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## **Benchmarking Higher Education System Performance: a look at learning and teaching**

*Cláudia S. Sarrico*

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### **Why Look at Higher Education System Performance?**

Higher education contributes to economic progress by improving human capital and innovation and spurring wider social, cultural, and environmental development. As a result, as economies have developed, higher education has rapidly expanded. This growth reflects its benefits to individuals and society. However, there are questions about how well higher education is performing, and these concerns put pressure on higher education systems to improve (OECD 2017).

### **The Performance of the Education Function**

So far, most measures of higher education performance have focused on study success as measured by retention, progression and completion rates, and time-to-degree (European Commission 2015). Comparing these measures across systems give us, at best, a measure of

how efficient or productive systems are, but says little about the quality of graduate learning outcomes.

The use of these measures, in effect productivity measures, can also have a perverse effect on equity. If compared in a crude way, they will penalize institutions and systems with strong policies aimed at broadening access. As systems move from elite to mass higher education, the heterogeneity of the student body will need to be taken into account when assessing study success.

Simply using indicators of observed performance is not enough. The correct approach takes into account the difference between observed performance and expected performance, given the characteristics of the student intake in terms of socio-economic background and prior attainment (Johnes and Taylor 1990, The Economist 2017). However, such measures are often not provided because the data is not available.

Using measures of study success, as those described above, assumes that the quality of learning outcomes is generally the same across higher education. It is unlikely that this assumption was ever true, but now with increasing massification and diversity of higher education it is highly doubtful.

Several systems, such as Australia, England, Ontario, and across Europe, are developing projects to measure learning outcomes and even learning gains (Barrie et al. 2014, Weingarten 2014, Goff et al. 2015, Wagenaar 2018).

The OECD's Programme for International Student Assessment (PISA) compares the educational attainment of 15-year-old students worldwide. So far, no comparable program to PISA exists to evaluate higher education systems by testing the learning outcomes of graduates. Schleicher (2015) presents the problem well: "Without data on learning outcomes, judgements about the quality of teaching and learning at higher education institutions will

continue to be made on the basis of flawed rankings, derived not from outcomes, nor even outputs—but from idiosyncratic inputs and reputation surveys.”

Higher education has expanded enormously and so has the cost of providing it. Austerity measures have affected some systems in response to the 2008 financial crisis, and competing demands for other services often prompted countries to seek measures to make their systems more affordable.

Johnstone and Marcucci (2007) track trends, such as increasing unit costs of instruction, increasing enrolments, and faltering government tax revenues, that show how financing higher education is a challenge. Some solutions aimed at reducing costs (such as increasing the casualization of academic staff, student-staff ratios, and teaching loads) may negatively affect the quality of the education provided and the equity of outcomes.

Other solutions (such as diversifying the system, mergers, the use of technology in teaching and learning, and cost-sharing measures) may increase the sustainability of systems in the long-run by making it more affordable and ensuring adequate levels of funding.

For higher education systems, short-term cost considerations should not be prioritized over the outcomes and long-term value that the system provides in improving human capital, economic growth, and social development.

The affordability challenge of higher education is increasingly moving from simple economic considerations, cost containment, and adequate levels of funding to more complex questions regarding value for money.

The discussion of value for money goes beyond simply cost, and focuses on the cost-effectiveness of the system, taking into consideration the outcomes attained given the cost of the system. Weingarten et al. (2015) analyze equity of access, the value to students, and the

value to society obtained from the investment per student for each province in Canada. Their conclusion is that more funding does not necessarily equate with better equity and outcomes.

Governments have made widespread efforts to increase equity of access by increasing the number of places available at existing institutions, increasing the number and nature of institutions, diversifying the program offerings, and making a concerted effort to reach underrepresented groups. By many measures these policies have been successful in improving equity of access. However, there is evidence that equity of access has not been accompanied by a commensurate improvement in equity of outcomes, with many of these students failing to complete their studies (Galindo-Rueda and Vignoles 2005, Quinn 2013, Eurydice 2014).

### **The Way Forward**

Performance in higher education has been focused on individual institutions as measured in rankings. However, international rankings are mostly based on input and reputation measures and they have produced well-documented perverse effects, such as biasing systems towards research performance to the detriment of learning and teaching (Hazelkorn 2015). As Hazelkorn (2017) puts it: “Pursuit of excellence is measured in terms of achievements of individual universities rather than the system or society collectively; in other words, it promotes world-class universities rather than world-class systems.”

To counteract this problem, the focus of performance measurement and management in higher education should move from the higher education institution to the system as the unit of analysis. The system includes all higher education institutions, and not just universities, and all levels of higher education, from associate degree to doctorate.

The current focus on study success is not enough. The debate can no longer be just about the efficiency of the system, because both efficiency and effectiveness matter. This means addressing not only the quantity of graduates a system produces, but also the quality of graduate outcomes. Graduate outcomes most obviously relate to learning outcomes and learning gain directly obtained from higher education. But graduate outcomes also reflect the effect of higher education on the labour market and social outcomes of graduates.

In addition, the effectiveness of the system relates not only to the quality of graduate outcomes but also the equity of outcomes; that is how outcomes are distributed among social groups. Monitoring equity in higher education will mean tracking students in their trajectory through higher education—from applicant, to student, graduate, employee, and citizen—rather than just based on participation rates. This will mean having disaggregated data by groups of interest, based on age, gender, socio-economic status, ethnicity, migrant status, disability status, indigeneity, rural provenance, etc.

It is not enough to know the results of higher education; if we are going to enhance the performance of higher education systems, we need to act on the determinants of those results. For that we need to understand the levers of better performance. What practices in higher education drive better student learning and graduate outcomes?

This requires going beyond analyzing administrative and registry data on enrolments, progression, and graduations. It involves dedicated surveys of the student experience, such as the National Survey of Student Engagement (NSSE) in the United States (McCormick, Kinzie, and Gonyea 2013).

Students are very important stakeholders in the higher education system, but they are by no means the only ones. Surveying other actors will improve our understanding of what practices drive improvement. This will mean dedicated surveys not only of students, but also

of staff, graduates, and employers. These surveys exist, but mostly at the institutional level, rarely at the system level, and hardly at all at the international level. As discussed above, no PISA equivalent exists for higher education. And equally, higher education has no equivalent of TALIS, the OECD's Teaching and Learning International Survey, which surveys teachers and school leaders.

Student surveys will give us information on student characteristics, student experience, and student engagement. Staff surveys, including non-academic staff, will give us information on practices regarding required qualifications, recruitment, employment and working conditions, duties, promotion, remuneration, working practices, staff appraisal, professional development, and staff satisfaction. Graduate surveys will give us information on skill proficiency and skill use, labour market outcomes, and social outcomes. Employer surveys will give us information on satisfaction with graduate skills, mismatches and gaps in skills, training opportunities and practices, expectations, satisfaction, and expected trends in the labour market.

Knowing what happens in the learning and teaching process of higher education—through systematically surveying the actors, and seeing how that correlates with better graduate outcomes—will give us a better understanding of what works and what does not.

### **A Benchmarking Approach to Enhancing Higher Education Performance**

A benchmarking approach to enhancing higher education system performance is one way to address the issues discussed so far in this chapter. In this approach, the performance of each system is compared to the observed performance of other systems. By going beyond metrics to also focus on policy and practice benchmarking, it can better help tell the story behind the performance of higher education systems. And it will enable cross-country

comparisons and peer learning to support the developmental dimension of performance measurement and management, and inform higher education policy design, implementation, and evaluation.

The OECD project on benchmarking higher education system performance will collect and analyze data and information on higher education systems through regular rounds of benchmarking exercises using this approach. Comparing the performance of the different higher education systems and how different policies and practices appear to be driving that performance will provide the basis for policy recommendations.

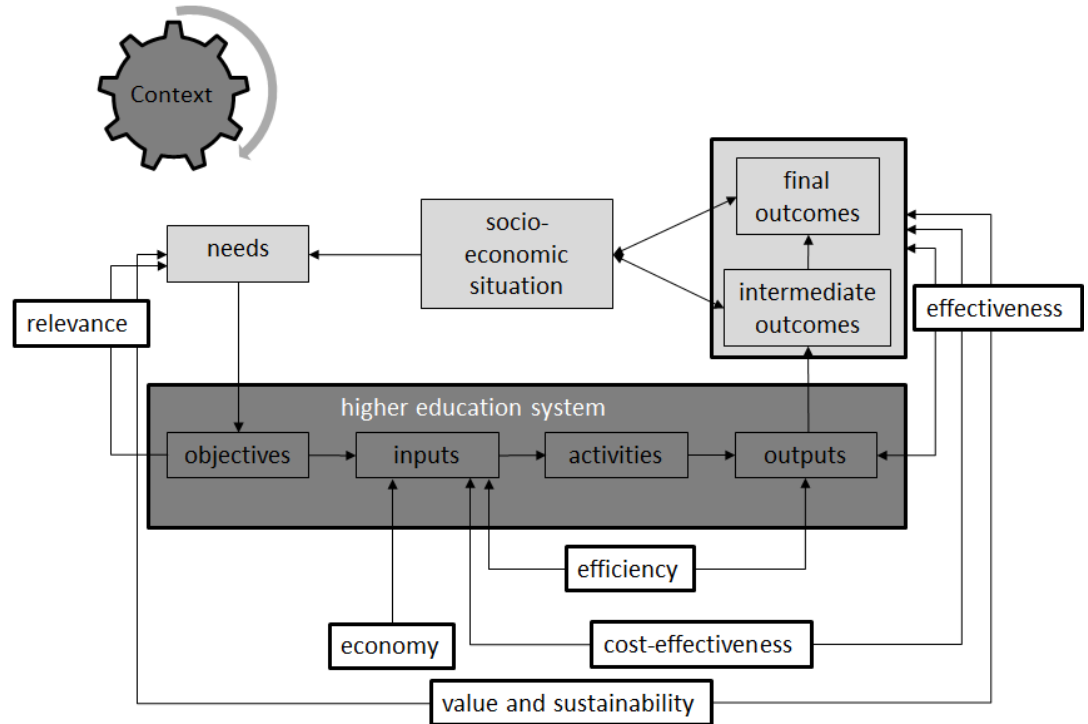
With time, longitudinal analysis will help us evaluate how higher education policies in different systems steer performance-enhancing practices.

### **The Model**

The OECD developed a conceptual framework for benchmarking higher education system performance with a system performance model that takes into account: (i) the three functions of higher education: education, research, and engagement, (ii) the whole production process, from input, activity, and output to outcome, (iii) the context within which systems operate, from the wider economic, social, and cultural context to the policies steering the higher education system, and (iv) the full span of performance, from relevance to value and sustainability (Figure 1).



**Figure 1: OECD Higher Education System Performance Model**



Higher education systems are part of an economic, social, and cultural environment—an environment with needs in terms of human capital, and wider economic, social, cultural, and environmental development. These needs prompt action by governments, which will define policies and objectives for higher education with relevant stakeholders. The extent to which the objectives of higher education address the needs of society gives a measure of its relevance.

Higher education transforms inputs into outputs, which in turn produce outcomes. Inputs take the form of the financial and human resources allocated to the higher education system. These provide the resources for the activities of learning and teaching, research, and engagement with the wider world. These activities produce the outputs of higher education such as graduates. A look at the cost of funding higher education will give a measure of the

economy of the system. Looking at the outputs produced given the inputs available will provide measures of efficiency; that is how productive the system is.

Outputs will produce effects in the form of intermediate outcomes, which are more directly attributable to the performance of the higher education system such as the learning outcomes of graduates. The intermediate outcomes eventually lead to final outcomes, such as labour market and social outcomes of graduates, which will be a product of the performance of the system in conjunction with contextual factors that the system cannot fully control.

The quality of outcomes and how equitably they are distributed among different population groups will provide measures of the effectiveness of the system. How much it costs to achieve that level of effectiveness, and how it compares to other systems, provides a cost-effectiveness analysis.

How final outcomes ultimately address the needs of society will give a measure of the value of the system and its sustainability in the long run.

Applying the model to the education function of higher education means answering a number of questions including the following:

*Effectiveness:*

Is the higher education system adding value to human capital?

- Have graduates received a significant learning gain from their higher education experience?
- Do graduates reach the intended learning outcomes and the associated skills proficiency?
- Do graduates achieve the intended labour market outcomes in terms of participation rate, appropriate job levels, and earning premiums?

- Do graduates gain the expected social outcomes, such as good health, active citizenship, and life satisfaction?
- Are the outcomes equitably distributed between different demographic groups (in terms of socio-economic background, age, ethnicity, migration status, disability, etc.)?

*Efficiency:*

Can the higher education system deliver its intended outputs with available resources? Can the system be more productive without hindering effectiveness (quality and equity) through the following:

- Increasing retention rates, progression rates, and completion rates?
- Decreasing time-to-completion?
- Operating at a higher ratio of student to staff?

*Economy:*

Is the system receiving adequate funding to allow it to operate at an efficient and effective level? How much funding is higher education receiving? Is there scope for cost savings in the system without hindering effectiveness through the following:

- Consolidation of higher education networks (mergers), or associated facilities such as libraries, laboratories, student and staff accommodation, sports facilities, etc.?
- Better system procurement policies (for instance, for informatics equipment, for access to research databases, etc.)?
- Adequate collective bargaining arrangements for staff compensation?

Can costs be controlled through measures such as:

- Caps on student numbers, tuition fees, *numerus clausus*?

- Limiting the number of institutions and degree programs?
- Predefined national salary scales?
- Transparent funding formulas indexed to inflation or other indexes?
- Limiting those eligible for student loans or grants?
- Promoting the specialization of institutions (by level of education, field of study, research versus teaching orientation, basic versus applied research orientation)?
- Targeted funding for agreed delivery?

Can costs be shared to lighten the burden on the public budget through measures such as:

- Introducing or raising tuition fees?
- Introducing or raising tuition fees for international students?
- Diversification of funding sources, including fees and earned income from continuing education, technology transfer, social engagement activities, philanthropy, and endowments?

## **Data and Information**

The conceptual framework above was translated into a data architecture to enable the benchmarking exercise. At that point, only conceptually relevant dimensions were considered without taking account of the availability of data. In the second phase, the OECD mapped comparable international data to the data architecture and identified gaps in the data. In the third phase, the OECD surveyed countries on the availability of national data to fill in those gaps. The identification of gaps in the data, and developments at the national level to address them will feed into the process of designing and implementing new, internationally

comparable, higher education indicators at the OECD, which will ultimately improve the benchmarking exercises.

Despite the gaps in available data, the number of metrics available is quite large. Four criteria were used to select metrics for the baseline analysis of the project: coverage, quality, comparability, and parsimony. The baseline analysis includes forty-seven metrics relevant for the education function, only four of which will be provided by the relevant national jurisdiction (in italics in Table 1); the remaining indicators are internationally available.

**Table 1: Baseline Education Metrics**

<b>Financial resources</b>
Expenditure on higher education as a percentage of GDP
Public expenditure on higher education as a percentage of total public expenditure
Relative proportion of public and private expenditure on higher education
Annual expenditure per higher education student on core educational services
Distribution of current expenditure by resource category: compensation of teachers, compensation of other staff, other current expenditure
<b>Human resources</b>
Ratio of student to teaching staff
Distribution of academic staff at education level by age groups
Percentage of full time versus part-time staff
<i>Permanent versus non-permanent staff</i>
Average annual salaries of teachers in public institutions
<b>Access</b>
Transition from upper secondary vocational education and training to post-secondary education
Percentage of students enrolled part time by age group
Profile of first-time new entrants, by gender, age, international status, level of education, and field of education
First-time entrants by age group (to be estimated)
<i>Socio-economic background of students</i>
Skills on entry: use PISA scores as proxy
<b>Internationalization</b>
International student mobility and foreign students
<i>Brain gain as share of international students who continue residing in the host country after graduation</i>
<b>Graduation</b>
First time graduation rates, by tertiary level
Profile of first time tertiary graduates, by gender, age, international status, level of education, field of study
<b>Completion rate</b>

Completion rate of full-time students by level of education, gender, and duration
<i>Drop-out rates</i>
<b>Attainment</b>
Intergenerational mobility by educational attainment of parents and immigrant status
Percentage of adults who have attained tertiary education by type of program and age group
Field of education studied among tertiary-educated adults
<b>Adult learning</b>
Participation in employer sponsored education by educational attainment
<b>Skills outcomes</b>
Distribution of literacy proficiency levels, by educational attainment and gender
Distribution of numeracy proficiency levels, by educational attainment and gender
Distribution of skills and readiness to use information and communication technologies for problem solving, by educational attainment and gender
Measures of graduate skills use from PIAAC (such as use of ICT at work—to be estimated)
Educational attainment of youth neither in employment nor in education or training
Level of the best-known foreign language (self-reported) by educational attainment level
<b>Labour market outcomes</b>
Employment, unemployment and inactivity rates of 25–34 year olds by program orientation and educational attainment
Temporary employees by sex, age, and educational attainment level
Full-time and part-time employment by sex, age, and educational attainment
Self-employment by sex, age, and educational attainment level
Relative earnings of full-time, full-year workers by educational attainment
Private costs and benefits for a man attaining tertiary education
Private costs and benefits for a woman attaining tertiary education
Public costs and benefits for a man attaining tertiary education
Public costs and benefits for a woman attaining tertiary education
Current work—Job satisfaction
<b>Social outcomes</b>
Percentage of adults reporting that they are in good health, by educational attainment, literacy proficiency level, and gender
Percentage of adults reporting that they volunteer at least once a month, by educational attainment, literacy proficiency level, and gender
Percentage of adults reporting that they trust others, by educational attainment, literacy proficiency level, and gender
Percentage of adults reporting that they believe they have a say in government, by educational attainment, literacy proficiency level, and gender
Life satisfaction

Note: For dimensions in italics only national data is available. For all other dimensions international comparable data is available.

Metrics tell us about levels of performance in a number of dimensions but do not tell us the reasons behind observed performance. The benchmarking project uses qualitative information on the structure and governance of higher education, the higher education

policies driving the system, and the practices emerging from the policies to analyze system performance. It asks key questions for each policy area to better understand the observed performance.

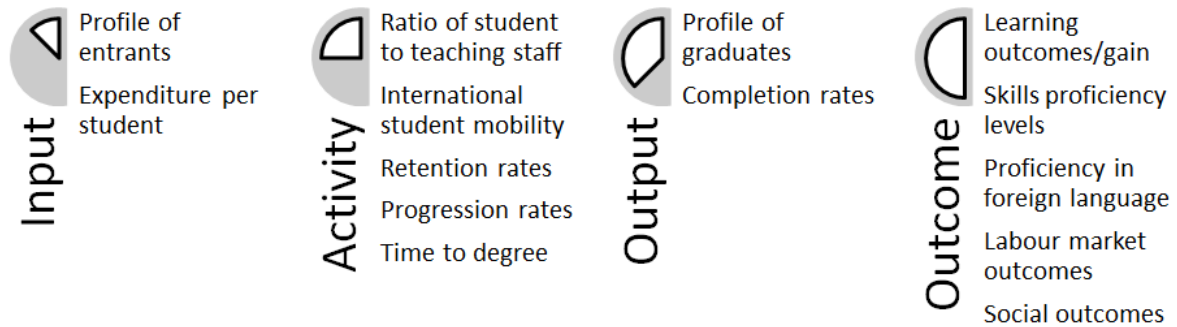
These questions look at the policy process in terms of design, implementation and evaluation, and the policies themselves classified under the four common types of policy levers, i.e. regulation, funding, information, and organization, to better understand the reasons behind observed performance:

- Who was involved in the following stages of the policy process: design, implementation, evaluation?
- What was the main purpose of the policy?
- Does the policy include measurable targets?
- Describe the policy in terms of the main policy levers used: regulations, funding, information, organization.
- What practices did the policy lead to? (What practices appear to be making a difference? What practices do not appear to be making much of a difference? What practices have produced perverse effects?)
- How is the implementation of the policy monitored and its effectiveness assessed?
- Who are the stakeholders involved in the implementation and evaluation process?  
Are they the same or different from the ones involved in the design phase?

These questions are asked for a number of relevant policy areas in order to better understand the performance of the education function (see Figure 2 for an example).

**Figure 2: Metric and Policy and Practice Benchmarking of Education**

**Metric benchmarking**



**Policy & practice benchmarking**



**The Gaps**

However, there are a number of important gaps in data and information vis-à-vis the conceptual framework for benchmarking the performance of the education function of higher education systems.

*Learning Outcomes and Learning Gain*

There is no internationally comparable data on the learning outcomes of higher education graduates. The only available internationally comparable data is provided by the Survey of Adult Skills of the Programme for the International Assessment of Adult



Competencies (PIAAC). However, this survey was not designed for measuring the learning outcomes of higher education graduates. It is designed to measure skill levels of the general adult population. As such, it only provides information on generic literacy and numeracy proficiency, rather than specific graduate skills. In addition, for some countries the samples for graduates are quite small, and the survey is planned to be repeated only every ten years. Furthermore, there is no internationally comparable measure of learning gain, as there is no information on skills on entry to higher education for the graduates surveyed.

The OECD Assessment of Higher Education Learning Outcomes (AHELO) feasibility study established that a large scale comparative assessment of higher education learning outcomes is conceptually valid and for the most part technically feasible, but the project did not continue. The OECD is now working with the Council for Aid to Education (CAE) to explore the use of the CLA+ International as an alternative method to measure generic student learning outcomes in higher education in a number of countries.

This is an area of continuing interest and where further developments could change the current emphasis on the research performance of higher education to a more balanced approach that recognises the importance of the teaching and learning performance.

### *Equity*

There are few international comparable metrics on equity, although the situation has improved recently. The OECD Indicators of Education Systems Network (INES) is developing new indicators on equity in tertiary education for publication in the OECD Education at a Glance series. The new indicators cover six variables: age, gender, parental education, immigrant background, students with dependent children, and students from rural provenance. Data is collected for new entrants and first-time graduates.

In terms of measuring equity of outcomes, more needs to be done to disaggregate the data by groups of interest for graduate outcomes. We expect further interest and developments in this area.

### *Education Activities*

The activities stage of the performance model in Figure 1 is currently the black box of higher education. Little is known about the teaching and learning practices of higher education, especially in a comparable way to be used in a benchmarking exercise. The first benchmarking exercise undertaken in 2017–18 uses qualitative descriptions provided by countries regarding their policies and the relevant practices emerging from them.

In the future, information will need to be collected in a more structured and standardized way, helping to improve the analytical power of the benchmarking exercises. This could be achieved through international surveys to relevant actors in higher education, such as students, staff, graduates, and employers.

### *Sub-sectors of Higher Education*

There are over 18,000 higher education institutions that offer at least a post-graduate degree or a four-year professional diploma in 180 countries (International Association of Universities and UNESCO Information Centre on Higher Education 2016). Less than 10 per cent of these institutions have at least fifty publications in the most comprehensive indexed database of publications (Bonaccorsi et al. 2017), and these tend to be the research-intensive university sub-sector of higher education. Most available metrics and qualitative data on the activities of higher education tend to focus on this sector, even though they often represent the minority share.

Although the OECD benchmarking project was conceived to cover the whole of higher education, a lack of data for the non-university sub-sector and the private independent sector makes achieving this objective more difficult. Again, this is an area where we expect to see some changes, as countries are increasingly interested in gaining a better understanding of the performance of their whole higher education system.

## **Conclusion**

Coates (2017) notes that “a casual participant [in higher education] cannot help but notice how things could be improved.” He calls for more transparency in higher education systems as a lever to change things for the better.

The benchmarking approach described above contributes to this debate by making the relative performance of each system in different dimensions more transparent. It complements traditional metric benchmarking with policy and practice benchmarking, by not only comparing metrics, but also by comparing policies, which allows for peer learning, spurring new ideas and policies, and driving creativity and innovation. Systems can use the information and the analysis to inform the design, implementation and evaluation of policies, and thus continuously enhance the performance of higher education systems.

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