Performance, Productivity and the Diversity of Student Pathways

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Abstract. Performance and productivity have become central goals in higher education reforms since the 1970s. The implications are more or less straightforward when it comes to teaching and research; academic staff should teach and publish more, while institutions should produce more graduates at a lower cost, and these graduates should quickly find a well-paid job that matches their field of study. However, while institutions and academic staff have adapted to these new forms of evaluation and funding, students seem to be less inclined to do so. It is problematic that within this equation, institutions and academics are the producers, while students are relegated to a role of products or, in the best-case scenario, clients. As products, they cannot be expected to comply with the productivity goals or the performance indicators of the institution. This article reviews how students behave and why they behave as they do, before considering the implications for productivity. The analysis focuses on Mexican higher education, but also highlights relevant results in other countries.

Keywords: higher education, pathways, performance, policies, productivity, students

Introduction

Since the 1970s, performance, productivity, efficiency and efficacy have become the buzzwords of higher education reforms across the world (European Commission, 2011). In Mexico, policies and reforms of this nature started in the late 1980s, clearly focused on performance and productivity. The prevailing opinion at the end of the 1980s was that Mexican higher education was in crisis, and that public universities were inefficient. There was a lack of transparency regarding the use of public funding (Kent, de Vries, Didou & Ramírez, 1998; López-Zárate, 1997), governance structures were inefficient (Acosta-Silva, 2009, 2013), academics published and taught very little, and students tended to drop-out or finish after more than six years (Kent, 1996). Thus, reforms were urgently needed and, inspired by documents from several international organizations, productivity became the central theme (CEPAL, 1992; OECD, 1997).

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The following decades saw a surge of policies aimed at increasing productivity. Most of these policies were linked to the introduction of additional funding, the distribution of which was performance-based. The state introduced special funds for institutional restructuring (de Vries & Álvarez, 2005), university governance underwent major reforms (Acosta-Silva, 2009), and merit pay became a fundamental contributor to faculty income (Galaz-Fontes & Gil-Antón, 2013).

Additionally, in the Mexican case, new sectors were created such as the Technological Universities, the Polytechnic Universities and the Intercultural Universities, with the aim of providing alternatives to traditional pathways. These new institutions are mostly vocational, and purportedly better served the needs of the labor market (Flores-Crespo, 2009). At the same time, graduate studies, almost non-existent prior to 1990, took on renewed importance. International comparisons gained weight, mostly through international rankings.

The ultimate goal of these reforms was to provide more access to students, whose learning should be geared towards preparation for the labor market. In doing so, Mexico would be able to build a knowledge-based society and transition towards higher level of development.

In this context, questions about performance and productivity were deemed to have straightforward answers. Universities, according to governments, clearly had to do more and preferably at a lower cost. Performance was to be measured by research outputs, the number of students in attendance, their graduation rates, and their employability. This led to greater attention being paid to indicators such as the number of publications in indexed journals, the number of citations, the number of full-time professors, the percentage of academic staff holding a PhD, sources of income and total revenue, costs per student, drop-out and graduation rates, and employment and income data for alumni. Once these indicators were established, they were used for accreditation and rankings, and for the allocation of additional funding.

The ideal university thus became a local variation of an international research university, exemplified by Harvard: an institution with mostly full-time professors with a PhD, who are highly productive in research, while also preparing students for a promising and well-paid future. While Harvard became the ideal university, we can also distinguish clear criteria for academic programs. These should require students to attend full-time, and be accredited by outside agencies, which would look at the credentials of academic staff, the curriculum, graduation rates and data from alumni surveys. Programs not only have to be efficient, but also pertinent, measured by the success of graduates in the labor market (Rubio, 2006). The yearly competition for additional funding, based on this limited number of indicators, reflects this doctrine.

The ideal academic should embody these same criteria. In the case of Mexico, the ideal faculty member is codified by the "Desirable Profile" that was introduced by the national Program for the Improvement of the Professoriate (*Programa para la Mejora del Profesorado* or PROMEP in Spanish), launched in 1996 by the Undersecretary for Higher Education. This academic is full-time and tenured, holds a PhD, and combines teaching, research, mentoring and collegiate decision-making.

He or she teaches several courses per semester at different educational levels, publishes in well-established journals, advises students, and participates in councils.

The ideal student was never formally defined in an official document but can easily be inferred from the policies introduced. He or she studies full-time, does not work during their studies, follows the pre-established route through the curricular maze, graduates on time with a high grade point average (GPA), and rapidly finds a well-paid job that matches their major. He or she attends classes, pays fees on time, obtains a high score on the entrance exam and graduates with honors. He or she certainly does not drop-out, interrupt their studies or decide to enroll in another program at another university.

Policies and outcomes

A wide array of educational policies have since sought to steer universities in such a direction, seeking to increase the number of full-time faculty, the number of PhDs, the number of scientific publications, the level of tuition fees, the establishment of entrance exams, the improvement of graduation rates and the employability of graduates. The underlying idea for these policies is that of human capital theory: more education leads to higher economic productivity, and even more so if this education is provided by quality institutions (Schultz, 1979; Hanushek & Kimko, 2000). From this perspective, education is the factor that determines labor productivity, reflected in graduate earnings or rates of return. In this line of thinking, education is mainly preparation for work due to its potential to increase economic capital.

However, human capital theory has strong limitations as it assumes a straightforward link between education and work. It pays little attention to other (non-economic) factors such as social stratification, unequal access, inequity in earnings, and above all, the behavior of students and other actors. It in fact assumes that all actors behave rationally, seeking to optimize their individual benefits (Marginson, 2017).

Despite these limitations, educational policies in Mexico and elsewhere have adopted the logic of human capital theory, considering education in terms of inputs, processes and outcomes. However, a review of the last three decades shows that Mexican public policies may have been successful on the input side, but far less so on the output side. There are now more institutions offering more accredited programs, more full-time faculty with PhDs, and a larger number of students. However, more is not always better. The number of institutions may have risen, but only a couple of Mexican universities appear in the international rankings. More programs may have been created, almost all of which are officially counted, but the vast majority continue to operate without accreditation (Buendía, 2013). Research output has increased in terms of the number of publications or patents, but Mexico continues to lag far behind other countries in research productivity. Likewise, more students are registered, but enrolment and graduation rates have stayed very low compared to other

countries: in 2014, 33% of the relevant age group (18-24 years) were enrolled in undergraduate programs, while only 23% graduated (OECD, 2016a, p.68). Finally, producing more graduates seems to have led to an increase in unemployment and falling wages for professional activities, not only in Mexico (Poy, 2010; Olivares, 2009), but also in other countries (Vedder, Denhart & Robe, 2013).

So, it is hard to say that performance and productivity have improved. Public policies have given rise to the "entrepreneurial university" (Clark, 1998), a well-run organization or enterprise that is subject to measurements of productivity, performance, efficiency, efficacy, inputs and outputs, costs and benefits. However, while research and outreach activities are relatively easy to measure as services rendered to outside parties, teaching and learning are harder to capture in numbers and indicators. Whether or not entrepreneurial universities produce better qualified students remains a puzzle.

Productivity and students

One issue that has received little attention in the ongoing wave of reforms is the performance or behavior of students. A problem from the outset is how to define students: are they to be considered as clients or customers who buy a product (an education, knowledge, competencies, etc.)? Or, are they inputs, entities produced by the university, as if a raw material transformed in the production process, and then sold to employers or society at large?

Both points of view show up in the literature, and are oftentimes intertwined (Rothschild & White, 1995). However, the distinction is important for the analysis of productivity and performance, and for the ensuing higher education policies. If the student is considered a client or a consumer, they should be free to choose what they like, but also be willing and able to pay the price. Universities in turn should seek to sell their product to the best buyer, and worry mostly about customer satisfaction. Governments would no longer need to come up with policies, as these transactions occur mostly in the market, ruled by supply and demand. Their role would be limited to some sort of Ombudsman, protecting consumers.

If the student is an input and an outcome or product, the efficiency of the production process becomes the crucial issue. The student becomes a sort of raw material that has to be transformed into a product that satisfies the needs of employers or society. Universities need to attract the best inputs and maintain efficient processes with skilled laborers. Productivity becomes a matter of rightly combining all the inputs (students, teachers, administrators, infrastructure), resulting in outputs that satisfy the needs of the market or society. Prices depend on production costs (wages, infrastructure), and governments need to plan and regulate this process through policies and investments.

The latter view has been predominant in higher education, with a history that dates back long before the introduction of human capital theories in the 1950s or New Public Management in the

1980s. Already in 1910, the Carnegie Foundation Report proposed ways to measure the productivity of instruction in universities in much the same way as in other types of organization, and introduced the key unit of measure: the student hour (Shedd, 2003). This unit is defined as "one hour of lectures, of lab work, or recitation room work, for a single pupil" (Barrow, 1990, p.70). Until today, this unit is still the basis of all calculations of productivity in universities, generally linked to a credit system that is used to measure the workloads of academics, the costs of teaching and academic programs, and the funding of departments and universities. Despite this, "the difficult measurement issues limiting completeness of the analysis 100 years ago are still very much in play" (National Research Council, 2012, p.10). Furthermore: "while productivity measurement in many service sectors is fraught with conceptual and data difficulties, nowhere are the challenges—such as accounting for input differences, wide quality variation of outputs, and opaque or regulated pricing—more imposing than for higher education" (National Research Council, 2012, p.10).

However, the main problem regarding measurements is that students do not behave as products, but rather as actors that follow an individual pathway through an increasingly complicated system, with a bewildering variety of options and only partial information. We will discuss these issues following the traditional input-process-output formula.

Students and other inputs

A major challenge to the measurement of productivity is that students follow very different pathways on their way to the university. In the past, when higher education was for the elite, the student body was fairly homogeneous. It became more diverse when more young people gained access, and this growing diversity influences student performance in several ways.

First, student preparedness has a strong impact on their performance during university. The relationship between academic preparation received before entering the university, and the academic performance within the university is strong and seems to be universal (Cabrera & La Nasa, 2001; Cabrera, La Nasa & Burkum, 2001; Astin, 1993; Martinez & Klopott, 2003). Indeed, in the United States of America, Adelman (1999) found that completing high-level mathematics classes such as algebra II, trigonometry, and calculus in high school is the best single predictor of academic success in college.

In Mexico, the increasing inclusion of students in higher education has meant that previously excluded social groups are now participating, and the student body has become more diverse. This process of inclusion has its limitations, however. Lower income groups and ethnic minorities, or the combination of both, still have reduced access. An important filter is the selection mechanism taking place during primary and secondary education. Almost all children now finish primary education, but not all do so with a solid educational foundation. PISA data show that Mexican children continue to lag behind in basic knowledge of both Mathematics and Spanish OECD (2016b). In light of

Adelman's observation about completing high-level mathematics in high school, Mexican students are less likely to be successful in the university,

The type of secondary education also plays a role. In Mexico, lower-secondary education is not diversified, as it is in many European countries. Levels 7-9 are general and mandatory. After that, upper-secondary education becomes a little more diversified with academic and vocational orientations, but the latter receives little demand. Thus, most students that finish lower secondary education tend to go on to academically oriented upper-secondary education (preparatory schools) with the aim of gaining access to some type of higher education. However, only 60% manage to finish upper-secondary school and qualify for higher education. Throughout this gradual selection process socio-economic background continues to play a major role, and in poor states such a Chiapas, Oaxaca and Guerrero, the percentage of students that finish upper-secondary school is around 30 percent.

A related factor is whether the upper-secondary school is public or private. Private schools have better records as to completion and qualifications. This leads in practice to situations where parents who aspire to send their children to university seek out private primary and secondary schools and are willing to pay high tuition fees (up to US$ 300 per month), despite public education being nearly free.

This indicates that issue of performance and productivity of young people starts at the pre-school level, and that, contrary to human capital theories, social capital and family income continue to play a crucial role alongside academic performance in primary and secondary school. The type of primary and/or secondary school also matters, as private schools have better results than public ones. Last but not least, ethnic and demographic factors are at play, as well as urban/rural issues.

Students' performance tends to be measured by indicators such as GPA during secondary school, but no national curriculum exists for upper-secondary education, and there is no national credit system. This means that GPA varies by school, and that comparisons between upper-secondary schools are impractical. Thus, Mexican universities' scores on any performance metric depends on the composition of its student body, and this composition varies widely from institution to institution and throughout the country. Not only is the country characterized by unequal academic performances, but income disparities are among the highest in the world. Mexican alumni studies show that family income is even more important for the future of students then the parents' educational level (de Vries, Vázquez-Cabrera & Treto, 2013). This coincides with data for the USA from Terenzini, Cabrera & Bernal (2001).

Finally, adolescents also show different culturally moderated behaviors in their pathways through secondary education, a factor often ignored by policymakers and institutions. Different groups exhibit distinct dress forms, cultural activities and academic performance. Peer pressure influences choices regarding studies and work, or what university to attend (Grijalva, 2010).

Institutional diversity

Diversity is not restricted to the student body. As a result of policies in combination and growing student choice and market forces, Mexico now has large institutional diversity, which results in significant variations in quality, performance or productivity. On the input side, there is a growing variety of students, but also of institutions, academic staff, administrative staff, and facilities. This diversity is hard to measure in practice.

Four decades ago, the system was relatively simple. Public universities received most of the students, generally without entrance exams, while a small group attended public Technological Institutes and a few private elite institutions. Most institutions offered less than 20 educational programs, and while the Technological Institutes were more vocationally oriented on paper, in practice they offered the same type of undergraduate studies, and most engineers continued to graduate from the universities. At the same time, private institutions offered very similar programs, particularly in areas such as Administration, Accountancy, Engineering, Law and Medicine. All in all, it was fairly easy for future students to elect their institution and program; most went on to study in a traditional program in a local public university.

In the present day, the situation is very different. Similar to other countries, massification went hand in hand with system diversification and stratification (Altbach, Reisberg & de Wit, 2017; Huisman & Vught, 2009, Unterhalter, 2006). The public university sector did not grow much in terms of the number of institutions, but new programs were created, and enrolments increased. Demand, however, started to exceed the supply. Furthermore, public universities, at the behest of the Undersecretary of Higher Education, started to introduce entrance exams. This created a large cohort of rejected students, who had to seek higher education elsewhere, or forgo it entirely. In turn, this led to a rapid increase of private institutions, mostly of the demand absorbing type, with variable tuition fees. Enrolment in the private sector grew from 12% in 1990 to 35% in the 2000s, after which it stabilized (de Vries & Álvarez, 2005).

Within the public sector, since the early 1990s successive governments started to create new institutions as an alternative to the public universities. A first new type of institution is the Technological University, offering two-year vocational programs. Later, several of these programs were upgraded to the Bachelor level or ISCED 6. Secondly, the Intercultural Universities emerged, geared towards ethnic minorities with special programs such as eco-tourism or sustainable development. Both sectors, however, never managed to attract more than 2-3% of total enrolments. To satisfy the demand of students in these sectors, the federal government then went on to create Polytechnic Universities, who offer a bachelor's degree after two to three years of additional studies for graduates from the Technological Universities. As such, a clear two-tier system never caught hold in Mexican higher education and most students remain enrolled in undergraduate programs of three to seven years.

Meanwhile, the number of programs increased rapidly. Whereas in 1990 most institutions offered only a dozen options, nowadays the major public and private universities offer over one hundred different courses. As a result, Mexican higher education now comprises around 4 thousand institutions, with some 12 thousand different undergraduate programs (ANUIES, 2016). This means that Mexico has one institution for every 600 students, and one program for every 200. In fact, there are hundreds of higher education institutions (HEIs) that enroll less than 500 students (Rubio, 2006).

As tuition fees are not regulated, prices vary widely from practically free to over 6000 US$ per semester. Admission criteria also vary, and in the absence of a national credit system, the number of courses to pass in order to obtain a title fluctuates. Most undergraduate programs, however, have a curriculum that comprises some 50 different mandatory courses. National exams are practically absent, and each HEI has its own entrance exam. Once students are admitted, each HEI has its own grading and credit system. No distinction is made between part-time and full-time students. No dependable data exist about family background (55% of the economically active population works in the informal sector), or about parents' education. Likewise, it is not clear who belongs to what ethnic minority. Practically no information exists on students' educational background (other than upper-secondary GPA), or their motivation for selecting a certain institution or program. Information about the costs of tuition is scarce. Thus, most of the basic statistics needed to measure productivity are missing.

What can be said, however, is that productivity is very low. Only 23% of freshmen finally obtain a title, again with huge fluctuations between programs. Psychology might have an 80% graduation rate, while Mathematics or Physics as low as 5%.

While this diversity poses serious questions about how to measure productivity, it also poses major challenges for future students, both in Mexico and in other countries. They face a bewildering diversity of institutions and programs, with different admittance criteria and costs, and unpredictable futures in the labor market (Márquez, 2008; Hoxby, 2004).

Academic staff

Considerable variation is also evident among academic staff. On the one hand, policies have sought to increase the number of full-time faculty with a PhD and a dedication to research, but only in the public sector. On the other, due to economic restrictions most universities hire part-time faculty to teach undergraduate students. This adds another factor to the measurement of student and teacher quality and performance, with implications for the measurement of productivity.

Academics have historically had special treatment in human resource analysis. Universities were previously labelled as professional bureaucracies, where academic authority was more important than bureaucratic rules. As such, academics were seen as playing the central role in their institutions,

and all other staff considered auxiliary. Decision-making used to be collegiate, not hierarchical (Clark, 1983).

Much has changed over the last five decades. Within the academic profession, new types of academics have emerged. Tenure has become less frequent, as well as full-time permanent contracts. Part-time, non-tenured personnel have grown in numbers due to financial restrictions. In Mexico, it is common that private, non-elite institutions rely heavily on part-time faculty dedicated only to teaching. Within public institutions more variety is evident. Some universities have over 80% of academic staff with tenure and full-time contracts, while others, like the national university (UNAM), have over 50% part-time faculty, on whom they depend for undergraduate teaching. In the new technological universities, it is common practice to hire even full-time faculty per semester, which means that these staff have no tenure, no pension plans, and no social security. With the exception of only a few public and private universities, research is not a common activity.

While salaries in the public sector have been placed under greater control and wages are low, there has been an important increase of merit-based bonuses. These payments are additional to wages and thus do not generate long-term benefits, and mainly target high ranked full-time academics with a PhD and time available to dedicate to research, predominantly in the public sector.

Thus, in terms of contracts, wages and benefits, Mexican higher education is now comprised of a variety of academics, ranging from high ranked, tenured, research-dedicated full-time academics with a high income (around US$ 3000 per month), to part-time, non-tenured academics earning around US$4 per hour, or less than US$ 150 a month.

What this means for the quality of teaching is far from clear. Several studies (de Vries et al., 2008; Estévez-Nenninger, 2009; Galaz-Fontes & Gil-Antón, 2013) have found that undergraduate teaching continues to rely heavily on part-time academics, while high ranked full-time faculty have reduced undergraduate teaching loads and concentrate on postgraduate teaching. But at the same time, part-time faculty receive better evaluations from their students, at least at the undergraduate level (Estévez-Nenninger, 2009; De Vries et al., 2011). This, however, does not necessarily imply that students learn more. As the OECD and Institutional Management in Higher Education (IMHE) pointed out in a joint study on quality teaching practices in HEIs around the world, better evaluation methods are needed to understand the causal link between the quality of teaching and learning.

> Even if accepted in principle, the evaluation of quality teaching is often challenged in reality. All the institutions have implemented evaluation instruments in order to monitor their action. But teaching is primarily appraised through activity and input indicators and the institutions struggle to create reliable evaluation instruments of the impact of quality teaching. The demonstration of the causal link between teaching and learning remains challenging for most institutions, although quality teaching is an influential factor on learning outcomes. One of the difficulties for them is to isolate - and thereby support - the right factors that most impact learning outcomes. (OECD-IMHE, 2009)

Processes

The growing variety of inputs makes it very problematic to assess how much learning takes place within institutions, and how efficient the learning process is. The common practice for measuring the productivity of learning is to consider GPA, the number of credits and the production of degrees, and then seek to link these numbers to graduates' wages after concluding university. Beyond the problems of defining when and how to measure the income of graduates and identifying the extent to which the number of credits contributed to eventual increases, the question remains whether GPA and credits obtained effectively measure learning.

As Arum and Roksa (2011) conclude, 45 percent of students "did not demonstrate any significant improvement in learning" during their first two years of college, while 36 percent of students did not over four years of college. Likewise, Bok (2006) observes that North American students learn very little at university, even in the most prestigious ones. Other authors have countered that some learning and development does take place (Pascarella, 2001; Carpenter & Bach, 2010).

The measurement of learning is troublesome because of the lack of generally applied standardized tests that assess student knowledge at their entry to university and again several years later. Furthermore, even when implemented these tests may show, as in the Arum and Roksa study, that students show little improvement after four years. As a consequence, the number of degrees or credit hours completed are incomplete indicators of what higher education produces, because these degrees or credits do not guarantee that graduates acquire the knowledge, skills, and competencies required to function effectively in the labor market and in society. Thus, in order to really evaluate the productivity of universities, indicators are needed that reflect both the amount of learning and its value in the labor market. Without these additional indicators, institutions would be tempted to simply increase graduation rates by lowering the bar.

The observations by Arum and Roksa, as well as Bok, also suggest that higher education continues to operate mainly as a social filter between socio-economic groups and positions in the labor market, as Bourdieu and Passeron (1964) observed. This would imply that increases in access do not necessarily lead to more equality, because massification of higher education is achieved through institutional diversification and stratification. In this new scenario, some of the institutions continue catering to the elite, while others attend universities designed to house the previously excluded, and selectivity by other means than academic capability continues to operate.

Several other studies indicate that pathways through university depend on multiple factors, rather than just the capacity to learn or assimilate knowledge. One conclusion from Pascarella and Terenzini (2005) is that the impact of college is largely determined by individual student effort and involvement in the academic, interpersonal, and extracurricular offerings on a campus. That is, student motivation or engagement is a crucial factor in accounting for post-college differences in

income, once institutional variables such as selectivity are controlled for (Pascarella & Terenzini, 2005).

This means that the capacity to solve problems, study abroad opportunities, service learning, conducting research with a faculty member, and participating in learning communities are important (Pascarella & Terenzini, 2005). Longitudinal data from the National Survey of Student Engagement also show that exposure to good practices in undergraduate education, with teachers who clearly articulate course objectives, use relevant examples, identify key points, and provide class outlines (Kuh & Pascarella, 2004; Kuh, 2002) are much more important to college quality than student ability alone.

No data exist on student engagement or effective learning in Mexico, but some studies point to similar conclusions as those from Arum and Roksa. Data from entrance and exit exams for upper-secondary schools, administered by the *Centro Nacional de Evaluación* (CENEVAL, 2017) indicate that students show progress in some schools, but declining scores in others after three years. As such, it seems possible to 'unlearn' in certain schools, even though this does not always lead to lower qualifications.

To measure gains or losses in learning within universities is far more complicated than in upper-secondary education, due to the immense variety of courses and programs. However, what can be said is that scores on different entrance exams do relate poorly to performance after admittance. Likewise, GPA during university does not relate to success in the labor market, measured in average monthly income (de Vries & Navarro, 2011).

In a similar vein, no reliable measurement exists regarding competencies and skills acquired in university. Information on these issues depends mostly on two sources: individual self-assessment by students, and observations of alumni behavior in the workplace (Allen, Ramaekers & van der Velden, 2005). As Blömeke, Zlatkin-Troitschanskaia, Kuhn & Fege (2013) observe:

> Measuring competencies acquired in higher education has to be regarded as a widely neglected research field. The progress made in empirical research on the school system since the 1990s (…) has revealed that nothing comparable exists at the higher education level. This deficit can be traced back to the complexity of higher education and academic competencies. Not only is there a variety of institutions, programs, occupational fields and job requirements, but also the outcome is hard to define and even harder to measure.

Information on competencies based on alumni self-evaluations in México reveals that, according to graduates, there does not exist a deficit in competencies, and that self-reported competencies match or surpass what is required by the labor market (de Vries & Navarro, 2011). Besides, what the labor market requires seems to be continually shifting is not clearly defined (Planas, 2013a). As such, it remains far from clear what competencies students acquire during their studies and whether or not these competencies influence future earnings.

Drop-outs and persistence

While little information exists on what students actually learn or what competencies they acquire, there is a growing research literature on factors that cause students to drop-out or persist and graduate. A major issue, when performance and efficiency is involved, concerns students that do not finish their studies. Drop-out rates in many higher education systems have remained steady at around 50% since WWII, in spite of major reforms (Tinto, 1989; Bound, Lovenheim & Turner, 2010; CEPAL, 2003). However, drop-out is a category that encompasses many behaviors: some students leave, others interrupt, others change universities or programs (Schwartzman, 2004; Mallete & Cabrera, 1991).

Two reasons seem to dominate: disappointment with the university or the program, and work (de Vries, León, Romero & Hernández, 2011). Those who are disappointed, around half of leavers, generally return to another part of the system, and are not permanent drop-outs. Those who work face various challenges. Some need to work in order to make a living, but others already found a job they like and must cease their studies as the university does not allow them to combine work and study, because of conflicting schedules. In most cases, universities arrange class schedules assuming that students attend full-time, whereas teachers are only available at certain times (they have other activities, such as research), which leads to schedules based on teachers' availability. Around 50% are expelled for non-academic reasons. In fact, only minor numbers leave for academic reasons. This means that efficiency and performance will always be low, no matter what reforms are implemented. Some policies have good results, albeit for a limited number of students. Providing financial support or offering the possibility of part-time studies with flexible hours does help to motivate and retain students, but will only do so for particular groups of students (Terenzini, Cabrera & Bernal, 2001).

Engagement and youth cultures

Those who stay do so for various reasons, but mainly because they are satisfied or engaged. According to several authors the degree of engagement, of student motivation combined with academic ability, strongly affects persistence (Kuh, 2002; Pascarella & Terenzini, 2005; Shavelson, 2010). However, it remains difficult to measure engagement. In the US, the National Survey of Student Engagement (NSSE) provides some relevant data, but is centered mostly on academic activities, with little information regarding what takes place outside the classroom.

In Mexico, no data exist about student engagement. However, there is an increasing literature on youth cultures and behavior. Several studies by de Garay (2001, 2004, 2009) point out that there are groups of youngsters that attend university with the goal to study hard and get a good job, but that others remain enrolled in the university because of cultural reasons, even when they have poor

academic performance. Between these two extremes, there are several other groups with other behaviors, but for all there are factors at play beside academic performance and ability. Very few, however, seem to live up to the standard of the ideal student.

Diversity starts to be readily evident in upper-secondary education, where different groups of youngsters can be distinguished. The differences are apparent in dress codes, musical tastes, and social activities both in school and outside (Grijalva, 2011). These differences also play out in educational engagement: some are fully dedicated to studying and determined to go to university, while others are less inclined to do so (Weiss et al., 2007). Interactions between peers play a crucial role at the moment when students need to choose which university and program to attend. At the same time, many prospective students are also entering the world of work, with a variety of jobs (Machado-Pais, Bendit & Ferreira, 2011).

This also implies that students follow very different pathways within higher education. As Casillas, Chaín & Jácome (2007) pointed out, one can observe model students from low-income backgrounds, while high-income students may fail and drop-out. These pathways turn out to be highly diverse (Acosta-Silva & Planas, 2014) as there is an intricate web of factors at work. Family income remains important, but so does the family's level of education, cultural habits, sub-cultures, gender, GPA, entrance exams, type of program, type of institution, financial aid, distance, course load, group size, infrastructure, and the combination of work and study.

The result is a situation in which students gradually become adults and establish their own identity (Dubet, 2005). This maturing process involves not only learning in school or university, but also establishing social networks, obtaining work experience, having and spending an income, leaving the parental home, etc. This implies that most students are not of the ideal type. Around half of the student population in Mexico works while studying (Planas, 2013b; de Vries & Navarro, 2011), which not only means that they need to find ways to combine study and work, but also that they obtain experience and learn from their jobs. It is also apparent that students who work tend to obtain a better job after they finish their undergraduate education (Planas & Enciso, 2014).

At the same time, in several countries most students leave home, but in Mexico the vast majority (70%) does not, and even continues to live at home after graduating. The reasons are both cultural and economic. By the same token, the immense majority of students choose not to have children, in contrast to youngsters who do not attend higher education. For the same reasons, most students opt to study at an institution close to their parental home, and only a few are interested in studying abroad (de Vries & Navarro, 2011).

It would be fair to state that most of this process of growing up takes place outside the classroom or even outside the university. This also means that universities have little bearing on this process, as most factors that influence the process cannot be altered by the university.

Role of institutions

This is not to say that institutions do not matter. On the contrary, students' futures depend highly on which university and program they (are able to) enter. But according to the literature, this does not depend solely or even predominantly on curriculum content and effective learning and teaching. What seems to matter more is the organizational culture and the selectivity of the institution. Peers substantially influence students' attitudes, values, and other dimensions of personal and social development. Hoxby (1997, 2004) has shown that selective universities contribute to the undergraduate education and future earnings of some groups of students. Selectivity does also improve graduation rates in several institutions, according to Bowen, Chingos, and McPherson (2009). These effects, however, seem to be mostly due to peer pressure, and the correct match between the challenges posed by the institution and student abilities. Success in the labor market seems to depend on family income, and the ability to pay for selective universities.

Nonetheless, it remains hard to relate institutional selectivity or reputation with effective learning. Much evidence points to the contrary, indicating that the selectivity of the institution contributes minimally to learning and cognitive growth during college (Pascarella & Terenzini, 2005).

In Mexico, clear differences exist between graduates of different types of universities, when monthly income in the labor market is concerned. Graduates from elite private universities earn more than graduates from low-tuition public universities. On the bottom of the income scale we find graduates from small private institutions, as well as alumni from the Technical Universities or the Intercultural Universities. And whereas on average, women earn less than males, female graduates from private elite universities earn more than male graduates from public universities, even in the same type of program (de Vries, Vázquez-Cabrera & Treto, 2013).

Then again, within universities one can observe huge cultural differences between distinct disciplines (Becher & Trowler, 2001). Different disciplines or programs do not only have variable patterns of inquiry and teaching, their students also exhibit different behavior. These differences are visible in social behavior, but also express themselves in very different graduation rates. On average, graduation rates tend to be far higher in the administrative sciences than in the hard sciences or humanities. Furthermore, each discipline attends a specific niche in the labor market, with its particular way of hiring and rewarding graduates.

Outcomes

Human capital theories view graduates as one of the outputs of higher education. From this point of view, productivity is measured by the number of graduates produced after 4 or 5 years, depending on the formal duration of the program. This metric, however, faces serious problems as graduation rates vary widely among institutions and programs, and each institution has a different credit system and

course load. Requisites for graduation also vary widely. Some institutions grant titles automatically after finishing coursework, other require a dissertation, which generally is not included in the curriculum and produces no credits. Still others require students to pass an English language exam in order to qualify for graduation.

A second problem exists in the absence of information about effective learning and the preparation for the labor market or further studies. As a result, using graduation rates as a metric of productivity is highly disputable.

Economic returns

The next problem concerns the economic returns of a higher education degree. According to many alumni surveys, wages received by graduates vary widely by institution and study program, but also by city, region and country, gender and students' socio-economic background (Mora, Carot & Conchada, 2010). Salaries also depend on the time elapsed since the student graduated. Most graduates start with low wages, reach a peak in their forties and fifties, and receive less after that. On the whole, wages seem to depend more on the economic situation at the time of measurement than on the education received (Mora et al., 2010; de Vries et al., 2013).

Even more complicated is to establish causal links between earnings and what students have learned in university (Card, 1999). GPA does not seem to relate to earnings. The institution matters, but this effect is based mostly on reputation and standing, and not on what a student has actually learned. Competencies do not appear to be related to earnings, and the question of how to measure competencies acquired remains unanswered. Surveys tend to show that wages and job satisfaction are only loosely related. Surveys of local businesses also show little correlation between what has been learned and wages.

So, after decades of trying to measure productivity by graduate income, only rough estimations of economic returns to education exist, and are highly variable over time, dependent on whether graduates are interviewed about their first job, their salary after five years, or about total lifetime earnings at the age of retirement. Then again, wages fluctuate according to business cycles and changing labor market conditions. Finally, self-reported earnings are not always reliable, even less so when graduates work in the informal sector and are reluctant to report their earnings.

Measuring monetary rates of return also poses the question about how to consider those graduates that did not find employment, lost or interrupted their work, or chose not to seek a paying job after finishing their degree. Likewise, in times of increasing internationalization, how should we consider the rates of return for foreign students, or local students who seek a job abroad?

Then again, some graduates receive high salaries, but are unsatisfied with their jobs, while others are satisfied even though they receive low wages. Likewise, some find work that matches their studies, while others do not. Job satisfaction, matching and income only partially correlate (Cabrera,

de Vries & Anderson, 2008). Differences in wages, satisfaction and matching occur according to the student's major (Brennan & Little, 2010).

At the same time, the labor market for graduates has become increasingly diverse, and changes occur at a speed with which universities struggle to keep pace. New types of jobs emerge while others vanish, which makes it impossible, and even undesirable, for universities to adapt their processes to the ever-changing demands of the labor market (Edvarsson & Gaio, 2010; Planas, 2014; Béduwé & Planas, 2003). Besides, the incorporation of graduates into the labor market depends highly on their socio-economic background, their work experience while in university, and their social networks (Albert, 2000; Burgos & López, 2010). In short, it remains unfeasible to establish a simple causal link between formal learning and monthly income or financial rates of return.

Non market benefits

Pretty much all actors involved (politicians, institutions, faculty, administrators, students) agree that higher education produces "something more" than individual or social rates of return that can be measured by income or Gross Domestic Product. Something more, however, includes a wide variety of possible outcomes or benefits, such as increases in social capital, lower crime rates, better health and wellbeing, a higher life expectancy, or lower birth rates. Much of this social value is intangible and highly variable. The existing evidence of improvements follows the line of reasoning of human capital theory: in countries with high levels of educational attainment, the quality of living tends to be higher. However, it remains hard to establish how exactly universities contribute to this (Hout, 2012).

Conclusions

Policies over the last four decades have significantly altered the workings of universities, and perhaps have improved the productivity of academic staff if measured in terms of research output. As to teaching, more students are now attending higher education, and the number of graduates has increased. At the same time, the number of institutions and programs has also increased. But, on the whole, this simply means that production has increased. Whether or not productivity has increased remains an open question, particularly where students are concerned. If we consider productivity as a measure of the efficiency of an organization or system in converting inputs into useful outputs, and consider students as an example of this process, then many problems arise.

Firstly, there is a huge variety of inputs. Prospective students arrive with different backgrounds and expectations, and their performance is influenced by this background, which not only includes academic capability, but a variety of other factors, many of which are hard to measure.

Secondly, production processes within universities are also very diverse. Each institution and each program has its own rules of the game when it comes to teaching and learning. In a highly deregulated system such as Mexico, each university has its own curricula and credit system, and different cost structures. Their teachers have different qualifications and capabilities, and different contracts and wages. However, the interaction between teachers and students in the classroom is only a small part of what takes place within the university.

Finally, the outcomes – the successful participation of students in the labor market – are dependent on many variables that escape the purview of universities. For starters, around half of students already participate in the labor market during their studies. Monthly salary is a poor indicator of success, because it does not reflect job satisfaction, or the degree of match between study and work. Furthermore, the situation in the labor market depends highly on other factors, such as gender, socio-economic background, field of study and social networks, which are factors universities cannot alter. In turn, competencies or GPA seem to bear little influence on future earnings.

As a result of the diversity of factors at play, it is highly complicated to measure the efficient production of useful outputs. One key problem is that, thus far, there is no clear method or procedure to measure learning. A second problem exists in that students are not merely inputs and products, but above all individual actors behaving in their personal interest and constructing their personal pathways, which generally do not coincide with what universities or policymakers consider the most efficient way to progress. Situations in which the product is also the consumer are hard to measure, and the lack of information on the central aspect of the process – learning – makes the situation even more complicated (Rothschild & White, 1995).

Given the increasing diversity of higher education students and their multiple, winding pathways to a degree, a myriad of factors and possible indicators influence the final outcome. These could include goal attainment, persistence, transfer rates, success in coursework, degree completion, student and alumni satisfaction with the university, the personal and professional development of students and alumni, social, cultural and political participation, graduate school participation, employment, and a capacity for lifelong learning.

This implies very complex measurement systems (Ewell & L'Orange, 2009), whose usefulness is uncertain because measuring productivity in the current way may do more harm than good. In treating universities as commercial businesses, enhancing productivity has led to reducing the costs of the inputs. As a result, academic staff are increasingly part-time, with higher teaching loads and lower income (Bettinger & Long, 2006), while students and their parents are forced to pay more for their studies. However, universities do not function as for-profit businesses, because part of their inputs – students – are also their outputs, their customers or clients. This way, cost-cutting on the input side is likely to produce low quality outputs and unsatisfied customers.

In conclusion, in higher education outputs of very different quality are produced in very different universities at very disparate costs, and sold to students and employers with very dissimilar

backgrounds, abilities, needs and preferences, in a marketplace where little information exists on what exactly is being offered and bought. Furthermore, Mexican public universities are legally not allowed to function as for-profit organizations, and will only seek to improve productivity when faced with budget constraints. The main beneficiary of higher productivity would be the State. At the same time, in the private universities, the only beneficiaries of higher productivity would be the owners. One possible way out of this labyrinth would be to focus on learning productivity instead of student productivity (Johnstone, 1993), but this is only feasible when reliable measurements of learning are in place, when students are free to opt for institutions and programs that offer high levels of learning, and when success in the labor market clearly depends on how much is learned. In the absence of reliable information on how much is learned in universities, one can hardly expect students to contribute to higher productivity. In plain economical terms, it would be in their best personal interest when access and graduation rates remain low, as long as they themselves graduate. But then again, most students are not *homo economicus*, seeking the highest financial rates of return at the age of 18. Instead, they follow meandering pathways through higher education, while trying to construct their own identity. For this reason, it seems inadequate to insist on measuring the quality of universities based mostly on how many students they produce.

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