multiplier" effect: if teaching attracts qualified people, competitive candidates who had not considered teaching might be drawn to it.

One issue that is not included in this list because of lack of clear guidance from available evidence on how to tackle it is that of the "flexibility" of the profession. Several studies find that some women prefer to teach because they can take leaves of absence to take care of their families without incurring wage penalties when they come back (Flyer and Rosen 1997; Stinebrickner 1999a, 1999b, 2001a, 2001b). Yet, it is unclear that education systems want to attract these candidates any more than other groups.

There are four policy levers education systems can use to reach this goal Set appropriate entry requirements to attract talented candidates;

- Provide appealing pay and benefits for talented candidates;
- Ensure appealing working conditions for talented candidates;
- Create attractive career opportunities.

With the exception of Indonesia, Lao PDR and Vietnam, all other East Asian systems are Established or Advanced in this policy goal, which means they have: (i) entry requirements that allow screening of talented individuals; (ii) attractive pay and benefits; (iii) appealing working conditions; and (iv) attractive career opportunities within the teaching profession.

Preparing teachers with the skills they need to succeed in a classroom is crucial. First, few (if any) individuals are born effective teachers.

Teachers need subject matter knowledge, classroom management skills and lots of practice in order to be successful in a classroom. In addition, preparation puts all teachers on an equal footing, giving them a common framework and a base from which they can improve their practice.

One aspect not included in this framework because no data on this indicator was collected, is that of teacher certification. Although the definition of teacher certification varies by country, and sometimes, within one country, studies have found that a certification status is generally associated with higher teacher effectiveness (Darling-Hammond 1999a, 1999b; Darling-Hammond, Barnett & Thoreson 2001; E. J. Fuller 2000; Goldhaber & Brewer 2000; Hawk, Coble & Swanson 1985).

Three policy levers education systems can be used to prepare teachers:

- Set minimum standards for pre-service teaching training programs;
- Require individuals to have prior classroom experience;
- Ensure a smooth transition from pre-service training into the first teaching job.

In this policy goal, the majority of systems are Latent or Emerging.

Matching teachers' skills with students' needs is important for promoting equity and efficiency.

First, it is a way of ensuring all students in an education system have equal opportunities to learn: without purposeful incentives, teachers tend to gravitate towards schools with better working conditions, which often serve better off students. (Boyd, et al. 2005; Hanushek, et al. 2004) Second, it is a way of ensuring that teachers are distributed efficiently—i.e., to minimize the number of surplus teachers at a given grade, subject or geographic area. Finally, ensuring teachers are a good match for their school can also increase their effectiveness and reduce turnover rates. (Boyd, et al. 2002, 2005; Jackson 2010).

Much research has been devoted to the issue of turnover. Several studies have noted that it is not always the most effective teachers who leave (Boyd, et al,. 2007; Hanushek, et al,. 2005; West & Chingos, 2008). Yet, these studies also concede that there is still considerable room for schools to enact targeted policies aimed at retaining only the most effective performers.

Two policy levers can be used to match teachers' skills with students' needs:

- Create incentives for teachers to work at hard-to-staff schools;
- Create incentives for teachers to teach critical shortage subjects.

A majority of East Asian systems are Latent or Emerging in this policy goal.

Leading teachers with strong principals is important because the quality of school heads is second only to classroom teaching as a predictor of student learning. (Eberts & Stone 1988 and Leithwood, et al. 2006).

Quality principals attract and retain quality teachers. (Boyd, et al. 2009; Ingersoll 2001; Papa Jr., Lankford & Wyckoff 2002). Also, capable principals can spearhead much-needed change at the school level. Finally, good principals can facilitate teachers' work and continuous improvement. The more capable a principal is, the more he or she can support teachers, create a sense of community, make teachers feel valued and ease their anxiety about external pressures (Mulford and Silins 2003). There are three policy levers education systems can use to reach this goal:

- Ensure requirements to become a principal attract talented candidates;
- Create incentives for principals to perform well;
- Allow principals to make key decisions to improve teaching.

This policy goal remains a challenge in many systems. However, several systems including Cambodia, Malaysia, the Philippines, Singapore and Thailand have set up mechanisms to provide autonomy to principals to make decisions related to instruction or personnel management for their schools—a factor that has been shown to enhance student learning outcomes in high-performing economies.

Monitoring teaching and learning is essential to improve student learning outcomes.

First, teacher and student evaluations help identify good practices, which can then be shared among teaching staff to improve school performance. Second, identifying low-performing teachers and students is necessary to ensure they are supported in a timely manner. Finally, such information is useful for accountability purposes. Two policy levers can be used to reach this goal:

- Ensure that there is sufficient student achievement data to inform teaching;
- Ensure that there is sufficient teacher performance data to inform teaching.

With the exception of Indonesia and Japan, all other East Asian systems are either Established or Advanced in this policy goal, having put in place solid student learning assessment systems and teacher performance appraisal mechanisms.

Supporting teachers to improve instruction is vital.

First, all teachers can improve—regardless of how effective they are at one point in time. Therefore, support mechanisms are necessary to help teachers reach their potential and perform at their best. Second, changes in classroom assignments and/or student populations can pose new challenges to teachers. Thus, during periods of transition, teachers will need additional help to sustain their performance. Finally, support mechanisms can go a long way to prevent burnout and reduce turnover. Even motivated teachers may choose to leave if they are consistently ineffective, do not know how to improve or receive little support. There are two policy levers education systems can use to reach this goal:

- Use teacher performance data to improve teaching;
- Provide professional development to improve practice.

Many East Asian economies have achieved solid systems to support teachers for instruction. However, Cambodia, Indonesia, Singapore and Korea have fewer systems in place for supporting teachers than do other East Asian systems.

Motivating teachers to perform.

The more aligned incentives are with the behaviors and outcomes expected of teachers, the more likely teachers are to behave and perform as expected. Incentives are also a way of recognizing teachers' work. Teaching is a challenging job and incentives can let teachers know the results they have achieved are valued so that they continue working hard to sustain them. In addition, some types of incentives can influence the profile of the teaching profession and make it more competitive, dynamic and performance-driven. The presence of incentives can have an effect on the attractiveness of the teaching profession. There are three policy levers education systems can use to reach this goal:

- Develop minimum mechanisms to hold teachers accountable;
- Offer rewards for high-performing teachers;
- Sanction low-performing teachers?

In this policy goal, there is no clear regional trend. In many East Asian systems there are minimum mechanisms to hold teachers accountable as well as rewards and sanctions for high- and low-performing teachers, respectively.

IV. Improving Teacher Policies: Priorities for East Asia

East Asian education systems have clear strengths, and some areas for development with respect to their teacher policies. All economies have established clear expectations for teachers, which help set the standards for teaching and learning, and guide classroom practices. In addition, a majority of systems have attractive pay and working conditions and selective entry into the profession, thus enabling economies to attract strong professionals into teaching. In addition, most education systems in the region have established mechanisms for monitoring teaching and learning.

The policy goals where certain East Asian systems can devote attention and resources include: preparing teachers with useful training and experience, matching teachers' skills with students' needs, leading teachers with strong principals, supporting teachers to improve instruction, and motivating teachers to perform.

Preparing Teachers with Useful Training and Experience

Several studies have shown that, while experience is not a good predictor of teacher quality, the first few years of a teacher's experience considerably increases his/her effectiveness in the classroom, regardless of whether it is acquired through clinical practices or a probationary period. (Boyd et al, 2009; Chingos and Peterson, 2010; Hanushek et al, 2005; Hanushek and Rivkin, 2010; and Rivkin et al, 2005). Therefore, systems in the region should consider whether they would benefit from requiring all teachers who enter the profession to have previous experience.

Similarly, the way in which education systems manage the transition between a teacher's training and their first job, also influences how effective he/she will be in the classroom. The smoother the transition, the more likely the teacher will succeed in school. For example, available evidence on induction programs, which introduce new teachers to their schools and provide them with the support that they need to adapt to their new work environment, suggests that they can make teachers more effective in the classroom (Glazerman et al, 2010) and reduce teacher turnover— especially, when mentors have had experience at the school. (Rockoff, 2008).

Matching Teachers' Skills with Students' Needs

One way in which education systems can foster a more equitable distribution of teachers is by using incentives to let the "price" of teachers vary to reflect their relative scarcity in different schools: if high-performing teachers find it financially attractive to teach in hard-to-staff schools, they are less likely to be concentrated in suburban schools that serve better-off students. Additionally, incentives can also offset information gaps: teachers often know little about the staffing needs of schools in remote areas; incentives can act as a signal to reflect these needs.(Santiago 2004).

Even in education systems with well-designed incentives to attract teachers into hard-to-staff schools, the distribution of teachers may still be inequitable. Thus, considering teacher experience when making transfer decisions, as is the case in many East Asian systems and around the world, can be detrimental to education equity.

Leading Teachers with Strong Principals

Giving school principals more authority over decisions that influence teaching and learning can positively impact instruction. A growing body of evidence finds that when principals are allowed to hire teachers, they tend to hire candidates who turn out to be effective classroom instructors according to value-added estimates of teacher quality. (Ballou and Podgursky, 1998; Boyd et al, 2010; and Rockoff et al, 2010). Several studies have also shown that principals make sound dismissal decisions if allowed to do so. Taking into account both effort and performance when dismissing teachers (Jacob, 2010a), they tend to dismiss teachers who are among the lowest-performers, according to value-added estimates (Rockoff et al, 2010). Further, their authority to dismiss teachers increases teacher effort over time. (Jacob, 2010b).

Supporting Teachers to Improve Instruction

Ensuring that teacher performance data is used to improve classroom instruction is useful because the more data is used to drive changes in instruction, the more likely these changes are to raise student learning. Similarly, the more professional development activities expose teachers to best practices in instruction, the more likely teachers are to adopt them in their classrooms. (Angrist & Lavy, 2002; Borko, 2004; Brown, Smith & Stein, 1995; Cohen & Hill, 1997; Wenglinsky, 2000; Wiley & Yoon, 1995).

Motivating Teachers to Perform

Education systems can ensure all teachers meet minimum standards of behavior, effort and performance by tying these standards to accountability mechanisms: if there are consequences for not meeting these standards, teachers are more likely to do so. Education systems can also motivate teachers by rewarding outstanding performance: if teachers who attain above-average results are rewarded, they are likely to maintain or even raise their effort. Conversely, if other teachers want to attain that payoff, they are likely to work harder to obtain the same results as the high-performing teachers.

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CHAPTER 6

School Autonomy & Accountability

Gustavo Arcia

SUMMARY

Evidence shows that the most successful schools are those that have pedagogical and budgetary autonomy and that enforce regular student assessments. This chapter presents a set of indicators to build strong autonomy and accountability mechanisms that will enhance education quality. The East Asian benchmarking exercise shows that budgetary autonomy at the school level is well established in most of the economies surveyed, but may still require some changes to be fully achieved. In terms of school and teacher assessment, several of the economies are at the Established and Mature stages, while only a few are still at the Emerging stage. This suggests that with a little effort, most economies in the region could introduce these assessments and foster greater accountability throughout the school system. In terms of the participation of parents in school councils, and the enforcement of accountability, some economies are doing very well, while several others are still at the Emerging stage. In the case of autonomy over personnel decisions, most economies are only at the Latent or Emerging stage.

Why Does Autonomy and Accountability Matter?

School autonomy and accountability are key components to ensure education quality. Studies have shown a clear causal link between school autonomy and efficiency in resource use (Barrera et al, 2009). By transferring core managerial responsibilities to local schools, school autonomy fosters local accountability and increases the participation of parents and the community. As a result, the education provided tends to reflect local priorities, values, and needs (Bruns, Filmer and Patrinos, 2011). Also, as local accountability reveals areas for improvement in the school system—such as increasing the technical and pedagogical capacity of teachers or increasing the participation of parents in student life—education quality and learning outcomes tend to improve (Vegas and Umansky, 2005).

Although there is little formal evidence that *teacher* quality improves as a direct result of school-based management, there is a compelling argument that increasing school accountability is a necessary condition for improving teacher quality. The implementation of School Based Management (SBM) can increase the support that parents and school councils give to good teachers; for example through salary and non-salary incentives and by setting the right conditions to attract the best candidates into the teaching profession (Arcia et al, 2011a).

Autonomy and accountability are key areas of school-based management and can be monitored through a series of indicators that allow rapid assessment and improvement of education systems. Using indicators also enables governments to compare their own policies and practices with those of other economies where students excel in international achievement tests. In East Asia, Hong Kong is a best-practice example of school-based management reforms. (See Box 1 Below).

Table 1. Autonomy and Accountability at the School Level

Managerial Factor	Strength		
	LOW	MEDIUM	HIGH
Teacher and Personnel Management	Centralized hiring and firing	Regional hiring and centralized firing.	Local hiring and firing
Budget Planning and Approval	Centralized. Budget based on payroll plus an allotment for materials and utilities	Decentralized budget with regional variations. Budget based on payroll and equity considerations.	Decentralized at school level. Budget approved by the school council and funds transferred directly to the school.
Teacher Assessment	None	Routine evaluations, no direct accountability	Schools conduct routine evaluations that provide teachers and schools with incentives to perform better
Student Assessment	None or based on local tests	Periodic standardized testing but results not made public.	Routine standardized testing; results made public

Source: Arcia et al (2011a)

Implementing Autonomy and Accountability for Improved Student Learning

School-based management is a form of decentralization in which school personnel are in charge of making most managerial decisions, oftentimes in partnerships with parents and the community. Such an approach to school management creates the proper conditions for improving student learning in a sustainable way (Barrera, Fasih and Patrinos 2009). SBM can encompass different activities and policies to improve student learning by involving both teachers and parents. By allowing more local control over school operations, SBM fosters a new social contract between parents and teachers by improving communication and increasing local cooperation and local accountability.

For SBM to work effectively, it is useful to align the incentives of key stakeholders in a common strategy bound by the implicit incentives of the legal framework. Some components of SBM may take more time than others to be defined, whereas others may need to be implemented gradually until full autonomy and accountability is reached (Ho, 2006). This gradual implementation requires the interplay of various managerial factors that determine autonomy and accountability at the school level which can take several years to occur—see Table 1. The available empirical evidence shows that it takes about eight years before school autonomy and accountability start affecting learning outcomes (Barrera, Fasih and Patrinos 2009).

Autonomy and accountability have four key components:

i. **The ability to hire and fire teachers and school directors;**

ii. **The participation of parents in the planning, approval, and monitoring of the school budget;**

iii. **The use of regular teacher assessments to make rewards conditional on performance;**

iv. **The use of assessments of student learning to measure school performance and enforce overall accountability.**

Evidence also suggests that all of these critical components of SBM must be present and interconnected, so that the process amounts to more than just a series of discrete managerial activities (Arcia et al, 2011a). The most successful combination of managerial components is still being studied, but an emerging body of practice points to a set of variables that foster managerial *autonomy*, the *assessment* of results, and the use of the assessment to promote *accountability* among stakeholders (Gertler et al, 2007). These variables are used to assess the SBM indicators presented here.

The most recent empirical evidence on the effectiveness of SBM in improving learning comes from the analysis of the *Program for International Student Assessment* (PISA) test results for 2009. PISA results cover 15-year-old students from 66 economies who took standardized tests in reading, mathematics, and science. Several Asian economies were among those that produced the best results, as shown in Table 2, followed by several European economies (OECD, 2009).

Table 2. 2009 PISA Scores for Asian and European Economies in the SBM Sample

Country	Reading	Math	Science	Ranking
Shanghai	556	600	575	1
Korea	539	546	538	2
Finland	536	541	554	3
Hong Kong	533	555	549	4
Singapore	526	562	542	5
Japan	520	529	539	8
Netherlands	508	526	522	10
Poland	500	495	508	15
Denmark	495	503	499	24
Hungary	494	490	503	26
Spain	481	483	488	33
Bulgaria	429	428	439	46
Thailand	421	419	425	50
Indonesia	402	381	383	57

Source: OECD (2009) Table compiled by the author using data from http://www.pisa.oecd.org/dataoecd/54/12/46643496.pdf.

With regard to school autonomy and accountability, an OECD analysis of 2009 PISA data found that the most successful school systems in terms of academic achievement are those that give schools pedagogical and budgetary autonomy and that enforce regular student assessments. Moreover, to be successful, school systems do not necessarily need to tolerate education inequality. Specifically the study found that:

- Economies where schools had more autonomy over teaching content and student assessment tended to perform better on the PISA test.
- PISA scores in schools with autonomy over resource allocation were higher than in schools with less autonomy (in economies where schools publicized their test results).
- Economies in which many schools competed for students did not systematically get better PISA results.
- Economies with standardized student assessment tended to do better than those without standardized student assessment.
- PISA scores among schools with students from different social backgrounds differed less in economies that use standardized tests for assessing student performance than in than in economies that did not use them.
- Economies that allowed schools to compete for the best students did not obtain better PISA results than those that sought to reduce inequality in educational access.

Box 1. School-based Management in Hong Kong - An Example of Best Practice-

The essence of Hong Kong's SBM reforms, which began in 1995, was to decentralize schools by devolving authority to all stakeholders, including the representatives of School Sponsoring Bodies, principals, teachers, parents, and community members. School management committees were established to make key decisions and manage the direct transfer of funds from central government to schools. Funding was based on the number of students enrolled in each school. In addition, Hong Kong schools were highly decentralized in the areas of budgeting, student affairs, and the curriculum, but less decentralized in terms of personnel management, especially in setting teacher salaries.

The role that school directors play in school management in Hong Kong is particularly important. They are the leaders in the school decision-making process, supported by members of the School Sponsoring Body. In Hong Kong, school directors and school board members are empowered to make decisions in consultation with departmental heads and teachers. The effectiveness of SBM is reflected in the results 2009 PISA results where Hong Kong ranked third among the 66 participating economies.

Key Indicators for the Development of School Autonomy and Accountability

There are five SBM indicators that can serve as a benchmark for judging *policy intent* and progress in the introduction of school autonomy and accountability:

i. **School autonomy in budget planning and approval;**
ii. **School autonomy in personnel management;**
iii. **The participation of the school council in school finance;**
iv. **The assessment of school and student performance;**
v. **School accountability to stakeholders.**

Each of these indicators has a set of sub-indicator that make it possible to judge how far along each school is in the process of implementing each indicator, see Table 3.

Table 3. SBM Indicators and Sub-indicators of Autonomy and Accountability

1. School Autonomy in Budget Planning and Approval	
1A.	Does the school director have the legal authority to manage its operational budget?
1B.	Does the school director have the legal authority to set and manage staff and teacher salaries?
1C.	Does the school director have the legal authority to raise other funds in addition to the transfers received from national or local governments?
2. School Autonomy in Personnel Management	
2A.	Are decisions to hire and fire teachers managed by the school director?
2B.	Do school councils (which may include the school director) have the legal authority to hire and fire teachers?
2C.	Do school councils have the legal authority to hire and fire the school director?
3. Participation of the School Council in School Finance	
3A.	Does the school council assist the school **director** in the preparation of the school budget?
3B.	Do school councils have the legal authority to approve the school budget?
3C.	Is there a manual or set of instructions describing the participation of the school councils in the preparation of the school budget?
3D.	Do school councils have the legal authority to supervise the implementation of the school budget?
3E.	If school councils participate in the preparation and approval of the school budget, is this budget used as an input in the general budget prepared by the Ministry of Education?
4. Assessment of School and Student Performance	
4A.	Do schools perform yearly assessments of school and student performance?
4B.	Does the school use student assessments for making administrative or pedagogical decisions aimed at improving school and student performance?
4C.	Do schools perform yearly assessments of learning outcomes using standardized tests?
4D.	Are the results of standardized tests used for making administrative or pedagogical decisions aimed at improving school and student performance?
4E.	Are the results of the assessment of school and student performance made public to parents?
5. School Accountability	
5A.	Is there a manual regulating how the school council can use of the results of the yearly assessments of school and student performance?
5B.	Is the school's assessment of school and student performance part of a national or regional assessment system?
5C.	Does the school use the assessments to compare school performance with schools in similar conditions?
5D.	Do school councils have the legal authority to hire external auditors to carry out financial audits at the school?
5E.	Is there a manual to guide the school council in how to use financial audits to evaluate school performance?

For each economy in Asia we assigned an overall SBM score of 1 (Low), 2 (Medium), or 3 (High). We also classified the progress of each country in achieving each sub-indicator according to four categories: *Latent*, *Emerging*, *Established,* and *Advanced*. A Latent score indicates that the policy behind the indicator is not yet in place. An Emerging score indicates that the implementation of the program or policy is in progress. An Established score indicates that the program or policy is in operation and meets the minimum standards. An Advanced score indicates that the program or policy is in operation and reflects best practice.

School Autonomy and School Accountability in East Asia

The results of SABER-SBM exercise for fourteen East Asian economies are summarized in Table 4. Results show that budgetary autonomy at the school level is well established in most of the economies assessed, but may still require some changes to be fully achieved. However, the fact that the majority of the economies in the region are at the Established level of autonomy in budget management is a good sign.

For the indicator of school and teacher assessment, several of the economies are at the Established and Advanced stages, while only a few are still at the Emerging stage. This suggests that, with only a little effort, most economies could introduce these assessments, which would enable them to compare the educational performance of their schools and teachers, and foster accountability throughout the school system.

The indicators for parental participation in the school council and of the enforcement of accountability are at an intermediate stage of development, with some economies doing very well but several others still at the Emerging stage. In the case of the indicator for autonomy over personnel decisions, most economies are only at the Latent or Emerging stage.

Table 4. Indicators of School Autonomy and Accountability in East Asia

Country	Budget Autonomy	Personnel Autonomy	Participation	Assessment	Accountability	Overall
Cambodia	Established ◉◉◉○	Emerging ◉◉○○	Latent ◉○○○	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○
China	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○
Shanghai	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○
Hong Kong	Established ◉◉◉○	**Advanced** ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○	Established ◉◉◉○
Indonesia	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	**Advanced** ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○
Japan	Established ◉◉◉○	Emerging ◉◉○○	Latent ◉○○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○
Korea	Established ◉◉◉○	Latent ◉○○○	Established ◉◉◉○	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○
Lao PDR	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○	Emerging ◉◉○○
Malaysia	Established ◉◉◉○	Emerging ◉◉○○	**Advanced** ◉◉◉◉	Established ◉◉◉○	**Advanced** ◉◉◉◉	Established ◉◉◉○
Mongolia	Established ◉◉◉○	Emerging ◉◉○○	Established ◉◉◉○	**Advanced** ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○
Philippines	Emerging ◉◉○○	Latent ◉○○○	Emerging ◉◉○○	Emerging ◉◉○○	Latent ◉○○○	Latent ◉○○○
Singapore	Established ◉◉◉○	Latent ◉○○○	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○
Thailand	Established ◉◉◉○	Latent ◉○○○	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	Established ◉◉◉○	Established ◉◉◉○
Vietnam	Established ◉◉◉○	Latent ◉○○○	Latent ◉○○○	Established ◉◉◉○	Emerging ◉◉○○	Emerging ◉◉○○

Source: Prepared by the author

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CHAPTER 7

Engaging the Private Sector

Laura Lewis

SUMMARY

Most school systems are predominantly state-funded and therefore subject to top-down policymaking that can sometimes stifle innovation and change at the local level. The involvement of non-state players such as NGOs, communities, faith-based organizations, trade unions, private companies, and individual practitioners can therefore improve school performance through competition and autonomy—provided that the government ensures accountability mechanisms for all schools. This chapter outlines a framework for ensuring effective school provision, regardless of the type of provider—be it public or private, and then shows how the private sector can improve the quality of education and allow parents and students increased school choice. In terms of the SABER pilot, the analysis of non-state engagement in education in East Asia shows that although the public sector remains the dominant player, the private sector is increasingly active. Evidence suggests that economies in the region are willing to innovate in order to expand access and improve quality, however, a supportive and secure regulatory environment is crucial to engaging the private sector effectively.

The Role of the Private Sector in Education

The Organization for Economic Co-operation and Development (OECD) in its recent report on 'PISA 2009 defined superior education performance as high participation, high quality, high equity, and high efficiency (OECD, 2010[b]). In order to achieve this, Schleicher and Stewart (2009) have argued that governments must ensure that education promotes:

1. **High universal standards**: by focusing on outcomes, raising aspirations, and defining educational excellence;
2. **Accountability and autonomy**: by responding to local needs and strengthening accountability relationships;
3. **Teacher professionalism**: by recruiting strong teacher candidates, preparing them well, and offering them ongoing professional development;
4. **Personalized learning**: by ensuring that teachers are responsible for engaging constructively with the full range of students' interests, capacities, and socio-economic contexts.

Although the public sector remains the dominant player in education in East Asian economies, private sector programs and initiatives can compliment state efforts to provide high quality education that is accessible to all. There are ways in which the public and private sectors can join together to complement each other's strengths in providing education services, meeting education goals, and improving learning outcomes. Given the ability of the private sector to innovate, these partnerships can be tailored to meet the needs of specific communities.

A Model for Education Service Provision

The recent World Bank publication by Patrinos et al (2009) cites evidence that engaging the private sector can:

- Create competition in the education market;
- Promote flexibility—for example with teacher contracts that match the supply of education with demand;
- Enhance efficiency when providers are selected by means of an open bidding process, and when contracts include measurable outcomes and cost-effectiveness measures;
- Increase risk-sharing between the government and the private sector.

Building on the key elements of an effective system outlined by Patrinos et al (2009), Schleicher and Stewart (2009), and the World Bank (2004) model of service provision, this chapter outlines a model developed by the World Bank that measures four key elements of effective school provision, these include:

- **Autonomy:** Autonomous schools that can tailor teaching and learning to meet the needs of all of students and that have control over the quality of educational professionals in the school;
- **Competition:** A competitive environment within which schools offer a range of models to meet the needs of all students;
- **Parental Engagement:** Informed parents who can use both their voice and, if the system permits, their choice to ensure that the schooling supplied to their children is of the highest quality and who also hold the government accountable through the political process whether at the local, regional, or national level;
- **Accountability:** A strong and transparent accountability system in which autonomy is accompanied by responsibility, and policymakers hold all schools to account for the quality of their education.

Types of Private Sector Engagement

The engagement of the private sector in education cannot be seen in isolation from other education policies and government interventions. The government must decide how it would like the private sector to participate, and how this fits in its overall education strategy.

The model does not advocate any specific arrangement for private sector engagement –there is no right answer. Each country should use the private sector in a way that suits its specific needs.

The range of options open to governments includes:

- **Private schools**: schools that are owned by the private sector (private businesses, churches, religious groups, NGOs, foundations, charities or individuals) and are financed privately, typically through fees (in other words, they receive no public subsidies).

- **Privately funded schools**: schools that are owned and managed schools by the private sector (private businesses, churches, religious groups, NGOs, foundations, charities or individuals) that receive funding from the government but this funding **is *not* specified** in a contract on a per student basis.

- **Privately contracted schools**: schools owned and managed by the private sector that receives funding from the Government and the funding **is specified** in a contract on a per student basis. The transfer of public funds to the school requires it satisfies specified conditions.

- **Privately managed schools**: schools owned by the government but operated or managed by private organizations (for example, charter schools, academies, and concession schools).

- **Market-contracted schools**: public schools, privately contracted schools, or privately managed schools that are implicitly contracted by the student in that public funding follows the student to their school of choice (for example, vouchers).

Evidence

There is a body of evidence from around the world that shows how effective these different models of private sector engagement have been in terms of academic performance and cost-effectiveness (Lewis and Patrinos, 2011).

Private Schools:

The evidence for the impact of private schools is mixed. The results of PISA 2009 suggest that there is no difference in the performance of students in public and private schools after controlling for their backgrounds. Another argument is that private schools increase competition, thus forcing all schools to improve. The degree to which this happens depends on the extent to which public schools view private schools as a threat for drawing students away.

Nannestad (2004) analyzed whether private schools in Denmark improved the quality of local municipal schools and found no evidence that their existence increased competition. This is in direct contrast to Sandström and Bergström (2004) who found that increased competition arising from the existence of private schools in Sweden led to improvements in the standards of public schools. Nannestad partly explained this difference as being due to the different perceptions of the 'threat' posed by private schools to the public school system in each country. As a consequence, one would expect the incentive effects of competition from private primary schools on actors in the public school system in Sweden to be stronger than they are in Denmark. This could be part of the explanation as to why competition from private primary schools improves quality in public schools in Sweden but not in Denmark (Nannestad 2004).

Privately Funded:

McEwan (2000) evaluated the impact of privately funded schools in Argentina and showed that Catholic school attendance lowers the probability of students repeating a grade by 0.04**.**

Privately Contracted:

The Department of Education in the Philippines uses '*Education Service Contracts'* with qualified private high schools. These schools are paid a fixed amount per grantee to accept students who cannot be accommodated in nearby, highly congested public high schools but who are willing to pay the unsupported portion of their private school tuition and all other fees. An impact evaluation of the program showed that students in these contracted private schools scored 60 points higher on the TIMSS international test than students who attended public schools. Even after controlling for student and family background, students at private schools scored 33 points higher (World Bank, 2011).

In Pakistan, '*Foundation Assisted Schools'* are low-cost, privately contracted schools. In order to receive public funding, the schools must meet strict criteria. The program has had a positive impact

on test scores of between 0.361 and 0.457 standard deviations on total test scores, particularly in math and science in grade 5 and in English in grade 8 (Barrera-Osorio, 2010) .

Lefebvre and Merrigan (2009) examined privately contracted schools in Quebec. They found that the effect of changing from a public grade school to a private high school increases the percentile rank of a student's math score by between 5 and 10 points and by between 0.13 to 0.35 of a standard deviation depending on the specifications and samples.

Privately Managed:

Several evaluations of publicly funded and privately operated/managed public schools have found positive effects. Hoxby and Rockoff (2004) showed that students who won the lottery to attend a charter school in the United States, achieved scores that were 11 percentage points higher in reading and 10 percentage points higher in math than those who did not win the lottery. Booker et al (2008) found that initially students in charter schools perform worse on standardized tests than their peers in public schools, but that after three years, the scores of charter school students catch up with those of their public school peers.

Barrera-Osorio (2007) reached similar conclusions for Colombia. They found that students in privately managed schools achieved higher test scores at the end of their basic education (grade 11) than those in public institutions. Clark (2009) found that schools in the UK that converted to grant maintained status achieved as much as a quarter of a standard deviation improvement in pass rates on standardized examinations.

Market Contracted:

There have also been numerous empirical evaluations of voucher schemes that have found positive effects. In Colombia, Angrist et al (2006) found that vouchers improved the test scores of both average students and those in the highest decile. Himmler (2007) found positive links between the intensity of competition that a voucher scheme creates and academic achievement in the Netherlands. Patrinos (2011) who also examined market-contracted schools in the Netherlands, found private school effects on math, reading, and science achievement of 0.17, 0.28, and 0.18 respectively.

The results for Chile's voucher system however, are mixed. Gallegos (2004) found that one standard deviation in private enrollment generates about a 0.20 standard deviation in test scores and 0.24 in productivity. However, Contreras et al (2008) found that, after controlling for self selection, there was no difference between public and private schools.

Types of Private Sector Education in East Asia

East Asian education systems all employ some private provision but in different ways. Private schools operate in all East Asian education systems. In China and Shanghai, privately funded schools operate with no explicit government contract; in Singapore, Indonesia, the Philippines, Japan, and

Korea, private schools are explicitly contracted and funded. Both Thailand and Hong Kong use vouchers to increase school choice (Table 1).

Table 1. Comparison of Types of Private Sector Engagement across East Asia

Country	Private Schools	Private Funded	Private Contracted	Private Management	Market Contracted
Cambodia	✓				
Lao PDR	✓				
Malaysia	✓				
Mongolia	✓				
Vietnam	✓				
China	✓	✓			
Shanghai	✓	✓			
Indonesia	✓	✓	✓		
Japan	✓	✓	✓		
Korea	✓	✓	✓		
Philippines	✓	✓	✓		
Singapore	✓	✓	✓		
Hong Kong	✓	✓	✓	×	✓
Thailand	✓	✓	✓	×	✓

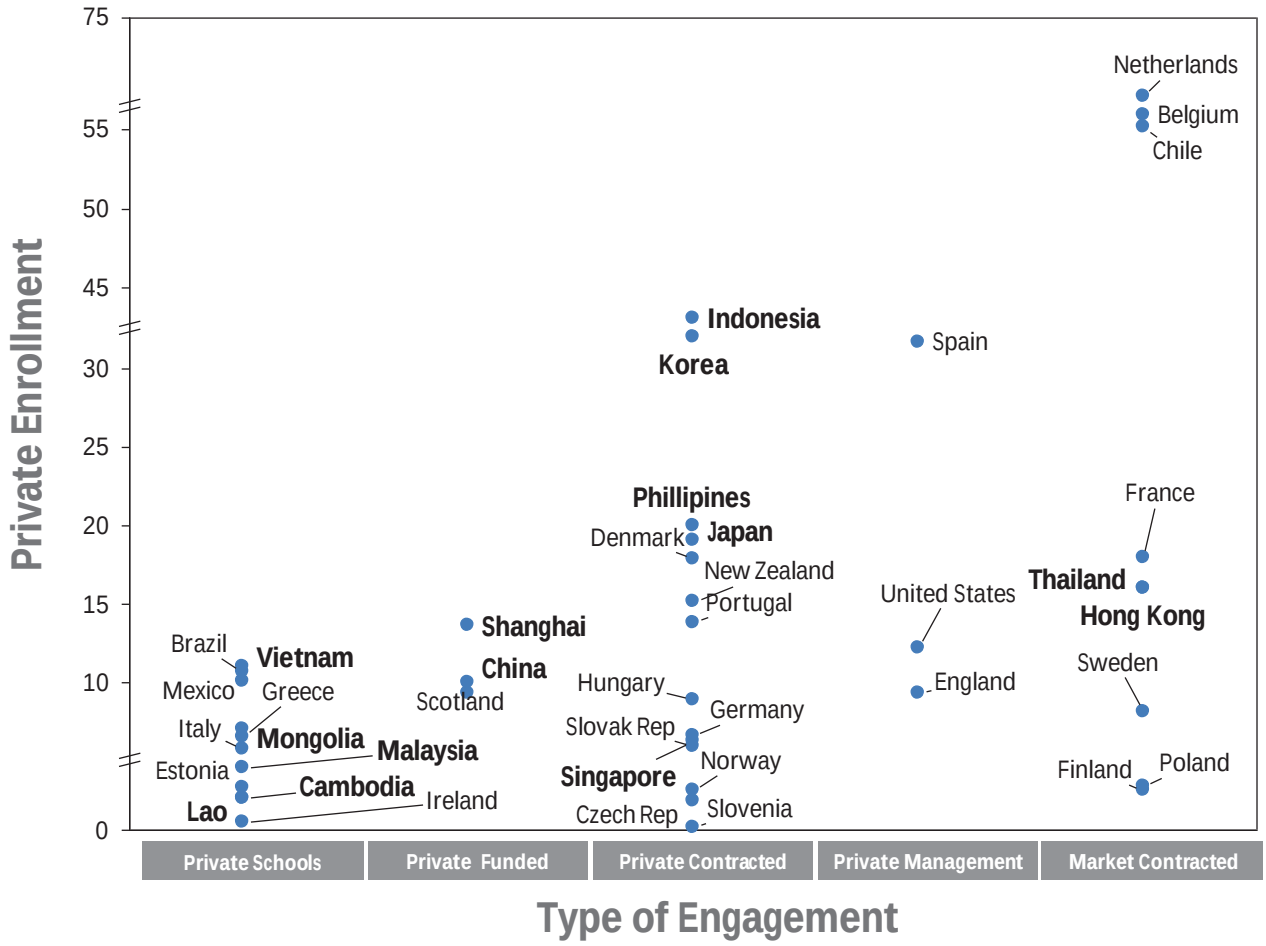
Figure 2 combines the types of private sector provision and enrollment data to outline how the private sector is engaged in the education sector in East Asia, the OECD and other regions. The types of private sector engagement outlined above are not exclusive; however, the five key questions listed below can help discern the degree to which they are used. Answering 'yes' to questions 1-3 automatically moves a country to the right of the figure as they are sequential. Questions 4 and 5 are non-sequential so answering "no" to 4 does not mean a country could not also engage the private sector by using market-based contracts.

The key questions are as follows:

1. **Are private schools allowed to operate?**
2. **Is public funding for private schools allowed?**
3. **Is there a contract that governs the conditions under which funds are transferred to non-public schools?**
4. **Is the private operation and management of public schools permitted?**
5. **Does public funding follow the student to the school of their choice?**

For East Asian economies, information was provided by in-country experts. For the OECD and others, we consulted the OECD's *Education at Glance* 2010 school choice indicators (OECD, 2010a), however, because the OECD choice indicators do not cover question four, experts were also interviewed.

Figure 2. Private Enrollment and Types of Private Sector Engagement



Source: OECD Education At A Glance 2010 , Choice indicators , UNESCO Institute of Statistics, SABER East Asia Benchmarking study, Shanghai Statistical Yearbook

Combining types of private sector provision with private enrollment figures revealed a wide variation in the scale of private sector engagement across the world. Indonesia and Korea have a high level of private enrollment – comparable to the levels found in Spain. All other East Asian economies have over 10 percent private enrollment except for Cambodia, Lao PDR, Malaysia, Mongolia and Singapore. Even in Finland, where the quality of public schools is very high, the private sector plays a role, albeit a small one.

Figure 2 also highlights the subjectivity involved in answering survey questions. In Ireland, 50 percent of secondary schools are aided by the *Department for Education and Skills*, of which 49 percent are Catholic-denominated schools. This is not shown in OECD data as these schools are considered to be public. As a result, the private sector seems to play only a limited role in Ireland. This contrasts with France, where the extent of the role played by the Catholic Church in providing education is explicitly recognized in the data—France has one of the largest Catholic education systems in the world (Dreycke, 2007:1).

Capturing the Potential Benefits of Private-Sector Education Provision

Increasing the role of the private sector can have several potential advantages over the traditional public delivery of education. Whether these benefits are realized in practice depends greatly on how well designed the partnership between the public and private sector is, on the regulatory framework of the country, and on the capacity of the government to oversee and enforce its contracts and partnerships with the private sector (Patrinos et al, 2009).

We have developed a tool which categorizes East Asian economies on the basis of the policies they have implemented to regulate the private sector. We analyze these policies to see how well each supports the four key regulatory outcomes from our model of effective school provision: competition, accountability, autonomy, and information. Figure 3 outlines the regulatory outcomes and poses the questions which will examine to what extent governments are currently meeting them.

Table 3. Regulatory Outcomes

Regulatory Outcome	Description
Competition	How well does the system support different players in entering the market, and to what extent does it ensure that there is no selection that constrains the efficiency of the market?
Accountability	What standards are private players required to meet and what is the accountability process?
Autonomy	What degree of autonomy are schools given over curriculum, delivery, and teacher policies?
Information	What information is available to parents when making their school choice, and to what extent are financial contributions hindering this selection?

Table 4 compares the extent to which each East Asian economy currently regulates private schools. There is a wide variation across the region, particularly in the degree of competition. In Korea and Cambodia, private school fees are set by the government, while in China Shanghai, Thailand, Vietnam, and Hong Kong, the government imposes a ceiling on tuition fees. Indonesia, Japan, Lao PDR, Malaysia, and the Philippines do not limit competition through regulated fees nor do they restrict competition based on ownership—both nonprofit and for profit schools are allowed.

All economies in the region set minimum standards for private schools to be established, and all except Cambodia have external inspections of schools. Malaysia, Korea, the Philippines, and Vietnam are considered to be advanced as the inspection regime is risk-based; the frequency of future inspections is dependent on the results of the previous inspection. The tool does not currently assess the quality of the inspection regime or the professionalism of the inspectors.

Most East Asian economies do not supply information to parents to enable them to make an informed choice when choosing a private school. In Cambodia, Japan, Lao PDR, Malaysia, Mongolia, the Philippines, Shanghai, and Vietnam, governments are not required to supply performance data to parents and students. In Hong Kong, this requirement only exists for primary schools. In China, Indonesia, Korea and Thailand, governments must supply this information at both the primary and secondary levels. The quality of the information supplied was not assessed in the tool, which is why both are considered Advanced. (Autonomy is not included for private schools as it is considered outside the remit of public policy).

Table 4. The Extent of Regulation of Private Schools

INDICATOR	Competition	Accountability	Information
Cambodia	Latent ◉○○○	Emerging ◉◉○○	Latent ◉○○○
China	Emerging ◉◉○○	**Advanced** ◉◉◉◉	Established ◉◉◉○
Hong Kong	Emerging ◉◉○○	**Advanced** ◉◉◉◉	Emerging ◉◉○○
Shanghai	Emerging ◉◉○○	Established ◉◉◉○	Latent ◉○○○
Indonesia	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉
Japan	**Advanced** ◉◉◉◉	Established ◉◉◉○	Latent ◉○○○
Korea	Latent ◉○○○	**Advanced** ◉◉◉◉	Established ◉◉◉○
Lao PDR	Established ◉◉◉○	Established ◉◉◉○	Latent ◉○○○
Malaysia	**Advanced** ◉◉◉◉	**Advanced** ◉◉◉◉	Latent ◉○○○
Mongolia	Established ◉◉◉○	**Advanced** ◉◉◉◉	Latent ◉○○○
Philippines	**Advanced** ◉◉◉◉	Established ◉◉◉○	Latent ◉○○○
Thailand	Emerging ◉◉○○	Established ◉◉◉○	Established ◉◉◉○
Vietnam	Emerging ◉◉○○	**Advanced** ◉◉◉◉	Latent ◉○○○

China and Shanghai fund private schools with no explicit contract. Recent reforms have expanded the number of privately funded schools, but competition is restricted because the government controls tuition ceilings for non-funded students and because schools are allowed to set selective admission criteria, thus allowing them to select students who are the easiest to teach. In general the Chinese government releases information on school performance although this does not happen in Shanghai specifically, although there are mandatory examinations at the secondary level and all schools are inspected annually. In China and Shanghai, autonomy is also inhibited by the requirement that schools have to follow a standardized curriculum.

Seven of the East Asian education systems analyzed here use privately contracted schools (Table 5). In Hong Kong, Indonesia, Japan, Korea, the Philippines, Singapore and Thailand, the contract does not require privately contracted schools to achieve certain outcomes (Singapore uses merit based student admission criteria to enter the privately contracted schools). In six out of the seven education systems, privately contracted schools are constrained by contractual requirements on the inputs that they can use. Autonomy and competition can also be restricted if – as a precondition for public funding – governments require private schools to adhere to the same input standards that are applied in public schools, thus reducing their operational flexibility (Lundsgaard, 2002).

Table 5. Privately Contracted Schools – Contract Comparisons

COUNTRY	Contract based on		
	Inputs	Outputs	Outcomes
Hong Kong	Yes, support services	Yes, students enrolled	No
Indonesia	Yes, instruction and support services	Yes, students enrolled	No
Japan	Yes, instruction only	Yes, students enrolled	No
Korea	Yes, instruction and support services	Yes, students enrolled	No
Philippines	Yes, instruction only	Yes, students enrolled	No
Singapore	No	Yes, students enrolled	No
Thailand	Yes, instruction and support services	Yes, students enrolled	No

Thailand and Hong Kong both use market-contracted schools. Thailand uses vouchers targeted to certain geographical areas and to students from underprivileged socioeconomic backgrounds. Competition is hindered because schools often do not receive their funding on time, which makes it difficult for them to plan. They also receive less funding than their public school counterparts. Parents are also restricted because they have to make compulsory financial contributions towards their children's education. Thailand has an established accountability system in which the government sets minimum standards for teachers and annually inspects schools. Students at both the primary and the secondary level are required to take a mandatory exam to assess their academic progress. Schools are also required to report to the government as a condition for the continuation of their funding. However, despite this accountability system, school autonomy is hindered by restrictions imposed by the central government on schools regarding the curriculum and staffing.

Conclusions

The evidence shows that East Asian economies are willing to innovate in order to expand access and improve quality. However, while it is possible and often desirable to engage the private sector in this process, certain prerequisites are essential, in particular, a supportive and secure regulatory environment. Governments could ensure that the regulatory environment:

- **Supports school autonomy and allows innovation in delivering education to meet individual students' needs;**
- **Encourages multiple providers so there is a competitive environment**
- **Gives parents access to information on the quality of the education system to ensure that they can make informed decisions, exercise their parental choice and/or their parental voice; and**
- **Has rigorous and transparent accountability system that engages all stakeholders.**

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CHAPTER 8
Vocational Tracking

Harry Anthony Patrinos

Prime Minister :

Education in this country is a disaster. We're supposed to prepare children for work. Most of the time they're bored stiff.

Permanent Secretary :

I should've thought that being bored stiff was an excellent preparation for work.

BBC Television Program, Yes, Prime Minister, Episode 7 Series 2, Antony Jay Jonathan Lynn, originally aired 21 January 1988

SUMMARY

Reducing early tracking often leads to more equity, higher test scores, and more market-relevant results. This chapter presents case studies from Europe to support this assertion, and uses a benchmarking tool to test the effectiveness of tracking policies in East Asia. Results of the East Asia pilot showed that tracking policies varied across the region substantially. For example Korea has no tracking whereas high school education ends at grade 10 in the Philippines – and that they both have a small vocational education sector. Mongolia, Japan, and Shanghai, China, all have late selection, and continued access to tertiary education. Malaysia has late selection, while Thailand, Singapore, Lao PDR and Vietnam, have early selection. In practice, however, few students switch between the vocational and academic tracks.

Does Tracking Improve Learning Outcomes?

The emphasis on vocational education in secondary schooling has been a mainstay of development policy for many decades. It is often argued that vocational skills are needed to encourage job creation and increase productivity. For decades the received wisdom was that vocational education was necessary for a country to modernize, and acquire the technical skills needed for economic development. As a result of these beliefs, several policies have been adopted to increase the proportion of students in vocational education programs. These have included the creation of youth employment schemes, technological knowledge courses, and policies that channel less able students into learning skills necessary to become mid-level technicians.

Recent evaluations of these policies and programs have highlighted problems with the vocational argument however. One of the major problems of this approach is opaque selection criteria—the reality is that in many cases a segment of the population is 'selected' by the system for vocational studies irrespective of capability or personal choice. Moreover, there is little evidence to show that vocational studies lead to better job prospects. Vocational training while at school does not guarantee that students will acquire job-relevant skills, or useful integration into the labor market. In sum this approach has been proven to involve higher costs and lower benefits, and to induce higher inequality than traditional secondary academic schooling (Foster 1965; Psacharopoulos 1991, 1987).

Box 1. No Tracking in Korea

Korea's egalitarian education strategy successfully expanded opportunities for primary, secondary and higher education by setting high standards for all and ameliorating differences across regions and socio-economic groups.

Introduced in 1951, Korea's single-track educational system, which aimed to promote democracy and expand education for all, has seen little change since its inception. Today the system still ensures that anyone can receive elementary and secondary education, and continue on to university. After 9 years of schooling, students make a decision about what type of upper secondary education—academic or vocational high school—they wish to pursue.

Korea achieved universal primary and secondary education by the 1960s and 1970s respectively, Key to this achievement were the No-test Middle School Entrance System (1968) and the High School Equalization Policy (1974). The premise behind these programs was to encourage entry into middle school. The enrollment rates of elementary students into middle school increased from 51 percent in 1970 to 95 percent in 1980.

The success of the No-test program resulted in bottlenecks at the high-school entrance stage. To cater for the huge influx of middle school students who wished to go on to high school, the High School Equalization Policy was introduced in 1974. The government attempted to reduce discrepancies in facilities, teachers and finances, among schools. As a result, high school enrollment rates soared from 41 percent in 1975to 96 percent in 2000.

To reduce coverage gaps, the government also provided targeted support for low-income and geographically marginalized students, providing free textbooks and free compulsory middle school education.

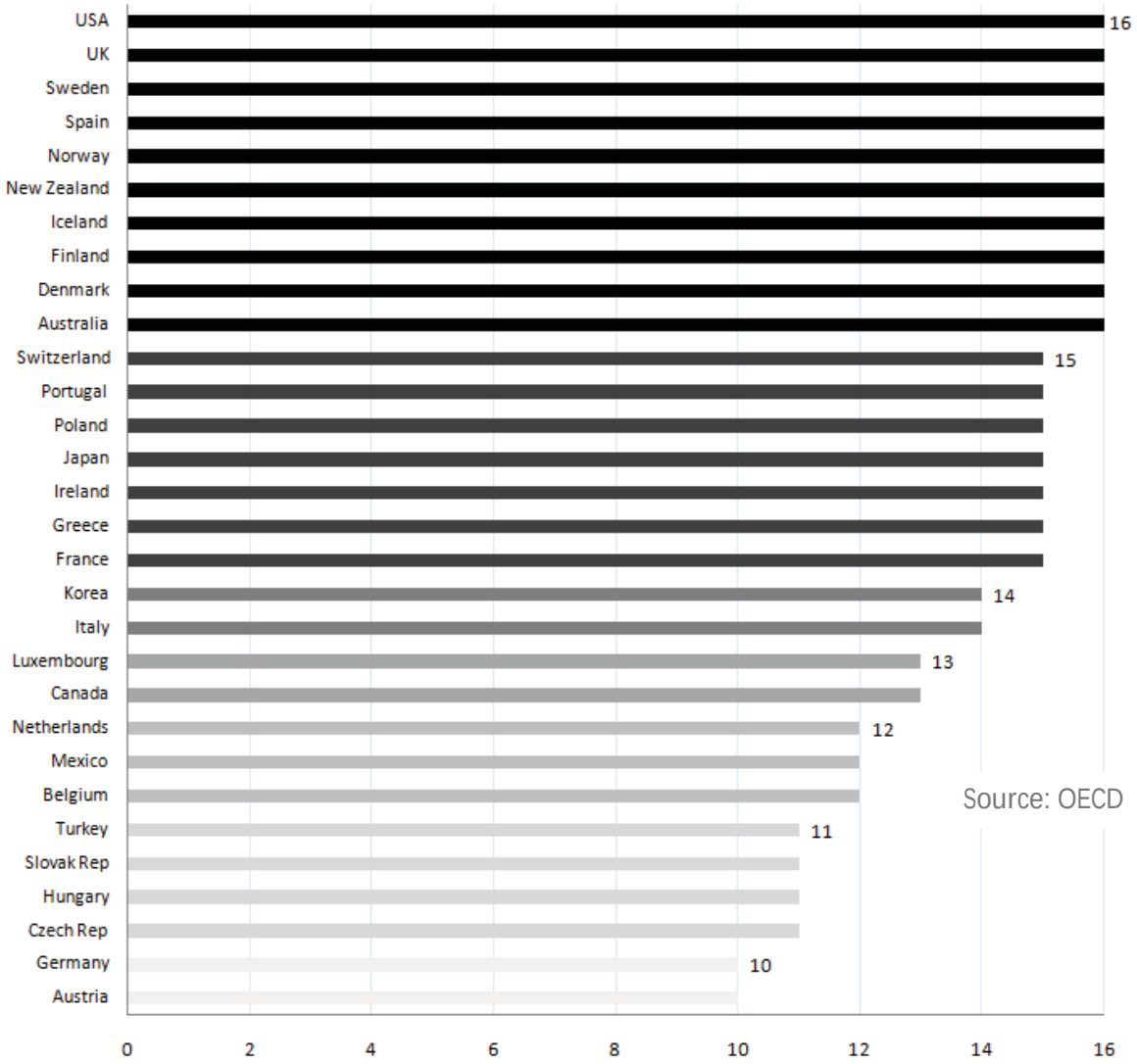
Source: Sungmin Park

Studies have found that:

- Early selection into vocational education leads to inequality by channeling poor, less able, and minority students into the less prestigious vocational track.
- Early tracking reduces mean performance.
- Tracking reinforces ethnic inequalities in educational attainment.
- Vocationally oriented schooling systems do not prepare students for active citizenship.

In addition, recent research shows that vocational students score poorly in subjects such as reading and math, which are precisely the skills that employers are demanding. Another issue is that students streamed into vocational studies are sometimes not allowed to switch later on to another track; thus limiting their future opportunities and reducing their options for post-secondary schooling. Also, the earlier students get into the vocational track, the more limited their opportunities are for entering tertiary education.

Table 1. Age of First Selection into Vocational Track, OECD Countries



Source: OECD

In several high-performing countries, evidence shows that extending comprehensive, non-tracked schooling not only leads to significant improvements in the learning outcomes of those students who would otherwise have been enrolled in vocational secondary programs, but also causes overall learning outcomes to improve. In high-performing countries, education systems are flexible in that they allow students to switch back and forth between vocational and academic schools. Table 1 shows the range of ages at which students are first selected to enter vocational tracks in OECD countries.

The Rationale for More Schooling

There is strong causal link between cognitive ability and labor market outcomes (OECD 2010). In addition, inadequate schooling not only lowers an individual's future income, but also the returns to society from education. Because early tracking often prevents students from pursuing further education opportunities, the potential academic returns from higher education can also be limited by these policies.

Education systems need to focus on producing the basic cognitive skills that employers demand—the type of "*learning that begets learning*" (Cunha and Heckman 2006). If schools do not teach the basics well, then investments in education will not translate into economic growth and poverty reduction. Thus improving the quality of education in the short term will increase labor market success in the medium term (Bertschy et al 2009).

The Evidence in Favor of Reducing Early Tracking

Reducing early tracking will lead to more equity, higher test scores, and more market relevant results. Expanding comprehensive schooling – that is, reducing early vocational tracking – instills in students a demand for academic schooling, increases student effort, and ultimately results in higher test scores. This happens because in academic schooling students spend more time on task, are subject to higher expectations, spend more hours learning tested subjects, and benefit from more opportunities to move onto higher education.

Cross-country comparisons show that the variance in test scores is higher in countries where tracking takes place at an early age (Hanushek and Woessmann 2006). At the same time, early tracking seems to have generally negative effects on mean performance, though the evidence on these effects is less consistent (Brunello and Checchi 2007; Waldinger 2006).

Experiences with Tracking: Case Studies from the European Union

The economic transition in Eastern Europe led to a significant restructuring of school systems, including a decline in the share of students on the vocational track.

In Romania, educational reform led to the postponement of tracking. As a result, more students from poor rural areas and with less educated parents are now significantly more likely to graduate from the academic track and become eligible to apply for university study. However, the postponement of tracking was not accompanied by an increase in the number of slots available at the university level, which means that access to higher education for disadvantaged groups did not change very much despite the fact that more disadvantaged students were eligible (Malamud and Pop-Eleches 2008).

In Lithuania, there was an entire education system reform after independence. This included moving away from the old 'Austrian Gymnasium' system of early selection and the introduction of extended compulsory comprehensive education. The reform led to significant improvements in student test scores, In Lithuania, which improved its TIMSS scores by 34 points in math, and 55 points in science –half of a standard deviation— between 1995 and 2007 (OECD 2002).

In Poland**,** before the transition period, there was an eight-year primary school system that was followed by early vocational tracking. This was changed to a nine-year comprehensive structure with tracking delayed by one year. Evaluations show that would-be vocational school students improved their learning outcomes by almost one standard deviation as a result of the reform. In fact, Poland went from being below the OECD average in 2000, to 8th place overall in the world in reading scores on the PISA test in 2006 (see Box 2).

In Germany**,** students must make an important decision about which educational track to follow at an early stage—after primary school at the age of 10. This practice has been shown to limit educational and career opportunities for many, primarily those from families with less educated parents. Parental background is strongly associated with what track is taken by a child in secondary school, and with his or her subsequent educational achievements. This association between parental class and educational choice translates into substantial earnings differentials later in life (Dustmann 2004).

In Finland, students were streamed at the age of 10–as in Germany and Austria today—until comprehensive school reform from 1972-77m adjusted the streaming age to 16. The reform therefore replaced the old two-track system with a uniform nine-year comprehensive schooling, thus significantly reducing the degree of heterogeneity in Finnish primary and secondary education. An assessment of the reform found that it had a small positive effect on test scores, with significant increases in the scores of students from families where parents only had a basic education (Pekkarinen et al 2009; see Figure 1).

In Northern Ireland, the academic track was expanded in 1978, leading to a 15 percentage point increase in the number of students entering secondary school. The number of students graduating from high school subsequently increased by 12 percentage points, and there was an increase of a similar magnitude in national examination scores (Maurin and McNally 2007).

Box 2. The Impact of Delayed Tracking in Poland

In Poland, delayed tracking improved test scores by taking students out of vocational programs with limited opportunities for jobs and future learning and increasing their motivation to learn and exposing them to more hours of academic instruction.

In 1999 Poland introduced education reforms that converted the traditional eight years of primary schooling followed by early vocational tracking, into a system that offered six years of primary education followed by three years of lower secondary education. Only after nine years of schooling would a decision be made about what type of upper secondary education – academic or vocational – would be taken by the student. In other words, the new system postponed the choice of education track at the secondary level by one year.

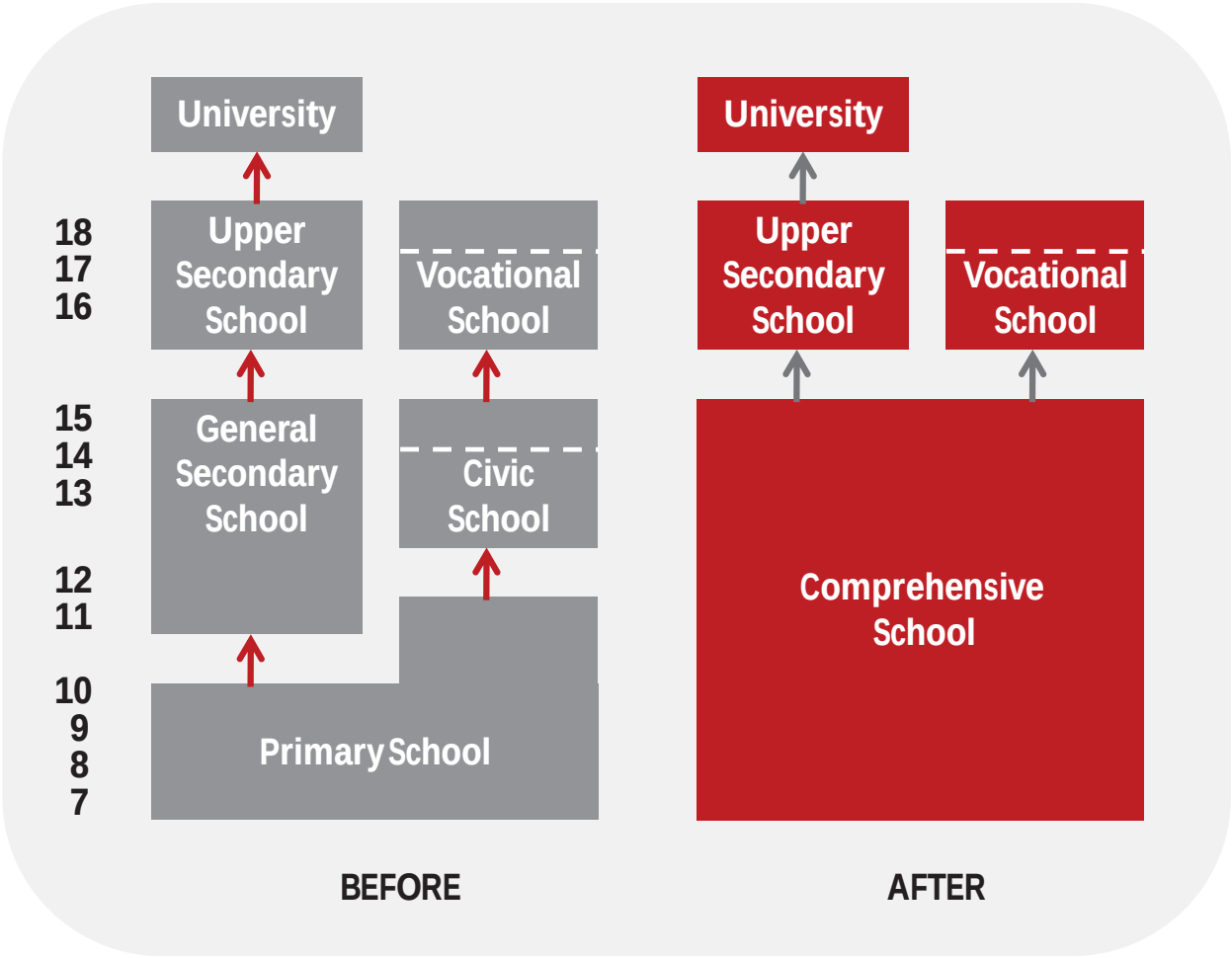
This reform was followed by a significant improvement in the performance of Polish students in international achievement tests. In math, Poland improved its PISA score from 470 in 2000 to 490 in 2003 and to 495 in 2006. This increase is equivalent to one-quarter of a standard deviation. Reading scores also steadily improved over time, from 479, to 490, to 508, an increase of 0.28 of a standard deviation. In science, Polish students scored 483, 498 and 498 over the same period, an increase of 0.15 of a standard deviation. Among the countries in Eastern Europe that participate in PISA, Poland is today one of the best performers, with a solid record of improvement over time. These changes also constitute the largest improvement over time by a traditionally low-end performer.

Measuring Impact:

To test for the impact of the 1999 policy change in on Polish test scores over time, analysts used scores from the group of students who took the PISA 2000 test as a baseline—since most of the existing students were continuing their lower secondary schooling under the old system—and then selected comparable individuals from a control group, and compared the change in outcomes over time for likely vocational and non-vocational students in subsequent years. They assessed the change in the test scores of the likely vocational school students who were able to study in the general academic track because of the change in school policy. They found that the reform was associated with an improvement in the likely vocational students' scores of about 100 points, or a whole standard deviation.

Source: Jakubowski et al 2010

Figure 1. Finnish School Systems Before and After the Comprehensive School Reform



Postponing Tracking

When students are tracked into vocational or academic secondary schools, usually only those who enter the latter track are eligible to go on to higher education. Postponing tracking gives pre-vocational students, especially those from disadvantaged backgrounds, additional time in school to catch up with their more privileged counterparts, and to increase their academic attainment. On the other hand, if students' ability and expectations are set at an early age, postponing tracking during adolescence may not have much effect.

Indicators of Vocational Tracking

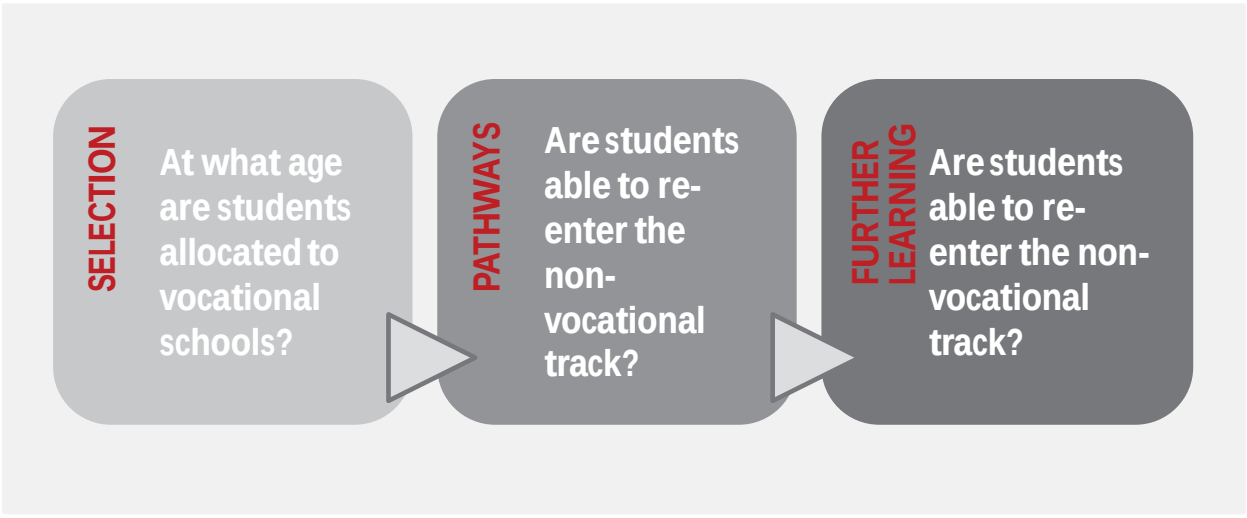
There are three main indicators of vocational tracking:

(1) Selection
(2) Separation of vocational/academic pathway and
(3) Opportunities for further learning

The key questions that relate to *selection* are: At what age are students allocated to vocational schools? Is that selection conducted through competitive selection examinations or is it up to parents and students to choose? The key question relating to *pathways* is: Are students able to re-enter the academic track once they are on the vocational pathway? In other words, even if there is early selection, is the system flexible enough so that students can switch back to the academic or other tracks? Also, what is the ratio of enrollments in vocational to enrollments in general education at the stage immediately after the selection occurs or at the end of comprehensive education? This ratio is a measure of the stratification of the education system (Bertochhi and Spagat 2004). A further indicator is the percentage of low-income students on the academic track at the secondary level—the post-comprehensive stage after selection has occurred).

The key question related to *further learning* is: Are vocational students eligible for higher education? In other words, even if there is selection, and regardless of whether switching between tracks is allowed, are vocational students permitted to enter higher education institutions? A further indicator might be the percentage of low-income students on the academic track in higher levels of schooling.

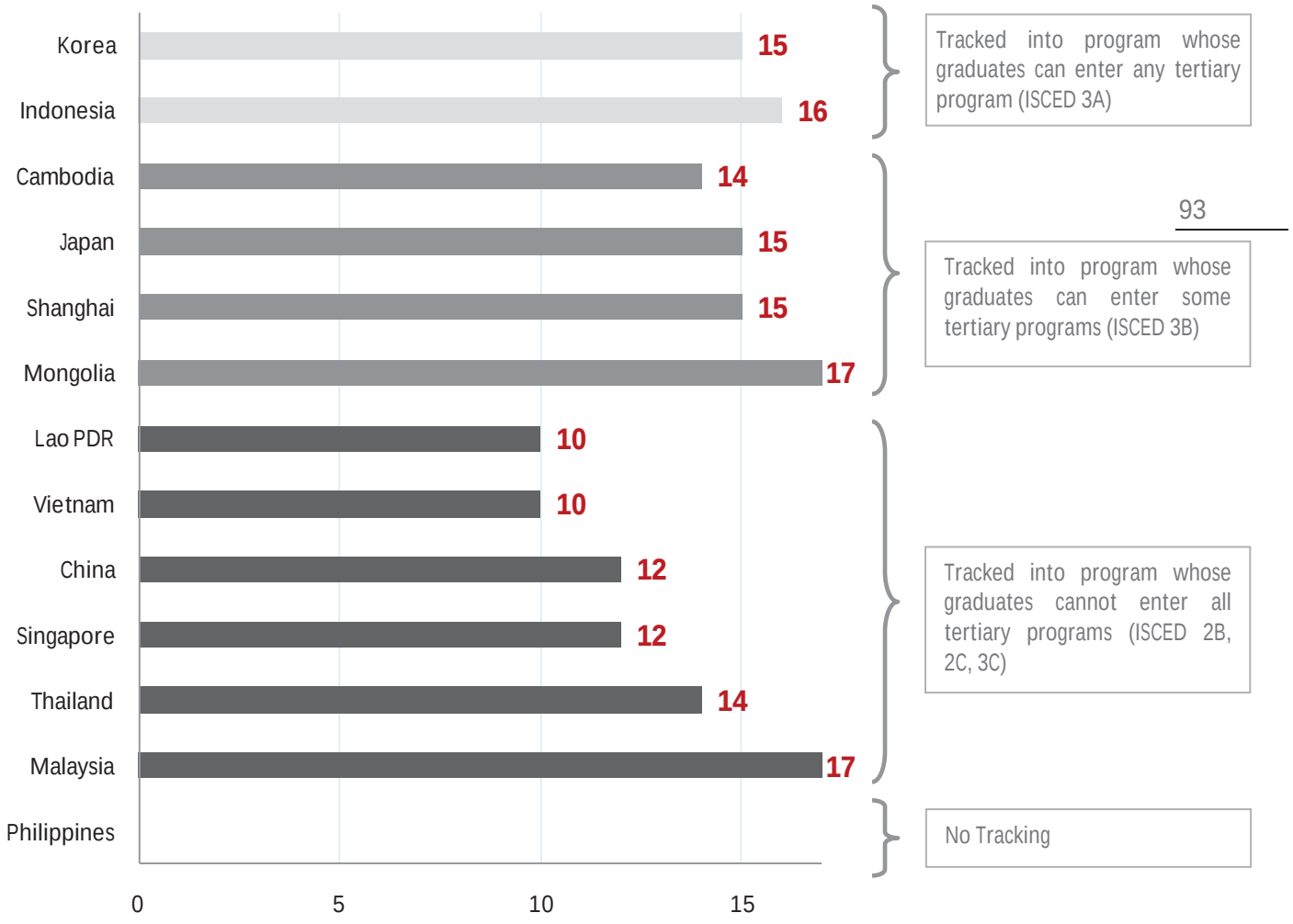
Figure 2. Indicators of Vocational Tracking



East Asia Tracking Results

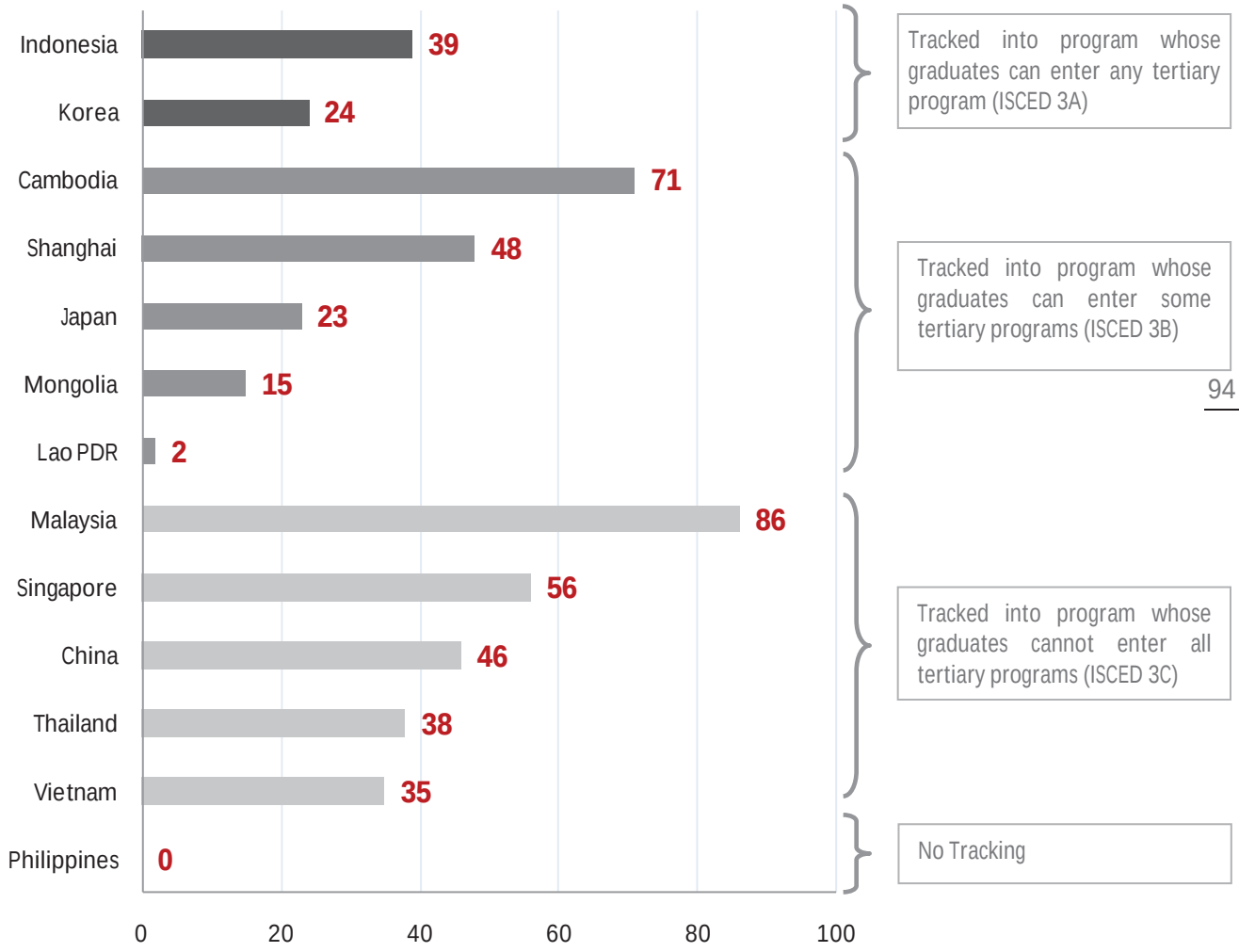
We assessed the performance of secondary education systems in East Asia using these three indicators. Table 2 presents the earliest age of selection. We found that all economies except for the Philippines track into vocational programs, but the ages at which this occurs varies. For example, Lao and Vietnam have the earliest age of selection, at age 10, while Malaysia has the latest at age 17. The average age of selection is 14. Table 2 also presents whether at this age students are selected into a vocational program that disqualifies them from entering tertiary education. In Korea and Indonesia, those students tracked into vocational programs will not be disqualified from entering academic tertiary programs while those in Cambodia, Japan, Shanghai-China, and Mongolia will be disqualified from entering academic tertiary but not technical tertiary. For the remaining economies shown in Table 2, students selected into vocational programs at the specified age are not qualified to apply for any tertiary program.

Table 2. Earliest Age of Selection



At the upper secondary level, the proportion of students tracked into the vocational sector varies considerably across the region (see Table 3). As shown in Table 3, Korea and Indonesia track 24 and 39 percent of their students into vocational upper secondary respectively, but graduates from these programs are still qualified for academic tertiary. For those economies where vocational graduates are only qualified for technical tertiary, the percent of students in these programs ranges from just 2 percent in Lao to 71 percent in Cambodia. Finally, for those economies where vocational graduates are not qualified for tertiary, the percent also ranges greatly, from 35 percent in Singapore to 86 percent in Malaysia.

Table 3. Percent of Upper Secondary Students *Selected* into a Vocational Track



While some educational systems allow students to switch between vocational and academic tracks, this does not happen very much in practice. In fact, there is very little data on the number of students that transfer from vocational programs to tertiary orientated programs. Of the five economies that have students in non-tertiary orientated upper secondary programs (ISCED 3C), only two report data on the number of students that transfer to tertiary-orientated programs: 10.3 percent of these students transferred while in Vietnam, one one-thousandth of a percent transferred (20 students).

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CHAPTER 9

Information & Communication Technologies

Michael Trucano

"You can see the computer age everywhere but in the productivity statistics."
Robert Solow, Nobel Prize winning economist.

SUMMARY

This chapter explores issues and challenges related to the collection of data about the use of Information Communication Technologies (ICTs) in education in East Asia. Despite widespread efforts across the region to introduce ICTs in education systems, little comparable data exist to help guide policymakers as they make important investment decisions. This knowledge gap complicates efforts of many Asian countries to benchmark their progress, and to ensure that their ICT investments for schools are strategic, cost-effective and have an impact.

Background and Context

Across East Asia, enthusiasm for the use of computers and other information and communications technologies (ICTs) in education is undeniable and widespread. While the contexts for such use differ considerably—from the highly developed urban centers of Shanghai and Singapore to rural villages in Cambodia and Laos PDR—the promise and potential of ICTs to help address a whole host of educational challenges are compelling. However, levels of actual ICT use in education systems in the region vary widely, not only between economies, but also within economies as well.

Attempts to answer many of the pressing policy questions we have about the use and potential impact of ICTs in education are complicated by the fact that we still do not have reliable data to compare across regions. As hard as it may be to believe, given the large investments being made in ICTs and their increasing economic importance, basic answers to many fundamental questions about the use of ICT in schools remain largely unanswered. Some of these pressing questions include: *To what extent – and how – are computers being used within classrooms? How connected are schools? What do ICT-related initiatives in the education sector cost, and what is the related impact?*

Many groups are trying to gather more data on ICT use in education, but until recently many of these efforts have been uncoordinated. Notably, the World Bank participates in an international *Working Group on ICT Statistics in Education*, (*WISE*) led by UNESCO's *Institute for Statistics* (UIS). This effort is

part of a larger international, multi-stakeholder initiative called *the Partnership on Measuring ICT for Development* that aims to improve the availability and quality of ICT data and indicators, particularly in developing countries. The partnership is an important component of the World Bank's education work, and in particular its *Benchmarking Education Systems for Results* initiative.

Why Attempt to Benchmark ICT use in Education?

Creative and innovative applications of ICTs have long been seen as important tools to enable educational reform processes; with the potential to improve both access to and the quality of, education. The internet explosion that occurred in the 1990s, the emergence of a variety of low-cost computing devices and the increased diffusion of computers throughout society ushered in a wave of "ICT and education" policies and projects around the world.

As an increasingly interconnected and digital world emerged—one which saw skills required by the industrial economy increasingly superseded by the demands of the knowledge economy—governments tried to adjust school curricula to equip their students with new, "21st century skills". In this regard, most education systems in Asia have generally been like their counterparts in other regions of the world -- somewhat slow to adapt, tending to narrowly focus on technical ICT skills rather than the full range of skills needed. These require that students think creatively, can problem solve, effectively communicate, identify and analyze existing information and create knowledge.

A range of pedagogical approaches have been proposed to help learners to develop those Information Age skills that are now in high demand. Based on research on how people learn, these methods include student-centered learning, active learning, project-based learning and inquiry based learning—to name just a few among many. Yet while the integration of ICTs into the learning process holds great potential to enhance these pedagogies, implementation to date has fallen short of this promise. In other words, ICTs are not yet transforming education, despite the high hopes of many reformers. That said, the increasing diffusion of a variety of ICTs throughout East Asian societies and education systems suggests that even if 'transformation' has not yet occurred, many of the necessary pre-conditions that can help enable such a transformation are being put in place.

Given the general lack of regionally-comparable data on the magnitude of ICT education investments and their effectiveness, the first step is to benchmark the basic *enabling environment* in each economy. This means gauging the level of physical infrastructure and human resources in schools and education systems, as well as measuring the degree of access to and use of basic ICT infrastructure and the presence of trained teachers and technical specialists to facilitate that use. Collecting and analyzing data about this first-stage enabling environment provides a foundation upon which larger, more fundamental investigations of the impact of the use of such infrastructure can be built.

Measuring the Impact of ICT Investments

There is much we still do not know about the impact of investments in ICT use in education and the related overall costs. We do not have a good handle on how to measure the types of impacts we hope to bring about through the introduction of things like '1-to-1 computing'—where each student has her own computing device—which require different measurement instruments from the traditional standardized learning assessments. With very few exceptions, there are very limited data published to help us understand the costs of such initiatives, especially those related to the total cost of operation over time, and the way such costs are calculated are often not very transparent. This means that, collectively, we are often unable to answer a basic question posed by finance ministries seeking to discriminate between numerous worthy projects and initiatives contending for investment: *How much 'impact' will this get me, and what will this 'impact' cost?*

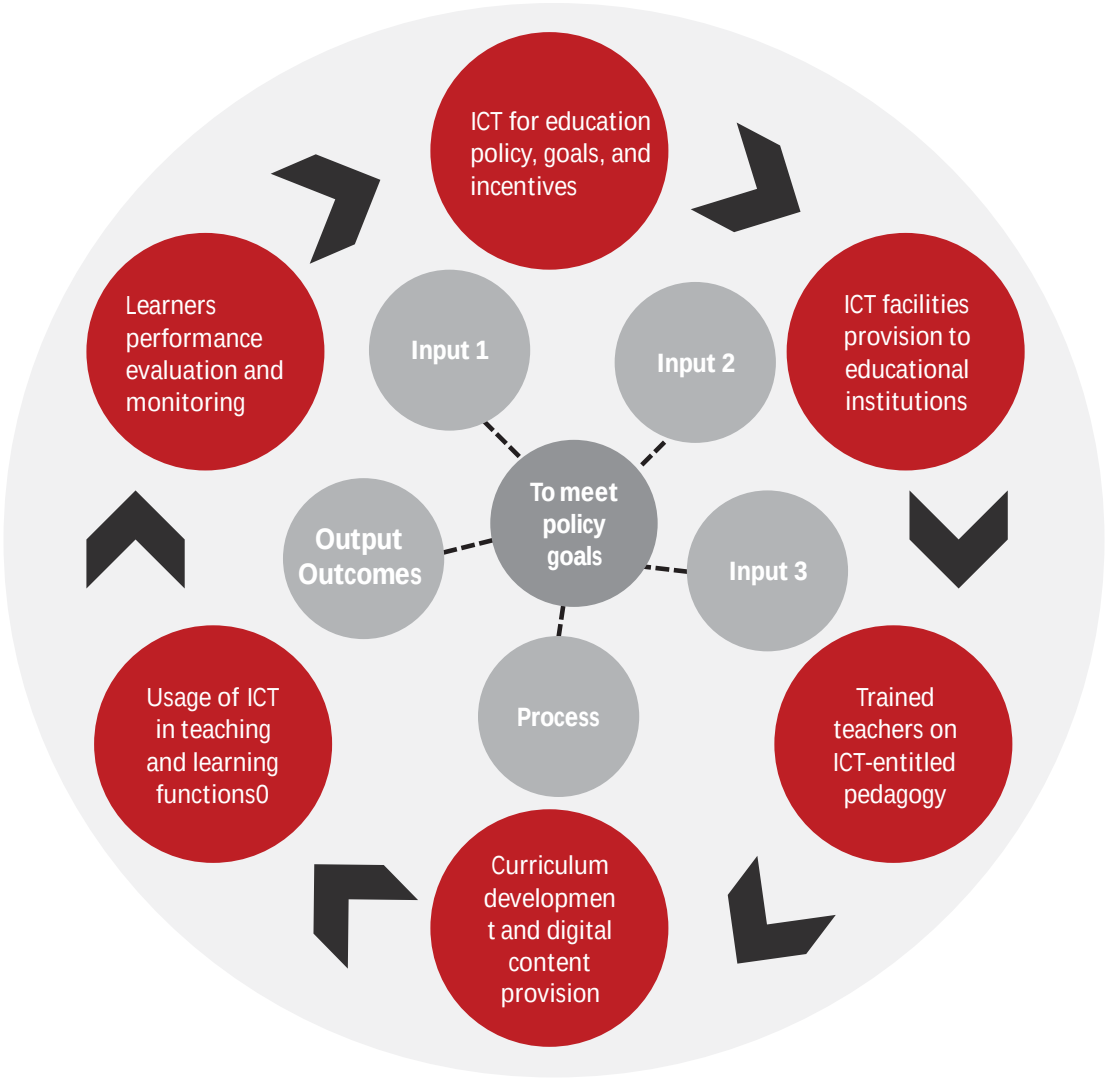
While there is much that we still do not know about the 'best' or most effective models for the diffusion and utilization of ICTs to meet a variety of educational objectives, appropriate models and good practices are emerging. Knowledge about such models and practices are slowly diffusing, thanks in part to the use of ICTs themselves. Moreover, even when cost-benefit analysis is absent, policy makers are confronted with a further policy challenge: *What is the cost of not investing in this area?* If they delay, and don't invest now, many governments are afraid that they may be outpaced by other, more 'daring' societies ready to make bold investments to compete in an increasingly technology-driven global economy. There is, regrettably, no simple answer to such questions. Some advocates for action recall the words of Nobel laureate in economics Robert Solow, who remarked back in 1987 that *'You can see the computer age everywhere but in the productivity statistic*s."

The largely accepted economic imperatives for investment in ICTs, coupled with the perception of educational benefits, often result in sufficient political will for action in this area. Though educational reform is difficult, the purchase of computers for schools, for example, offers a tangible symbol of a government's commitment to investment in change and ICTs themselves can often be important vehicles to help bring about desired reforms. It is not just the government who can be held responsible for embracing so-called ICT revolution, educational leaders, teachers, parents and students can also help to achieve tangible results on the ground. These efforts should be aided by a strong commitment to evaluating the impact of various initiatives and practices, and learning from the results.

What Should – or Can – We Measure?

The UIS-led *Working Group on ICT Statistics in Education* has identified sets of over 50 core and supplemental indicators that can be helpful in benchmarking the use of ICTs in East Asia. These indicators, summarized in Figure 1, help address a number of key policy questions related to political commitment; infrastructure; teaching staff development; curriculum; usage; participation, skills and output; and outcomes and impact. These factors should be understood within the context of a larger operational and conceptual framework for ICT integration in education (UNESCO, 2009).

Figure 1. Benchmarking ICT use in Schools



A sub-set of these indicators relate to the basic ICT infrastructure available in schools, and within education systems more broadly. Specifically, these are:

1. Learners-to-computer ratio

To explore the opportunities or limits for using computers in schools to promote or expand computer-assisted instruction.

This is the most-requested data point on technology use in education around the world, and for that reason alone it is useful to collect regionally comparable data in this area. It is thought to be a useful simple proxy for the level of penetration of computers into schools.

2. Proportion of schools with internet access, by type

To measure the overall level of access to the internet in schools, the opportunities or limits for the use of computers in primary and secondary schools, by type of internet access.

An important concern in East Asia relates to the use of the internet as an access point to education materials.

3. Proportion of learners who have access to the Internet at school

To measure internet accessibility among learners for educational purposes.

Anecdotal evidence suggests that where the internet is available in schools, it may only be used by certain segments of the school population and/or for administrative purposes. Building on indicators 1 and 2, this indicator is meant to help provide additional granularity to investigations of how broad internet access is for students.

4. Proportion of ICT-qualified teachers in primary and secondary schools

To measure the extent to which primary and secondary school teachers have the required ICT training to teach basic computer skills or computing classes.

The preponderance of evidence suggests that teachers need to be trained if investments in ICTs for schools have any chance of having an impact on educational practices at a classroom level. Imparting basic ICT literacy is thought to be an important first step in this process.

5. Proportion of learners (by gender) enrolled at the post-secondary and tertiary level in ICT-related fields

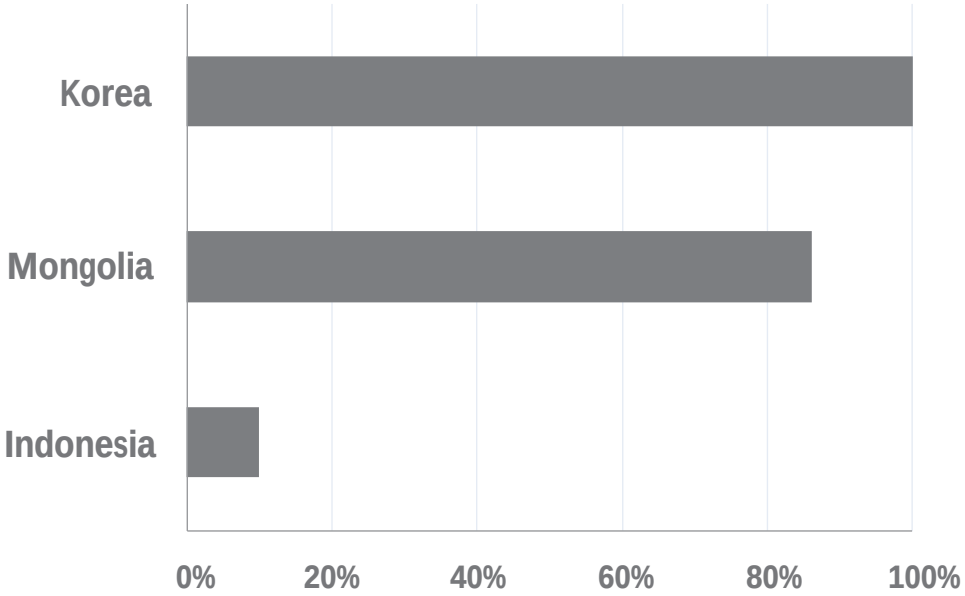
To measure the share of learners by gender in ICT-related fields of study in post-secondary and tertiary educational institutions.

It is widely believed the introduction of ICTs into educational settings may raise profound equity issues. One of the proxies often used to measure gender disparities in ICT use is how many students intend to major in computer-related fields. Any attempt to benchmark ICT use in education across East Asia, let alone the impact of such use, must begin with the collection and analysis of such basic data.

Benchmarking ICT Use in Education in East Asia

A recent pilot survey coordinated by UNESCO-Bangkok that attempted to collect the type of data outlined above for a select number of economies shows just how far we have to go. Of all the policy domains in the education sector surveyed as part of the recent World Bank-UNESCO SABER study, the ICT domain had the lowest completion rate, and much of the data that was collected was not current. Why was this the case? Probably the most significant factor is that there are very few systematic and formal initiatives in the region to collect even basic ICT-use data. When information does exist, it invariably comes from data sources outside of the education sector itself and does not appear to be gathered according to common methodologies and definitions. These factors are complicating efforts in the region to have policy and investment decisions driven by data, rather than by untested conventional wisdom, political calculation or the basic intuition of key decision makers.

Figure 2. Percentage of Primary and Secondary Schools Connected to the Internet



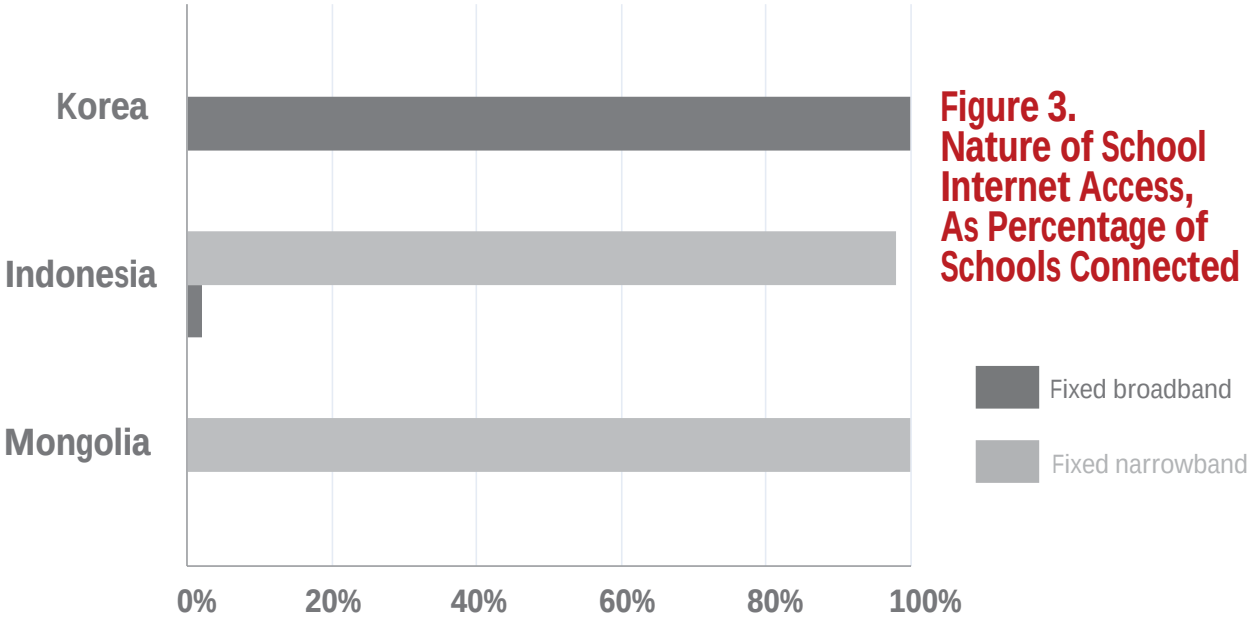


Figure 3. Nature of School Internet Access, As Percentage of Schools Connected

Across the region, as in the rest of the world, it is increasingly common to hear senior government officials call for 'all schools to be connected to the internet'. Of all the core indicators outlined by the UIS-led working group (*WISE)*, progress towards the goal of *'connecting schools'* is appears to be the easiest to measure, although defining what it means to be 'connected' can often differ radically between countries. Let's compare, for example, three countries: Indonesia, Mongolia and South Korea. From one perspective, Indonesia is the outlier here, as only 11 percent of its schools are connected, compared to 87 percent in Mongolia and 100 percent in South Korea.

Dig a little deeper however, and a different picture emerges. In South Korea, 100 percent of schools are connected to broadband internet at speeds that are some of the fastest in the world. Of the schools connected to the internet in Mongolia and Indonesia, almost all of them use fixed narrowband connections—less than 256 kbit/s. So, when evaluating the state of school connectivity in Mongolia, the answer depends on your goal: enabling teachers and students to be able to communicate via email, or on the other hand facilitating real-time access to rich media learning resources online. For the latter, a fast internet connection is what really matters.

Conclusions

Almost a decade ago, UNESCO's landmark *Metasurvey on the Use of Technologies in Education in Asia and the Pacific* attempted to analyze ICT access and use in education in the region. Since that time there has been no significant regional data collection effort. For a region generally considered by many in the rest of the world to be at the vanguard of technology use, this omission may strike some as rather puzzling—especially given that regular data collection efforts related to technology use in education *are* underway in Europe, North America and, more recently, South America. Absent basic data about how ICTs are being used in the education systems in their countries, and how this usage compares with usage in to other countries -- in the region and in the rest of the world -- educational policymakers in East Asia and the Pacific may face fundamental disadvantages compared to many of their counterparts in other regions of the world as they seek to ensure that their investments in this area are cost-effective and impactful.

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CHAPTER 10

Tertiary Education

Jamil Salmi & Sunita Kosaraju

"In questions of mind, there is no medium term:
either we look for the best or we live with the worst."
John Gardner

SUMMARY

Tertiary education institutions have a critical role to play in supporting knowledge-driven economic growth strategies and in the construction of democratic, socially cohesive societies. Comparisons of tertiary education systems across the world have revealed wide variations in their performance, even between those with similar funding levels and common country characteristics. They have also demonstrated that certain systems consistently out-perform others in many critical areas.

However, attempts to measure and analyze what works at the tertiary level have tended to emphasize the results of individual institutions as opposed to the system as a whole. The proliferation of international and national rankings has focused on the relative standing of countries, using the position of their top universities as proxy for the performance of the entire tertiary education system. But these rankings are flawed in their conceptual approach and suffer from serious methodological problems. They fail to measure the overall strength of a country's tertiary education system and its contribution to economic and social development.

There is, therefore, a need for a reliable and comprehensive benchmarking tool to evaluate tertiary education systems over time and the causal relationships between input and process variables and the outcomes of the system. This chapter outlines: (i) an intellectual framework to underpin analysis of the performance of tertiary education systems: (ii) a tool that can be used to analyze sets of data within this framework; and (iii) the relevant indicators to evaluate these systems. Finally, types of comparisons that can be made with this tool are illustrated using key indicators from East Asian economies.

Analytical Framework

In building the benchmarking tool, a fundamental distinction was made between the outcomes of tertiary education systems ("system performance") and the drivers of performance that account for these results ("system health"), with the purpose of answering the following two questions:

- How well does the tertiary education system actually produce expected outcomes at the current time (system performance)?
- How well do the key inputs, processes, and enabling factors of the system reflect conditions that are known to bring about favorable outcomes?

Furthermore, the tool was designed to be used to examine "system evolution", in other words, the rate of change over time in the main dimensions of performance and in each key driver of this performance.

System Performance

System performance can be measured by looking at the key outcomes of a tertiary education system. Reflecting the various missions of tertiary education, the benchmarking tool includes the following outcomes:

- **Attainment** refers to the stock of qualifications in a given population, measured by calculating the proportion of adults in the working age population who have completed a tertiary degree.
- **Learning achievement** refers to the quality and relevance of the education and training experience of tertiary level graduates. This is one of the most difficult areas to measure in the absence of widely accepted metrics such as PISA or TIMMS.
- **Equity** refers to disparities in the results (attainment and academic trajectories) of disadvantaged groups (such as low-income groups, females, minorities, and people with disabilities).
- **Research outcomes** refer to publications and advanced training, measured by the number of scientific journal citations relative to a country's population and the capacity of the system to prepare PhD graduates.
- **Knowledge and technology transfer** represent the contribution of tertiary education institutions to the development of the regions that they serve. Some ways to measure this include the number of patents registered by universities or the proportion of doctoral graduates working outside universities.
- **Values, behavior, and attitudes** refer to the effectiveness of tertiary education in equipping graduates with positive values and citizenship skills. This is also a very difficult area to measure, but the methodological challenges do not justify neglecting this important dimension of the role of education.

System Health

System health refers to the enabling conditions required for the tertiary system to produce these outcomes and to improve and sustain its performance over time. As Figure 1 below illustrates, these institutions operate in an environment that includes the following elements:

- **Macro environment:** the overall political and economic situation of a country, together with the rule of law and the enforcement of basic freedoms, which influences the governance of tertiary education institutions (the appointment of university leaders), their level of funding, their academic freedom, and safety in the physical environment.

- **Leadership at the national level:** the existence of a vision and a strategic plan to shape the future of tertiary education and the capacity to implement reforms.

- **Governance and regulatory framework:** the governance structure and processes at the national and institutional levels that determine the degree of autonomy that tertiary education institutions enjoy and how and to what extent they are held accountable. This is especially important for the human resources policies and management practices that allow tertiary education institutions to attract and keep qualified academics.

- **Quality assurance framework:** the institutional setup and the instruments for assessing and enhancing the quality of research, teaching, and learning

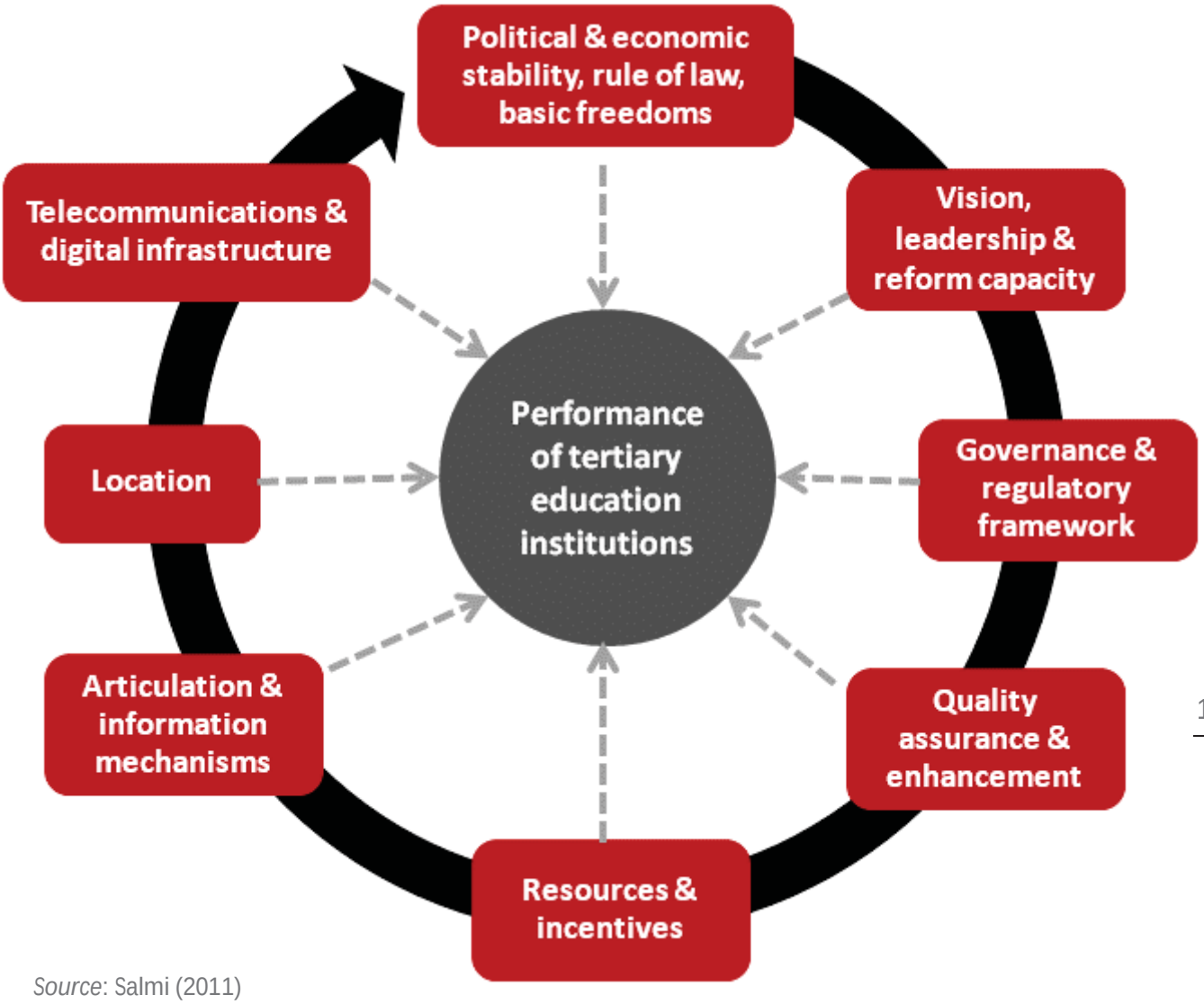
- **Financial resources and incentives:** the absolute volume of resources available to finance tertiary education (mobilization of both public and private resources) and the way in which these resources are allocated to various institutions.

- **Articulation and information mechanisms:** the linkages and bridges between high schools and tertiary education and among the various types of tertiary education institutions, all of which affect the academic characteristics of incoming students and their academic results within the tertiary education system.

- **Location:** the infrastructure and the economic, social, and cultural characteristics of the geographical location of the institution, which determine its ability to attract outstanding scholars and talented students.

- **Digital and telecommunications infrastructure:** the availability of broadband connectivity and end user devices to enable tertiary education institutions to deliver educational, research, and administrative services in an efficient, reliable, and affordable way.

Figure 1. Tertiary Education Ecosystem



Source: Salmi (2011)

This analytical framework translates into specific inputs and process indicators that measure "system health" in the following way:

- *Inputs.* To what extent do the resources invested in a tertiary system (such as its funding, the number and qualifications of its academics, the academic preparation of its incoming students, its curriculum, and its learning infrastructure) lead to positive outcomes?
- *Processes.* How effective are a system's processes or policies (such as its governance arrangements, resource allocation mechanisms, and accountability instruments) in producing positive outcomes?

Comparing East Asian Countries on the Basis of Leading Indicators

Leading indicators are those used to detect or predict important changes that are likely to occur in a tertiary education system. Table 1 below lists the ten leading indicators chosen for the summary analysis of the system performance and system health of tertiary education in East Asia.

Table 1. Leading Indicators of Tertiary Education Systems

System Performance	**Attainment**: Proportion of the population (25-44) with a tertiary degree
	Equity: Tertiary education attainment of females over attainment of males among the population (25+)
	Research Output: Number of citations per 100,000 inhabitants
System Health (Drivers of Performance)	**Expansion**: Tertiary education enrollment rate
	Equity: Female / male tertiary enrollment rate
	Quality: Proportion of accredited programs
	Financing: Total spending on tertiary education as a percentage of GDP
	Investment in Research: Public funding on research as a percentage of GDP
	Governance: Degree of autonomy of public universities
	Preparation of Incoming Students: Composite index of mean math, science and reading PISA scores

The following approach was used to assess the performance and health of East Asian tertiary education systems. First, data was analyzed for each leading indicator in 1960, 1980, 2000, 2005, and latest available year. Then data for each country was graphed to show the rate of change over time and relative to other economies. Where relevant an East Asia average was calculated in order to give the reader a baseline comparison.

In order to analyze the short-run and long-run growth rates of the various indicators and to understand trends in each country, the growth rate between 1980 and the most recent year for which data were available was calculated. Countries were grouped according to whether their growth rate on a

particular indicator placed them in the top 25 percent, the middle 50 percent, or the bottom 25 percent. Within each percentage group, countries were listed alphabetically.

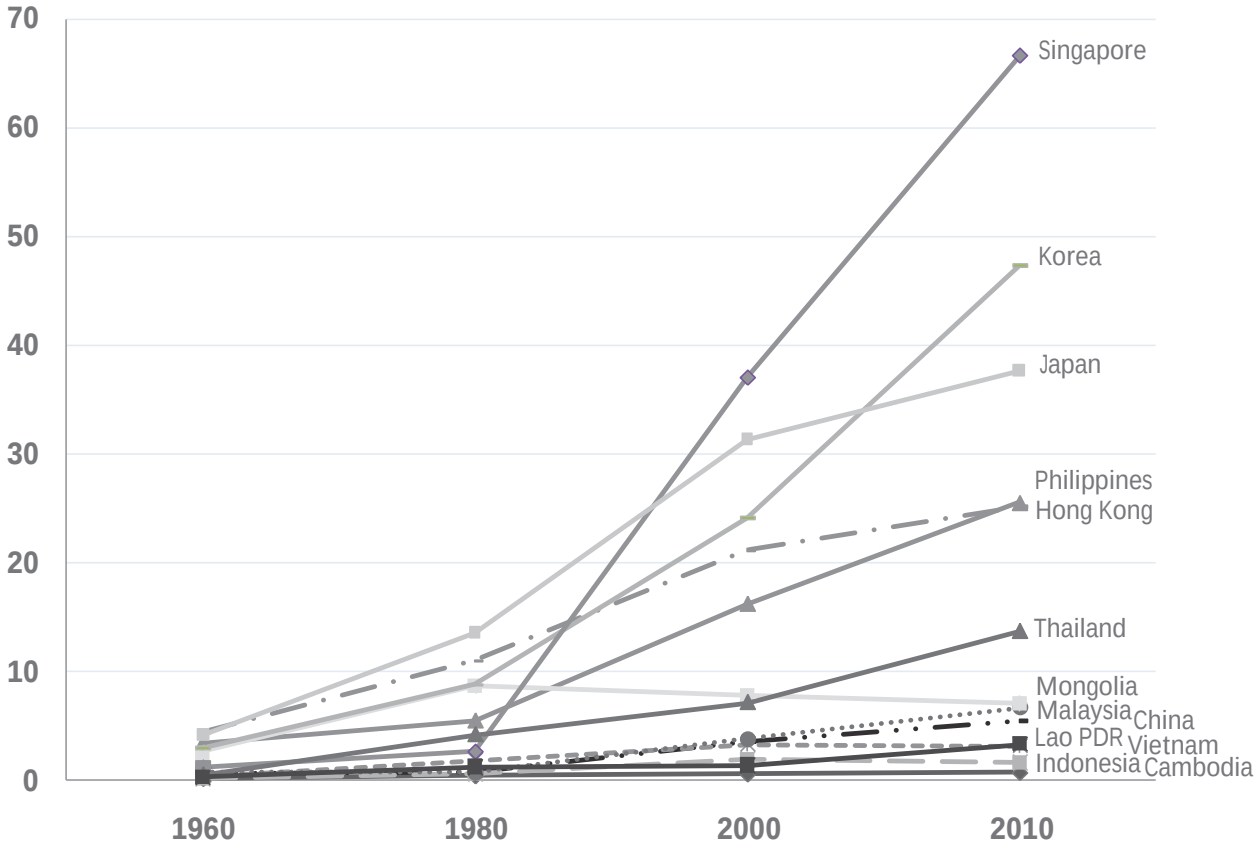
Analysis of System Performance Indicators

For the purpose of the analysis of performance, two leading indicators were selected: attainment and research citations.

Attainment

Figure 2 shows increasing levels of tertiary attainment in the adult population across the region. In 1960, in all economies in East Asia, fewer than 5 percent of the population had obtained a tertiary degree. By 2010, the spread has become much wider, with four out of 14 economies continuing under the 5 percent attainment range but with Singapore and Korea at the other end of the scale having an attainment rate of 66% and 47% respectively. There was rapid growth in tertiary degrees between 1980 and 2000 in Singapore, South Korea and Japan, but this growth has leveled off in the past 10 years—it would be useful to study what policies were in place that effectively allowed for attainment rates to quadruple within the span of 20 years.

Figure 2. Proportion of the Population (aged 25-44) with a Tertiary Degree



Source: Barro and Lee (2010)

Table 2 below shows that Thailand, Indonesia, and Lao PDR have the fastest growing attainment rates, even though their current attainment rates are low relative to other economies such as Singapore and the Korea.

Table 2. Growth Rate in Adult Tertiary Attainment Between 2000 and 2010

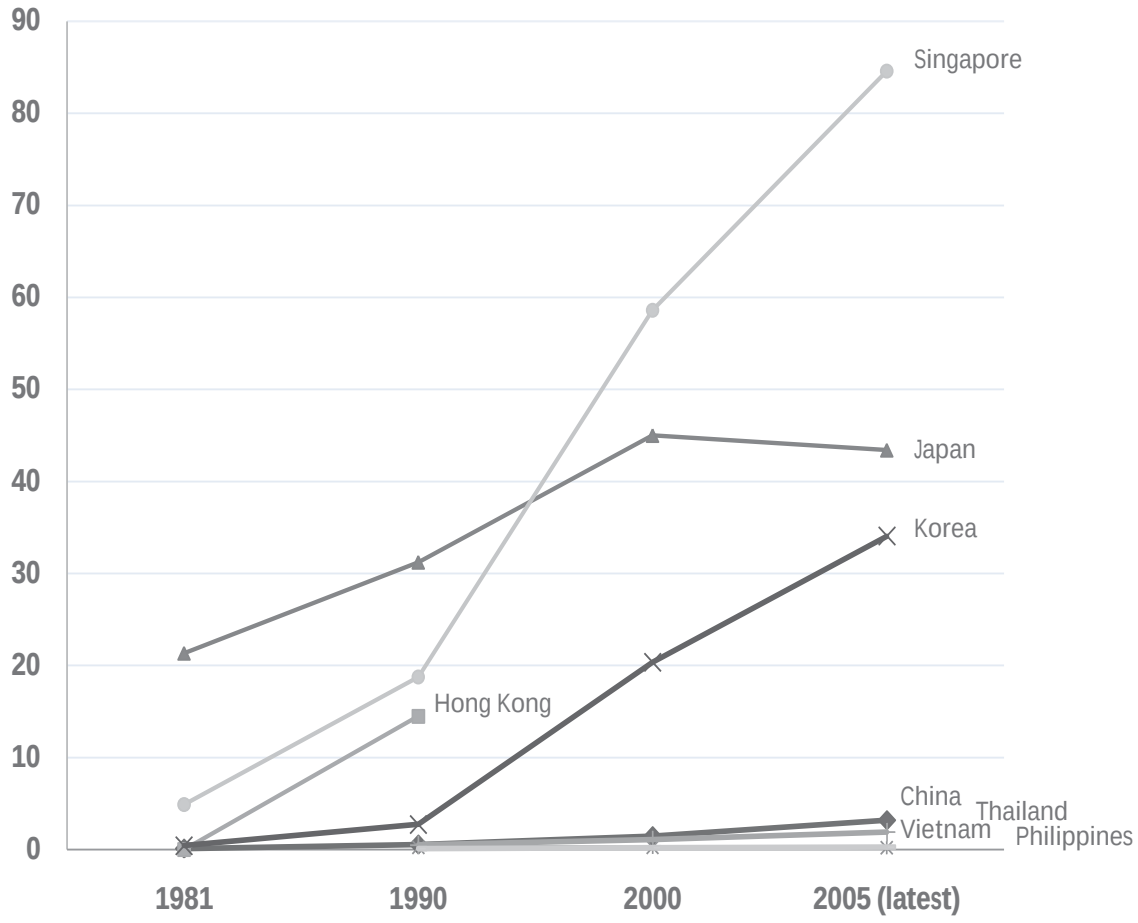
Top 25%	Korea
	Thailand
	Vietnam
Middle 50%	Cambodia
	China
	Hong Kong
	Japan
	Malaysia
	Philippines
	Singapore
Bottom 25%	Indonesia
	Lao PDR
	Mongolia

Source: Barro and Lee (2010) and national statistics agencies of Hong Kong, Singapore and Korea.

Research Citations per 100,000 Inhabitants

Figure 3 shows the research performance of economies in East Asia. Three stand out as high achievers in this area: Singapore, Japan, and Korea. All other economies continue to be in the initial or emerging phase of development in terms of research capacity with fewer than 10 citations per 100,000 inhabitants.

Figure 3. Science Citations per 100,000 Inhabitants



Source: National Science Foundation (United States) via World Development Indicators

When grouped according to growth in research output between 1980 and 2005 (the latest year for which data are available), China, Korea, and Singapore are in the top 25 percent, Indonesia, Japan, Malaysia, the Philippines, Thailand, and Vietnam are in the middle 50 percent, and Cambodia, Hong Kong, Lao PDR, and Mongolia are in the bottom 25 percent.

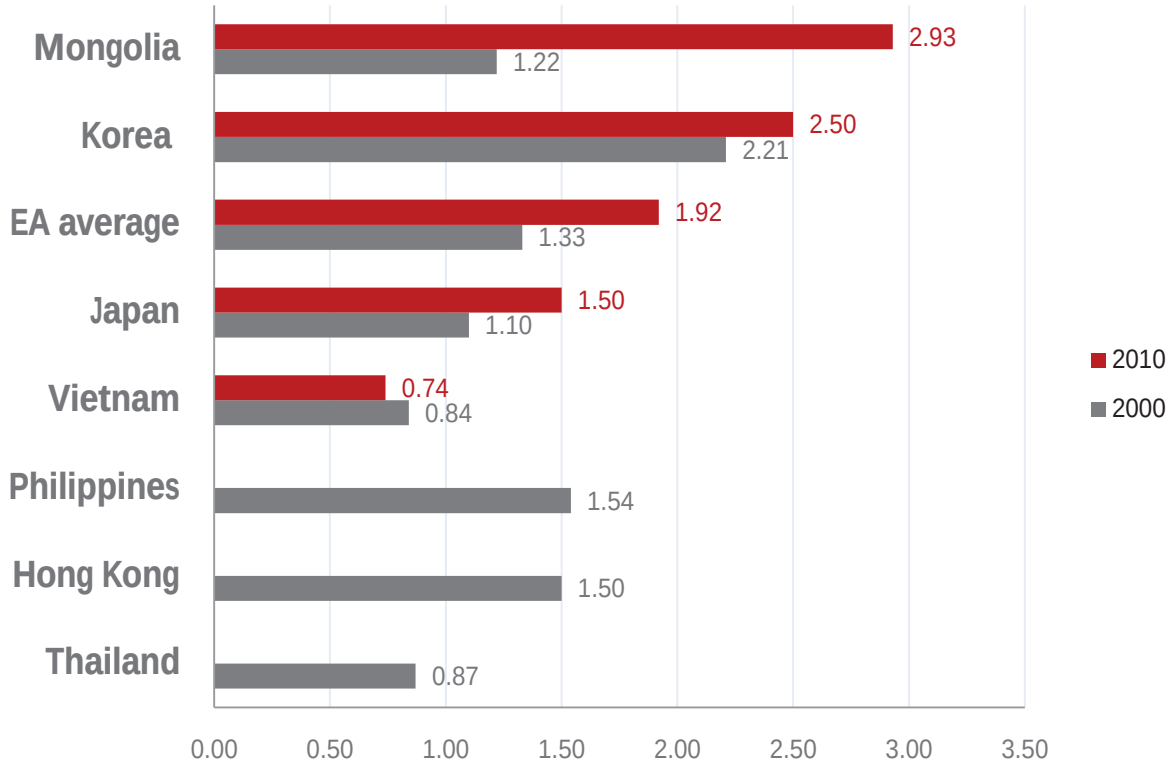
Analysis of System Health Indicators

Three lead indicators were used to look at the drivers of outcomes: spending on tertiary education, spending on research, and degree of autonomy.

Total Spending on Tertiary Education as a Share of GDP

In those East Asian economies where data were available, the analysis noted that average public and private expenditure on tertiary education grew from 1.33 percent of GDP in 2000 and to 1.92 percent in 2010. As shown in Figure 4, Mongolia was the leading spender on tertiary education in 2010, while Vietnam spent the least as a percentage of GDP.

Figure 4. Public and Private Spending on Tertiary Education as a Share of GDP

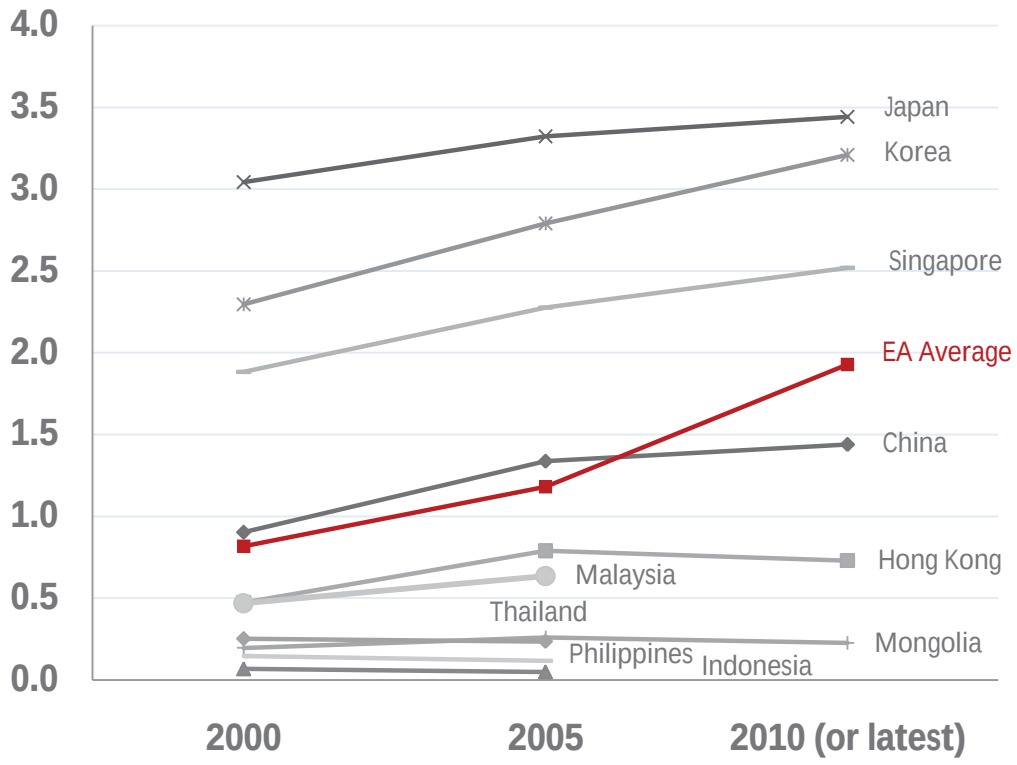


Sources: UIS, HDNED – UNESCO Bangkok survey 2010

Public Funding for Research as a Share of GDP

Investment in research grew slowly between 2000 and 2007, the latest available year of data (the exception is Hong Kong for which data was available for the year 2008). In 2007, the average expenditure on research and development (R&D) in the region was 2.2 percent of GDP. The economies with the highest levels of R&D expenditure were Japan, Korea, and Singapore, while Indonesia (0.05 percent), Philippines (0.12 percent) and Lao PDR (0.04 percent) were at the low end of the expenditure spectrum.

Figure 5. Research and Development Expenditure (% GDP)



Source: UNESCO Institute of Statistics

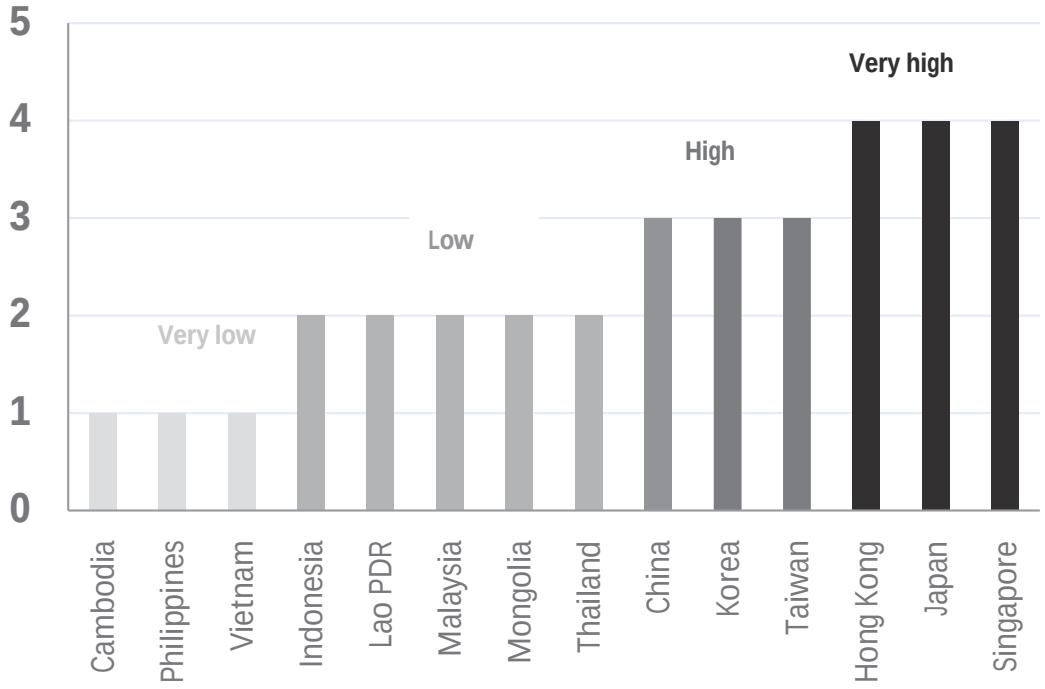
Governance – Degree of Autonomy

This indicator measures the level of management autonomy enjoyed by tertiary institutions. Economies were scored on a four-point scale based on how many of the four characteristics of a fully autonomous system they exhibited according to `key legal and regulatory documents such as higher education laws, ministry of higher education regulations, etc. The four characteristics of a fully autonomous system are: (1) independent management of finances; (2) independent appointment of leaders; (3) autonomy in recruitment of students/staff; and (4) academic freedom, meaning autonomy over the formulation of academic content,

Therefore, if an economy had no formal policies on the governance and management of tertiary institutions, it would receive a score of 1, and would be categorized as having "very low" policies on governance. An economy would receive a score of two, defined as "low", if its public institutions had one or two features of a completely autonomous system. An economy would be scored as three or "high" if public institutions had three features of a completely autonomous governing system. Finally, economies whose public institutions had all four features of a completely autonomous governing system would be categorized as "very high" and given a score of four.

For example, Malaysia was categorized as having "low" policies in the area of governance and received two points out of four) because Malaysian institutions still lack autonomy over such key areas as the independent appointment of leaders, and the government continues to maintain significant central control of public institutions (Raza, 2010).

Figure 6. Governance – Degree of Autonomy



Source: Raza (2010)

Conclusions

This chapter introduces a conceptual framework for measuring the performance of a tertiary education system and identifying the degree to which an economy has aligned appropriate policies and resources to drive performance in the future. The application of this framework to the systems of 14 East Asian economies has highlighted a number of trends. First, Singapore, Japan and Korea have established a leadership role in performance on attainment and research output between the 1980s and 2010. Not surprisingly, these results have been achieved in a context of ample financial support (both total expenditure and research and development specific investment in tertiary education) along with a favorable governance structure allowing for institutional autonomy.

Second, the economies that are currently leading in performance are not necessarily the same as those that are currently leading in improvement over time. An analysis of the attainment dimension showed that only one current leader (Korea) has also shown significant improvement over the past 10 years. Other top growers, including Thailand and Vietnam, do not currently have a comparable level of financial support or appropriate governance arrangement. It will be interesting to see what the ceiling on improvement will be for these countries without the advantage of relevant investments in institutional capacity. The SABER-Tertiary tool can thus be used to focus the attention of policy makers on the key inputs and processes likely to stimulate improved performance of the system.

This chapter provided an overview of only two performance measures (attainment and research output) and a cursory sample of the many inputs driving change on these dimensions. For example, the relationship between the level of preparation of incoming students and its impact on the efficiency of tertiary education systems (in terms of time to degree) in producing graduates was not discussed due to the unavailability of data over time for most countries under study. Similarly, the relationship between quality and research output in terms of type and level of accreditation of programs, was not explored both due to data constraints, and the relative lower impact on research output of this variable compared to those discussed. Thus, there is a need for further data collection on specific inputs to tertiary education systems including evidence-based research on the key inputs and policies required for system performance on the equity dimension.

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CHAPTER 11

Sequencing & Trade-offs

Kevin Macdonald & Sungmin Park

SUMMARY

Comparing education policies with those of high performing or "benchmark" systems provides some interesting insights into improving education quality, but what about context? Korea has been considered as a high performing country given its strong performance in international assessments and, more interestingly, has been at the same stage of economic development as every low and middle income East Asia country included in this report. Consequently, an interesting question to ask is how do a country's education policies today compare to that of Korea's when Korea was at the same stage of development? Two differences emerge. First, no country is paying its teachers as well as Korea did when it was at the same stage of development. Second, Korea has never provided an education stream that disqualifies graduates from academic tertiary programs; many East Asian countries provide vocational programs that are "dead-end".

Introduction

Comparing education policies and practices to that of high performing countries provides valuable lessons for improving the quality of education. Countries in East Asia, though, are at very different stages of development, and it is not clear whether the education policies used by wealthy, high performing countries are necessarily suitable for those that have lower institutional capacity and higher rates of poverty and inequality. An interesting case, however, is South Korea. Korea has been—at one time or another—at the same stage of development as every low and middle income country in the region. Since the 1960s, Korea's GDP increased 40 times, and this is largely attributed to the country's education system (Lee 2008). Given the success of Korea's education system to drive growth over the past 50 years, an interesting question to ask is how do low and middle income countries' education policies now compare to that of Korea when Korea was at the same stage of development?

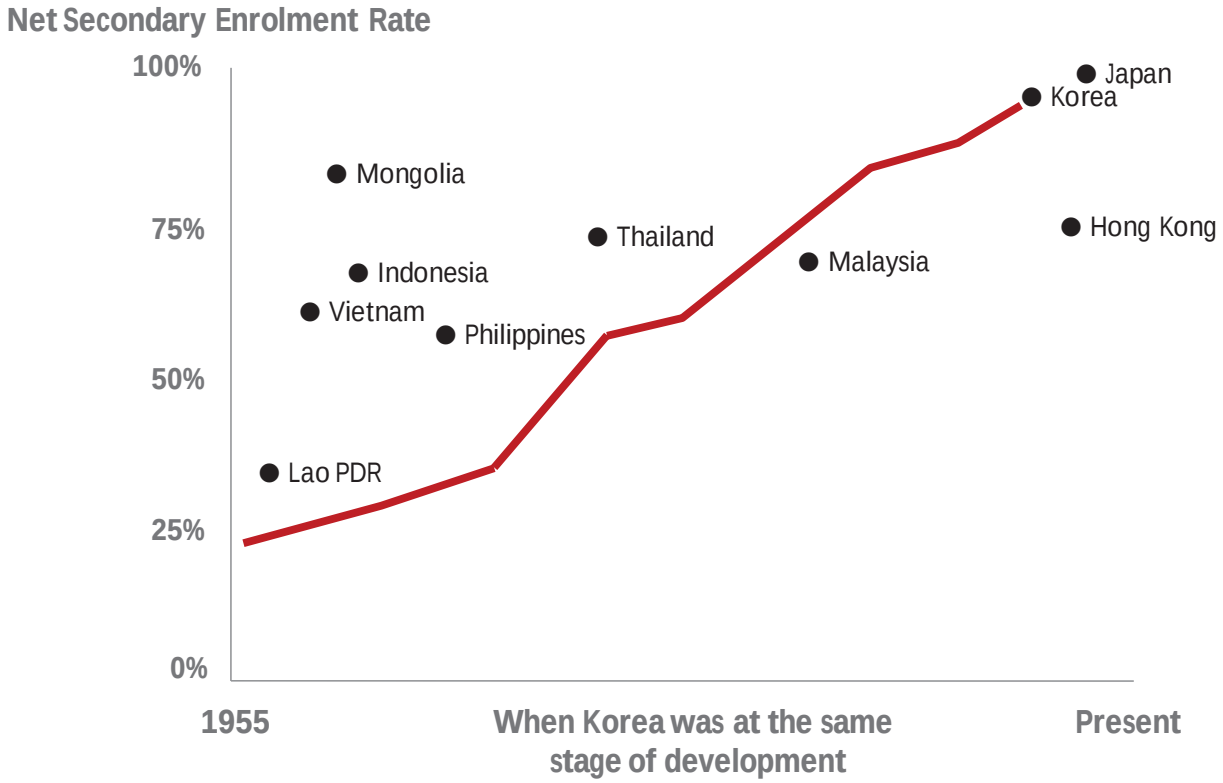
This chapter shows that Korea has consistently paid teachers highly and has never streamed children into vocational programs that restrict them from entering academic tertiary programs throughout its development. Low and middle income countries are paying their teachers much lower relative rates than Korea was at the same stage of development; moreover, many stream students into vocational programs that prevent entry to academic programs or to tertiary education opportunities. Other policies and practices, such as school autonomy and the use of national assessments, Korea has adopted more recently as the evidence base for their effectiveness has grown, and low and middle income countries are ahead of what Korea was doing at the same stage of development.

Learning from Korea's Past

One of the most notable education strategies that Korea adopted was the sequenced expansion of its schooling system. First, primary enrollment expanded until it reached approximately 90 percent by the early 1960s. Then, secondary enrollment became the focus, and was expanded throughout the 1960s and 1970s. But it was not until middle and upper secondary schooling became nearly universal, higher than 80 percent, that the focus turned to tertiary education.

Between 1990 and 2005, the tertiary enrollment rate increased from 23 to 62 percent. Low and middle income countries, however, are not following this same sequence. Figure 1 presents the net secondary enrollment rate for East Asian countries aligned to when Korea had the same GDP per capita. For example, Thailand has a net secondary enrollment rate of 72 percent; whereas when Korea had the same GDP per capita, its net secondary enrollment rate was 57 percent. In fact, almost all low and middle income countries have secondary enrollment rates that exceed those reached by Korea at the same stage of development, suggesting that these countries are taking a different approach to that of Korea.

Figure 1. What was Korea's Net Secondary Enrollment Rate when Korea was at the Same Stage Development?



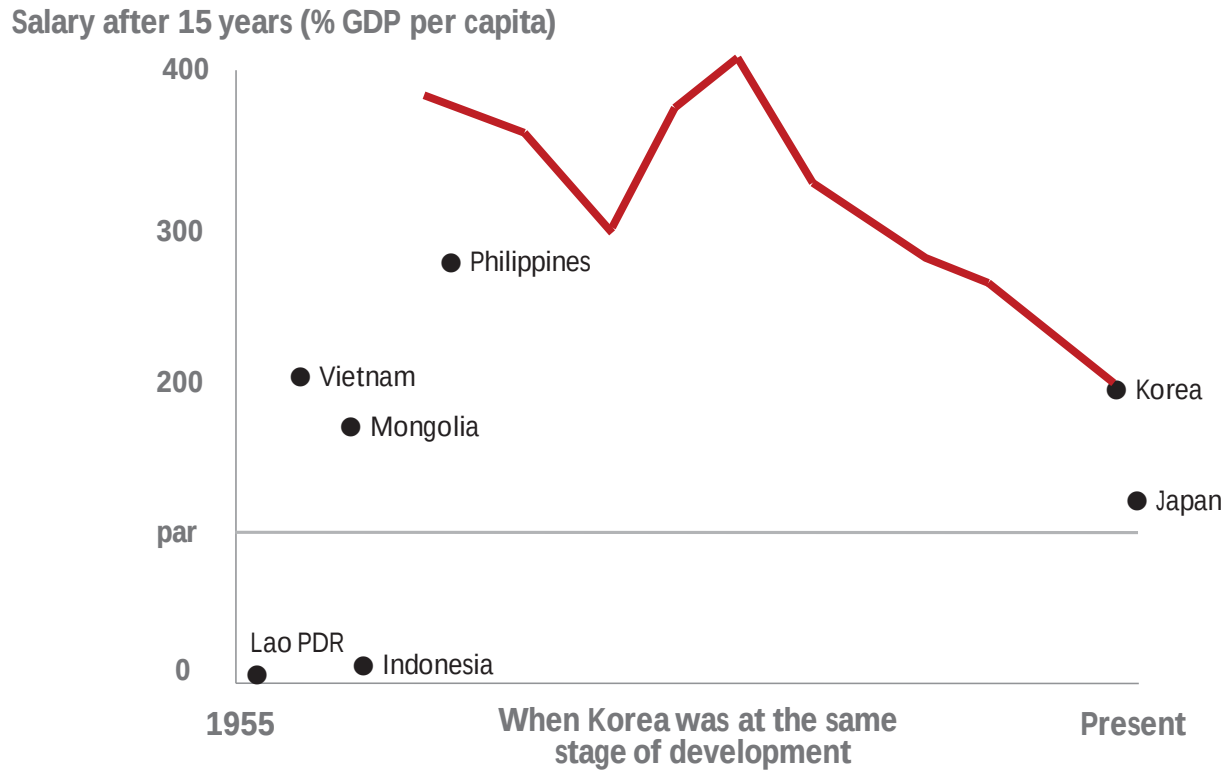
Source: KEDI 2007, UNESCO Institute of Statistics/EdStats

Teacher Policy

Researchers in Korea attribute its strong performance in international exams that test education quality such as PISA and TIMSS, to being able to attract the "best" into teaching; according to Kim et. al (2008). In Korea, the competition to be a teacher is tough – in 2006, only 15.3 percent of those who received teaching certificates after completing programs at secondary teacher education institutes, were employed by public and private schools

Korean teachers have also received higher remuneration as compared to other countries. In 1965, teachers with 15 years of experience were paid 3.9 times GDP per capita, and in 1985 the ratio peaked at 4.2 times. Figure 1 presents teacher salaries after 15 years as a percentage of GDP per capita throughout in Korea since 1965; it plots this percentage for East Asia countries at the time in Korea's past when they had the same GDP per capita. For example, teachers in the Philippines receive approximately 2.8 times GDP per capita. The GDP per capita overall in the Philippines is about $1,200 (in constant 2000 dollars) – Korea had the equivalent GDP per capita in 1964. In other words, when Korea was at the same stage of development as the Philippines is now, its teachers received salaries that were 3.9 times GDP per capita, which is higher than the Philippines. Although data for Korea only goes back as far as 1965, the implication for client countries is that they are not paying teachers enough.

Figure 2. How Well are Teachers Paid Compared to Korea at the Same Stage of Development?



Source: UNESCO World Education Indicators (2006), SABER Teacher Data, KEDI (2007), Lee et al. (2000).

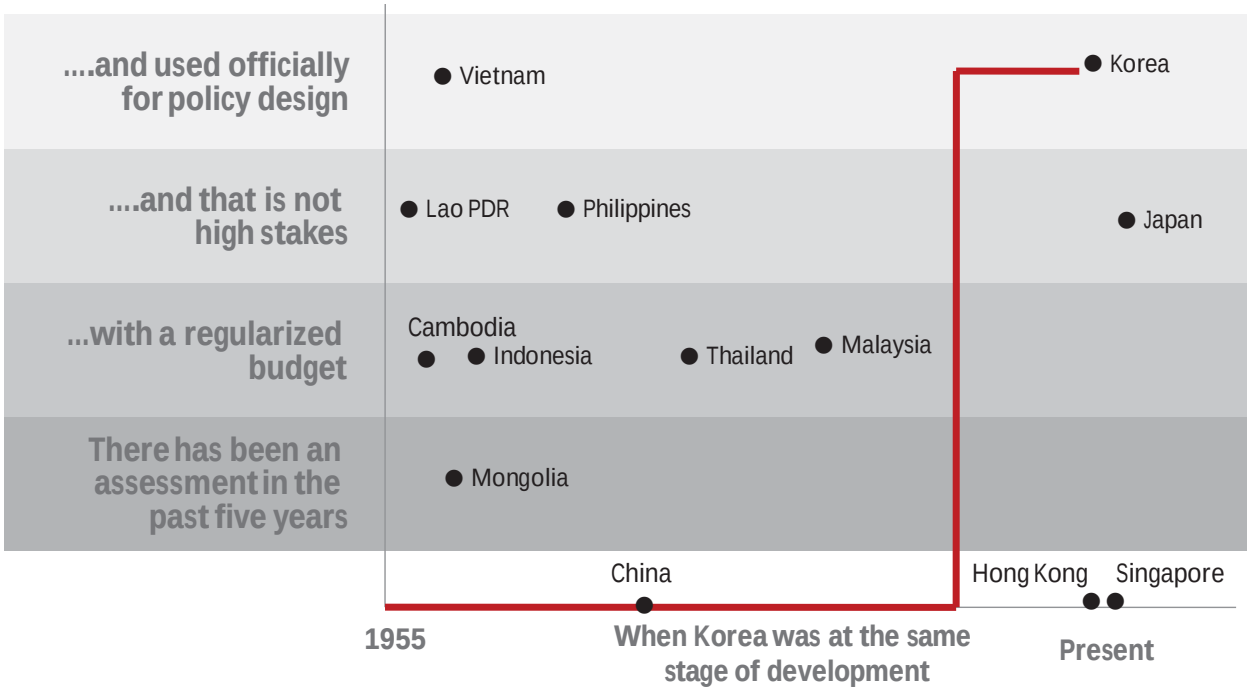
Assessment

Korea also uses a sophisticated national assessment to monitor the progress of education quality and to formulate policies and make decisions. Since 1999, Korea assesses all 6th, 9th, and 10th grade students using the *National Assessment of Education Achievement* (NAEA). Prior to 2008, the assessment was sample based, covering 1 to 5 percent of all students.

Figure 3 compares the use of national assessments across different East Asian countries, looking at four different indicators. In addition to whether there has been a recent assessment, it also looks at the enabling environment within the Ministry of Education by looking at whether there is a regular budget for the assessment, or if funding is more ad hoc. Since high stakes exams may not provide a reliable measure of student ability at the system level, Figure 3 also looks at whether countries' assessments are high stakes or not, and finally whether they are officially used for policy design or decision making.

Korea's NAEA achieves all four of these characteristics, but only since 1996. Before this, when Korea was at the same stage of development as the low and middle income countries included in this report, it did not have a national assessment; these countries are ahead of where Korea was in this respect.

Figure 3. Comparing National Assessments to Korea when Korea was at the Same Stage of Development

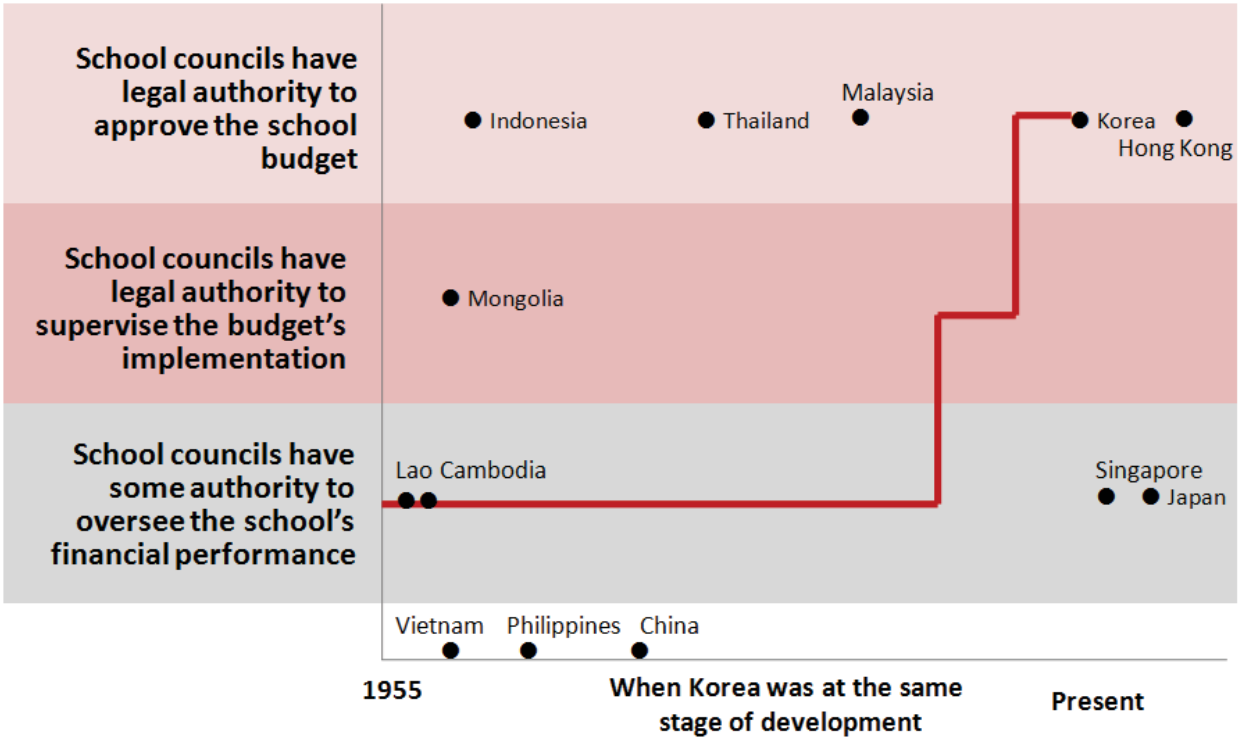


Source: SABER Assessment Data

Accountability to Parents

The accountability of schools to parents is also a defining feature of the Korean education system. Since 1996, the school council system was introduced to every public school to supervise budget implementation; this was expanded to all schools in 1999. In 2005, school councils were given the legal authority to approve the school budget. Prior to 1996, parent-teacher associations existed but had a very limited role in overseeing the school's financial performance. Consequently, parents in most East Asian countries have a much stronger influence over decision making at their school than Korea did at the same stage of development. Vietnam, China and the Philippines stand out as the only countries where parents do not even have a limited role in overseeing finances at the school.

Figure 4. How much Influence Do Parents Have Over the School's Finances Compared to Korea the Same Stage of Development?

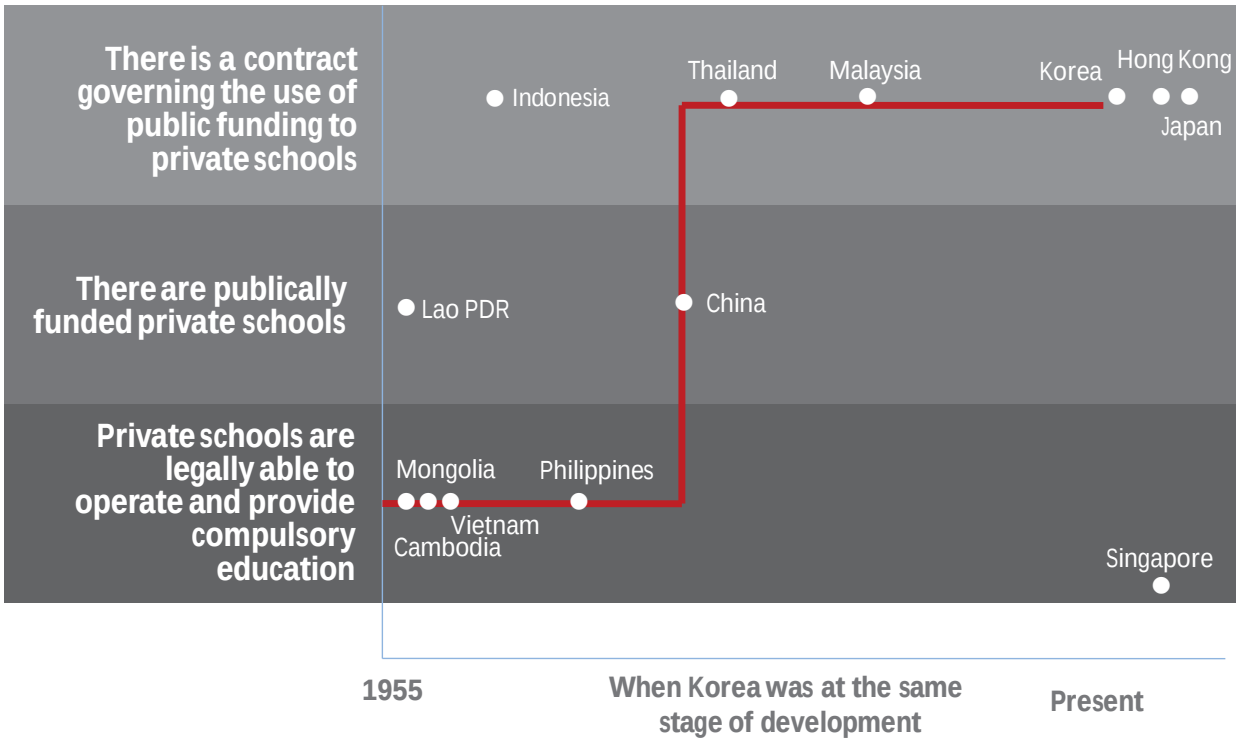


Source: xxx

Engaging the Private Sector

Figure 4 shows that engaging the private sector with public funding has been a practice in Korea since 1971. Prior to 1971, tuition and PTA contributions were the main sources of funding for schools, and no public funding was allocated to them. Private school enrollment rates were quite high during Korea's early development; in 1970, 48.6 percent of middle school students were enrolled in private schools but this had declined to 20 percent by 2004 (KEDI: 138). When Korea began providing private schools with public funding—initially teacher salaries—Korea's GDP per capita was just over $2,100 (in constant 2000 dollars). Most East Asian low and middle income countries shown in Figure 5 follow the same pattern; those below this level of development do not fund private schools with public resources while those above provide public resources.

Figure 5. Comparing the Role of the Private Sector to Korea when Korea was at the Same Stage of Development

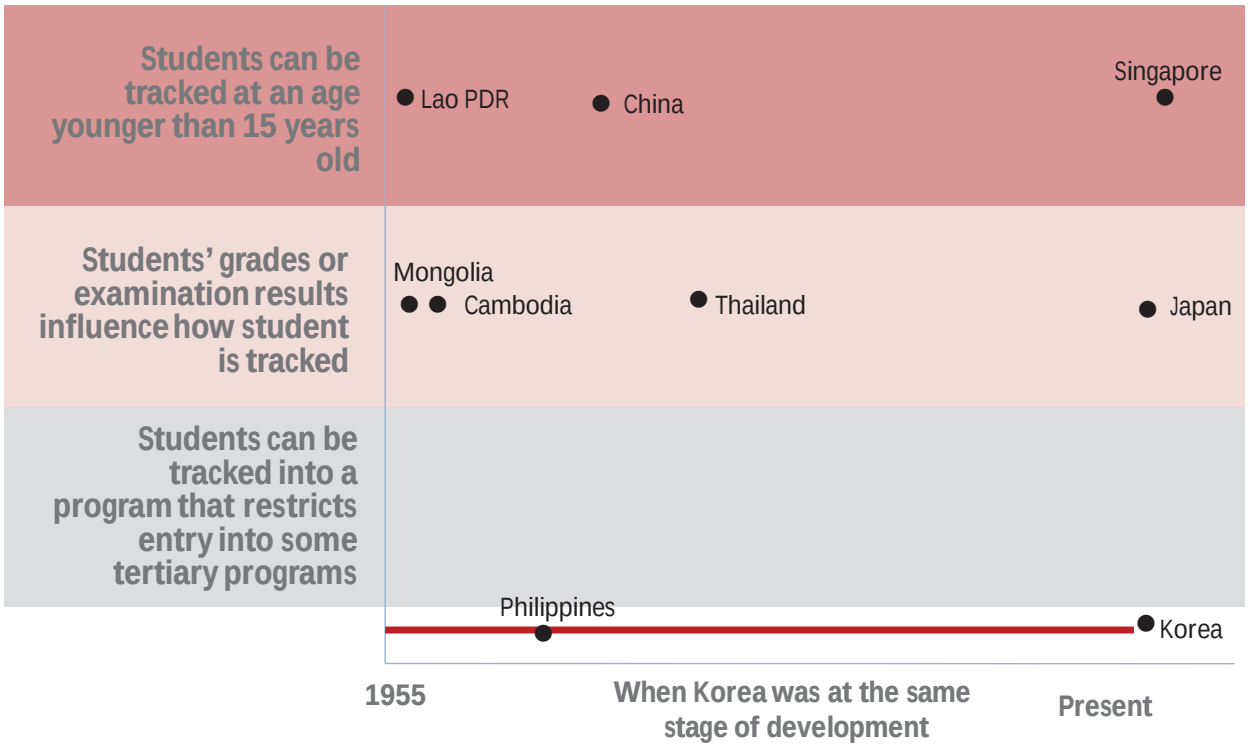


Source: xxx

Tracking

Tracking students into terminal degree, or "dead-end," programs has shown to be both inequitable and detrimental to student cognitive ability. Korea adopted a 6-3-3-4 single track education system to ensure that high school graduates are still qualified to apply to universities. However, tracking to vocational programs does exist in Korea; however, the difference between Korea and other countries is that vocational programs while not orientated towards university admission do not disqualify a student from entering. Vocational tracks in most East Asian countries, as shown in Figure 6, either disqualify students from all or at least some tertiary education programs; these are the ISCED B and C destinations as defined by UNESCO. The key finding from Figure 6 is that Korea has never at any stage of development produced secondary graduates that are not able to enter academic tertiary programs let alone technical or vocational tertiary programs.

Figure 6. How Do Tracking Policies Compare to Korea at the Same Stage of Development?

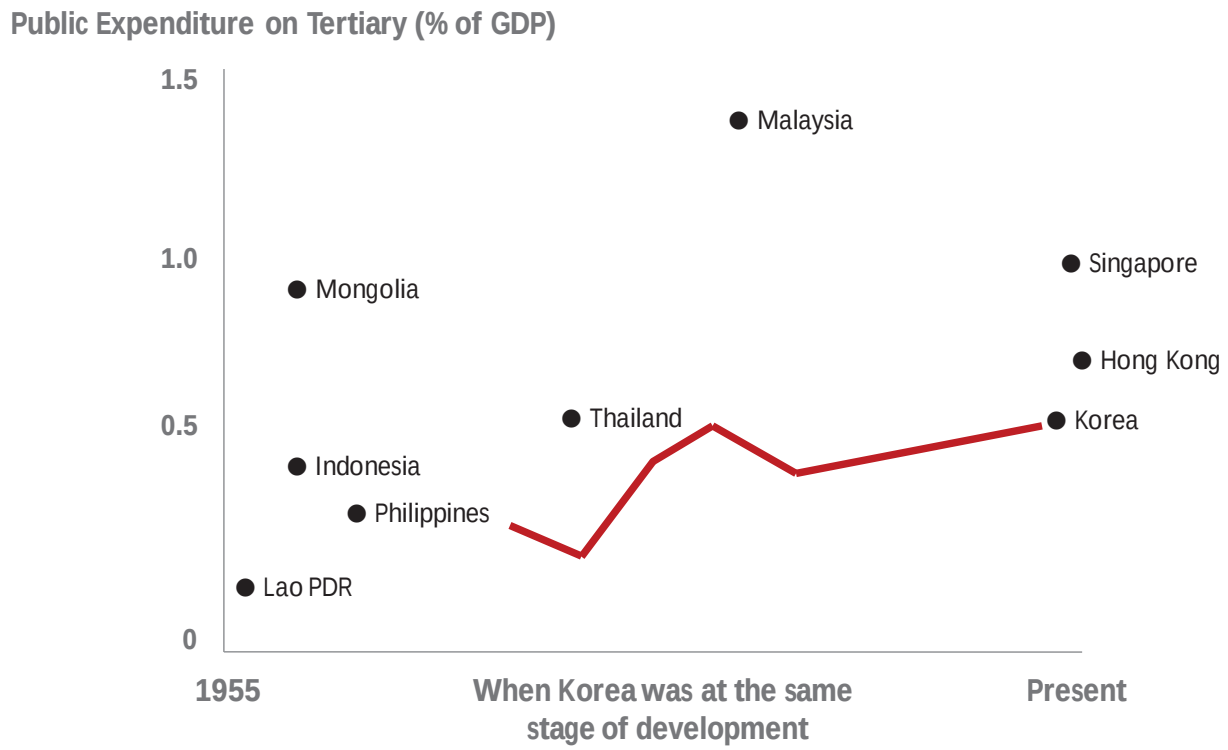


Source: xxx

Tertiary Education Spending

The expansion of Korea's education system is typically defined in stages and following a sequence starting with primary, then secondary, and now tertiary. As Figure 7 shows, the amount of public expenditure as a percent of GDP spent by Korea on tertiary education has grown from 0.3 percent in 1970 to 0.5 percent. Figure 6 also shows that some low and middle income country governments are spending about the same as Korea did at the same stage of development while other countries, notably Mongolia and Malaysia, are spending much more. For example, Malaysia's public expenditure on tertiary education is 1.4 percent which is about 2.7 times more than what Korea spent at the same stage of development.

Figure 7. Comparing Public Expenditure on Tertiary education with Korea at the Same Stage of Development



Sources: World Bank WDI, EdStats, UNESCO Institute of Statistics, World Bank (2000), Thomas et al (1999)

But are the lessons from Korea's past still relevant today?

The limitation of comparing the education policies of a country today to those of Korea's past is that the global context has changed dramatically over the past 55 years. The policies Korea was pursuing in the 1950s and 1960s may not be optimal for countries today, and there may be policies that Korea was not pursuing at the same stage of development that are needed now.

Figure 7 reveals one such important difference: low and middle income East Asian countries are much more integrated into the global economy than Korea was at the same stage of development. Cambodia, Thailand, and Malaysia have manufactured exports equal to around 50 percent of GDP. As a result, Malaysia has a level of manufactured outputs as a percent of GDP that is 1.8 times what Korea had at the same stage of development, and Thailand has 2.5 times. And if Korea's manufactured exports as a percent of GDP grew from 1955 to 1962, as the trend suggests, then Cambodia's would be 120 times larger than what Korea had at the same stage of development. Unless there were dramatically higher exports in Korea prior to the earliest data, in 1962, all low and middle income East Asian countries have a much higher level of manufactured exports as a percent of GDP than Korea did at the same stage of development. And because these are manufactured exports, not agricultural or energy exports, the volume of these exports suggests a high degree of integration into the global knowledge economy that Korea did not have at the same stage of development. Human capital formation, and the policies that drive it, need to be stronger for these countries than Korea's at the same stage of development.

Figure 8. Comparing Manufactured Exports as a percent of GDP with Korea at the Same Stage of Development

Source: World Bank World Development Indicators

Are East Asia's education policies on the right track?

For some education policies, such as provision of public funds to private sector schools, low and middle income East Asian countries are pursuing a similar path as Korea. But for other policies, there are some stark differences. Teachers are paid much less than what Korea was paying at the same stage of development, and while Korea provides vocational education, it was never at a lower standard that disqualified graduates from applying to the same university programs as those students following the general curriculum, unlike in almost every low and middle income country today. Additionally, some policies and practices are more recent innovations in Korea. For example, the use of assessments and the accountability of schools to parents have only been strengthened in recent years. As a result, many low and middle income countries are more advanced in these two areas than Korea was at the same stage of development.

Korea's past education policies provide a benchmark to low and middle income countries facing similar development challenges. But as shown, low and middle income countries are much more export-orientated in terms of manufactures than Korea—the model for export-orientated growth—ever was. Given their more robust integration into the global economy than Korea, human capital formation will be more crucial to their success, and consequently, their education policies will need to exceed the benchmark set by Korea throughout its rapid development.

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CHAPTER 12

Capacity Development

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Harry Anthony Patrinos

SUMMARY

The ability of a country to benefit from benchmarking depends largely on its capacity in a range of domains. Concerns about adequate capacity have been a significant part of the discourse on development cooperation. The approach of donors to capacity development has evolved over the years. Initially external technical assistance filled the gaps to meet immediate capacity needs, and externally supported projects implemented ad-hoc capacity development activities, often through training and short term measures. Over time, the focus shifted to enabling country systems to become more capable to implement reforms. The growing trend of using general and budget support approaches facilitated this approach.

Capacity Development and Aid Effectiveness

The 2005 *Paris Declaration on Aid Effectiveness* gave top importance to country ownership and leadership in capacity development (CD). The *Bonn Consensus* in 2008 followed, with a list of six capacity-development operational priorities which became part of the *Accra Agenda for Action*. These are:

1. **Integrating capacity development as a core element in national, sector, and thematic strategies and development efforts;**

2. **Supporting developing countries to take the lead to create the enabling environment for capacity development** by addressing systemic impediments to local capacity development;

3. **Responding to demand for technical co-operation** from developing countries rather than taking a supply-side approach, and use of local and regional resources, including South-South arrangements;

4. **Assessing, strengthening and promoting greater use of country systems** to implement policies and manage public resources, including procurement, financial management, results, statistics and information systems;

5. **Enabling developing countries to undertake capacity development of civil society and the private sector so that they can play their developmental roles more fully;**

6. **Assisting countries in fragile situations** with tailored and coordinated capacity development for core functions earlier and for a longer period to help build or re-build local institutions.

Capacity development work in the context of aid effectiveness seeks to strengthen CD methodologies in order to create pragmatic results and indicator frameworks that integrate CD results, are operationally focused, and that explicitly leave room for adaptation during implementation (OECD/DAC 2011). Capacity development as a key concept for enhancing aid effectiveness often has three main dimensions of integration: (i) interactions among stakeholders at various levels; (ii) linkages among different subsectors in the education sector, and (iii) linkages/combinations of different aid modalities, namely loans, grand aid and technical cooperation (Hirosato and Kitamura 2009).

In preparation for theis year's 2011 *Busan High Level Forum on Aid Effectiveness*, a review of the *Accra Agenda for Action* for capacity development was undertaken. The review indicated how the Aid Effectiveness Agenda is helping to raise the profile of CD by focusing on country ownership, systems and processes. However, while countries and development partners have made gains in coordinated, country-owned capacity development initiatives, there are still only few examples of sector-specific plans and strategies that address CD in an integral manner. Moreover, there is still considerable work to be done to ensure harmonization and alignment of CD support by external partners at the sector level (OECD/DAC/LenCD 2011).

There is now increasing recognition that capacity development is integral to achieving and sustaining education sector performance. The achievement of key educational objectives is contingent upon national systems being able to strengthen sector capacity. For this to happen, CD needs to be an integral component of education sector policies and strategies. Ultimately, adequate sector capacity helps to translate inputs into outputs, outcomes and impact.

Capacity for National Benchmarking

For evidence-based policy and planning, countries need comprehensive, reliable and timely data covering all sub sectors of the education system. Comprehensiveness, reliability, and timeliness are key factors for the effective use of data by countries to benchmark the performance of their education systems. Countries face the challenge of ensuring that all types of educational institutions, including those in the private sector, are comprehensively covered in a single, national data base. In general, the Education Management Information System (EMIS) tends to cover only public educational institutions, and does not incorporate data from private sector providers, particularly if they are within the unregulated sector.

Data reliability is also a constraint, as it is not uncommon to have inflated reporting of enrolment and other indicators. In addition to internal checks and balances, countries also need to ensure congruence between different sets of national data. Some dimensions of education data are collected through national population census and social sector survey data, and there could be substantial divergences. With growing emphasis on school-based data and household survey data for local planning, administrators are often challenged to triangulate information from different sources.

There is much to be gained from using a robust and decentralized matrix of data that captures different dimensions of education to allocate resources, since the allocation of budgets is often 'norms' based, rather than based on the degree of educational disadvantage arising from social exclusion, geographic remoteness, poverty and other factors. Resources that are distributed 'equitably' across regions, may not therefore contribute to establishing 'equity' in education. A vital pre-requisite for identifying and supporting areas that are lagging behind educationally is the existence of reliable, disaggregated databases, which can provide information on key educational development indicators.(Jhingran and Sankar 2009).

Developing counties also lack the capacity to collect and report internationally comparable data in a timely fashion. Although countries are providing an increasing amount of data for international reporting over time, there was a dip between 2009 and 2010. For example, the proportion of UIS/UNESCO indicators that are estimated using data provided by economies in East Asia is much lower at the tertiary level than at primary and secondary levels. The capacity of economies to participate in benchmarking internationally requires attention to such capacity. Table 1 below outlines key capacity indicators that benchmark CD.

Table 1. Capacity Indicators in Data and Information Systems

CAPACITY AREA	TYPES OF INDICATORS AND MEASURES
Comprehensive Education Data Systems for Evidence-based Policy and Planning	**Percentage of educational institutions covered by the National Education Data System at primary, secondary and tertiary levels for key educational indicators**
	Public institutions
	Private institutions, including unregulated sector private sector
	Institutions run by charities, corporates and other entities
	Institutions run through foreign franchises
	On-line educational services
Comprehensive Data Coverage on Teachers	**Percentage of teachers covered in a teacher information data base (Regular and part time teachers and 'Para' teachers)**
	Existence of a national and decentralized teacher data management information system that covers
	Teacher deployment
	Teacher qualifications
	participation in training and professional development
	career management information
Effective Use of Data and Information Systems for the Allocation of Budgetary Resources	Percentage of education budget allocated based on a gap analysis and use of instruments such as an Education Development Index
Third Party Validation of Education Data and Progress on Education Indicators	Percentage of education data and education human resources covered under alternative data collecting and reporting systems, including civil society
Country Leadership in Data Systems, Analysis and Reporting	Percentage of data is owned and managed by in-country mainstream institutions rather than by project-type EMIS; Share of total funding for data collection, analysis and reporting included in regular education budgets
Availability of Internationally Comparable Data on Key Education Indicators	Percentage of UIS indicators estimated with data reported by the country

Box 1. Case Studies from India

Using Data for Resource Allocation

The *'Sarva Shiksha Abhiyan'* Elementary Education Program in India uses an Educational Development Index (EDI) at the national, state and local levels for planning and resource allocation. The EDI captures a composite picture of the education systems, including the number of out of school children, gender gaps, student-classroom ratios, and student-teacher ratios to allow a differentiated response strategy. This is a concrete example of using data from the *District Information System for Education* (DISE) not only for allocating resources, but also for tracking the closing of gaps in key educational parameters. At the country level, the same data base allows national policy makers to know which districts have the lowest EDI and to approve additional financial and technical resources to ensure progress over time. Independent impact evaluation of the program is carried out by 41 social science research institutes and universities. Reports are shared at all levels of government and with donors to ensure good practices and experiences are circulated across the country.

Citizens' Report on State of Education

The Annual State of Education Report (ASER) is a citizens' report on the state of education in the India. The report has been produced every year since 2005 by *Pratham*, an NGO. In 2010, in its sixth year, the ASER report had covered 522 districts, over 14,000 villages, 300,000 households, and almost 700,000 children. Using a common methodology, the report tracks not only key educational indicators such as enrolments, attendance and dropout rates, but also undertakes testing and reporting of the level of student learning, adapted for language and linked to curriculum standards of each State in the country.

Source: www.sssa.nic.in; www.pratham.org

Monitoring Quality and Tracking Improvements

Economies in East Asia have made considerable progress in assuring basic provisioning for education, however, the challenge to augment quality is still pressing. Unlike goals such as universal enrolment, which is a quantitative and terminal measure, quality is more complex and dynamic. Even at high levels of quality, there is always more to be done. Assuring quality requires the interplay of several factors which are often hard to measure. However, it *is* possible for countries to develop a matrix of quality parameters.

Teachers are considered the single most important factor in determining the quality of an education system. Countries invest considerable resources in teacher training, yet the results and impact of such training in classroom processes and on student learning is difficult to establish and complex to monitor. Most countries do not maintain a comprehensive data base on teachers that includes information not just on their career management aspects, but also on their professional development path. By integrating teacher management information systems with school and student information management systems, quality planners can address the matrix of various factors that contribute to quality improvement.

Quality assurance systems in East Asia are nascent. Countries are just beginning to articulate policies for minimum teacher and school standards, and developing training programs to support these policies. The ultimate test of quality is derived from student learning for which countries implement national assessments of student learning. School quality assurance and accreditation mechanisms are being developed. However, school systems need to develop roadmaps that set realistic goals and targets within an overall time horizon. For example in Lao, the *Schools of Quality* program incorporates 70 indicators for 25 standards across 6 dimensions (UNICEF Lao PDR 2011). Measuring, monitoring and ensuring continuous improvements across such a large matrix of quality standards not only requires a fairly sophisticated data management system, but also capacity at different levels to track, monitor and improve conditions in schools against established benchmarks. Table 2 below outlines key capacity indicators for education quality.

Table 2. Capacity Indicators for Education Quality

CAPACITY AREA	TYPES OF INDICATORS AND MEASURES
EDUCATORS **Building Professional Standards of Teachers and Teacher Cadre Management**	• Percentage of teachers meeting established minimum qualifications for different levels of education • Percentage of teachers receiving annual in-service training relevant to their teaching assignments • Percentage of teachers participating in quality assurance initiatives of schools and student learning
EDUCATIONAL INSTITUTIONS **Ensuring Minimum Quality Standards in Educational Institutions**	• Percentage of schools covered under a school quality assessment system • Existence and coverage of an independent accreditation council/board for schools, technical and vocational education institutions (TVET) • Existence and percentage coverage of an independent quality assurance and accreditation agency for higher education institutions
LEARNERS **Quality Assurance of Learners**	• Existence and percentage coverage of an independent examinations board • Existence and coverage of a national system of student assessment of international standards • Number/percentage of TVET and Higher Education Institutions covered under a national qualification framework • Country participation in internationally comparable learning assessment systems such as PISA, TIMSS, PIRLS

Capacity for International Benchmarking

Even as countries struggle with ensuring capacity to benchmark performance nationally, there is growing evidence that they are starting to think about international benchmarking as well. These trends towards 'internationalization' are attempts to augment national standards to reach internationally recognized levels, and help students gauge their competitiveness in the labor market. In particular, there is a growing participation of countries in the OECD's PISA, which provides the most universally recognized international standard for student learning. Globalization of standards not only relates to students' academic achievement, but also to schools and educational institutions.

In the Philippines, the Center for Educational Measurement, Inc. (CEM) has partnered with the *Australian Council for Educational Research* (ACER) to introduce the *International Benchmark Tests* (IBT). The IBT seeks to bring useful comparisons of student performance against international benchmarks. In Indonesia, the *International Standard School project* is a new education policy initiative that seeks to prepare students for global competitiveness. The policy accredits the status of an '*International Standard School'* to schools that have completed set standards.

International assessment tools and standards help schools to gauge the success of their students, and benchmark achievement against other countries. Recently the importance of global or mutual-recognition of standards has gained ground in the vocational and higher education spheres, where there is mobility of students and faculty across borders. Another observable trend is the growth in regional networks that address quality assurance in the context of regional mobility, as well as the mutual recognition of qualifications. These include the Asian University Network (AUN); the Asian Pacific Association of International Education (APAIE), University Mobility in Asia and the Pacific (UMAP); The Association of South East Asian Institutions of Higher Learning (ASAIHL); The Association of Universities of Asia and the Pacific (AUAP), The APEC Study Centres Consortium, and the Asia Pacific Quality Network (AUN). These trends will become more prominent over the next few years, and there is a need to strengthen the ability of country systems to ensure relevant, credible, and internationally benchmarked systems.

Regional Initiatives for Peer Learning

There are significant gains to be made from regional collaborative efforts. The European Union bloc has implemented many initiatives for coordination and harmonization between education systems of its Member Countries, and has established peer learning platforms for teachers, education policy makers and administrators. Within Asia, these types of initiatives are emerging, and there is much to be gained from strengthening cooperation efforts in education through regional networks of research and peer learning platforms.

- The *Asian Network for Training and Research Institutions in Educational Planning* (ANTRIEP) was set up with the objective of promoting peer learning and capacity building in participating institutions. The network also addresses the growing, and increasingly diversified need for skill development in educational planning and management in the region. Supported by the IIEP, the network facilitates joint work between member institutions, particularly in the area of school management and head teachers. Annual meetings are used as venues for experience sharing and south-south cooperation. However, the network has lost momentum in the recent years.

- Another regional network supported by the IIEP, is the *Southern and Eastern Africa Consortium for Monitoring Education Quality* (SACMEQ) which is a collaborative network of 15 education ministries to promote research that can be used by decision makers. With an important mandate for capacity development, IIEP stresses the importance of national ownership, long term investment in capacity development, impact assessment of capacity development, and recognition of the professional character of education planning and management (De Grauwe 2009).

- The *Regional Network for Education Research* initiative seeks to improve the capacity for evidence-based education policy formulation and reform in the Middle East and North Africa. The 3-year initiative aims to create a virtual community of practice, and continue to expand tailored training and capacity building programs across the region. The initiative was funded by a World Bank endowment to the *Jordan National Center for Human Resource Development*. The initiative has supported a series of training seminars and workshops to build data-management skills, as well as a mentoring program to help participants practice these skills. Country team participants have also been trained in education policy analysis and on the preparation of policy notes using student assessment data collected by the countries' participation in TIMSS.

Capacity Development for Benchmarking

A systematic approach to strengthening capacity for education needs concrete measures to increase school quality, and specific indicators to assess outcomes. The following approaches to building this type of capacity could be further advanced in East Asia.

1. **The incorporation of CD in education systems plans, along with proper budget allocation.** Often CD initiatives are not adequately funded, or supported by a comprehensive plan for implementation.

2. **Measurable targets and indicators for CD.** Successful CD initiatives require concrete and measurable objectives.

3. **Demand driven CD.** CD activities could be instigated by international donors and national-level actors, but effective CD requires a buy-in from the ground-roots level . Generation of demand for CD requires foundational activities such as peer sharing and exposure visits.

4. **Diversifying the supply of CD.** While public institutions have a strong role to play in CD activities, it is clear that provision can be diversified to include NGOs and the private-sector, provided this ensures value for money, quality and innovation.

5. **CD Planning.** A comprehensive CD plan should incorporate activities at the individual, institutional and system level to enable sustainable institutional development and renewal of CD efforts.

6. **CD needs to be buttressed with adequate incentives and rewards.** CD alone is not sufficient to guarantee quality education, and must be complemented with a well-designed rewards and incentives system, which encourages higher level performance of all practitioners.

	INDIVIDUALS	INSTITUTIONS	SYSTEMS	
CAPACITY DEVELOPMENT	▪ Teaching professionals (teachers, instructors, lecturers, professors) ▪ Instructional Leaders (Principals/Head Teachers, heads of faculty, heads of training institutions) ▪ Teacher Educators ▪ (Teacher Trainers, Supervisors) ▪ Curriculum Experts ▪ Testing and certifying experts	▪ Teacher Training Institutions ▪ Quality Assurance Institutions ▪ Regulatory and Accreditation Institutions ▪ Examination Board ▪ National authority on student assessment	▪ Planning, budgeting and expenditure management for education ▪ Recruitment and performance management of educational and administrative personnel ▪ Monitoring, review and evaluation of education ▪ Governance of education systems, including at decentralized levels	INCENTIVES FOR PERFORMANCE

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About SABER

System Assessment and Benchmarking for Education Results (SABER) is an initiative that helps countries systematically examine and strengthen the performance of their education systems to achieve learning for all. The World Bank is working with partners around the world to develop diagnostic tools that benchmark education policies according to evidence-based global standards and best practice.
By leveraging global knowledge, SABER fills a gap in the availability of policy data and knowledge to improve the quality of education.

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“As an experienced implementer of educational policies I consider SABER a useful tool for those looking at ways to improve educational systems. I think SABER is useful for educational reformers when diagnosing their own system in a comprehensive way. It is beneficial when wanting to implement policies as it gives comparisons of different educational outcomes so that successful practices can be highlighted. In addition, SABER contributes to the tracking of policy implementation, showing the impact of the changes. And because the data is scrutinized, information systems become more accurate.”

Cecilia María Vélez White, former Minister of Education of Colombia and former Secretary of Education of Bogota, Colombia

“The SABER initiative is timely and valuable. High quality policy data is crucial for developing countries in the pursuit of relevance and excellence in their education systems. We appreciate the World Bank's efforts to build the SABER as a shared platform with stake holders and key partner agencies.”

Jouko Sarvi, Practice Leader (Education), Asian Development Bank