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GLOBAL TRENDS IN HIGHER EDUCATION FINANCING

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Abstract

This paper examines patterns of higher education financing around the world, the differentiating university characteristics by country and the different approaches to the fundamental change in university finance structures. The last decade has seen tremendous changes in higher education financing, with a predominant shift of higher education costs from the government to private sources: financial markets, philanthropy and households. There is overall rise in the demand for higher education worldwide. There has been an increase education costs fuelled by rising wages, costs of state of the art infrastructure, slow response to cost-pressures. These costs are to a greater extent being borne by the globally growing number of students enrolled in higher education. Another change has been the introduction of MOOCs (Massive Online Open Courses), which can offer cheaper, more accessible education to students. Declining government revenues and greater emphasis on better use of the limited resources have led to more monitoring of research outputs, as the government demands stricter measures of results for their funding and the private sector funded research has very clear goals.

University Characteristics

University organisation impacts its financial autonomy. Before delving into the financial trends, the following section categorises universities according to their relations with the government and the private sector and its larger impact on higher education financing.

State managed universities are controlled by a great level of funding from the government which in turn impacts the decision making power given to universities. This can be seen in China, where the ministry of education plays an important role in decision making (The World Bank, 2011). Such universities are highly dependent on state funding which is contingent to the decision-making of the education ministries.

State directed universities are distinct organisational identities separate from ministries. They have the right to select students and design their curriculum. At the same time, they are dependent on state funding. This could be seen in the U.K. where the University Grants Committee (UGC) allocated funds to universities in the 1980s. The same system is dominant in commonwealth countries like India presently where they still remain highly dependent on the UGC.

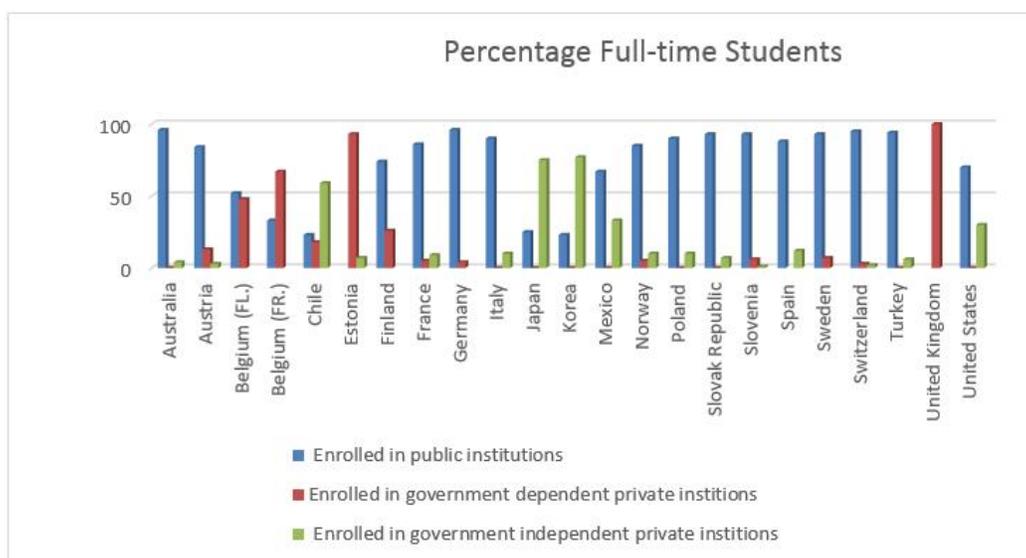
Trustee directed universities are more independent from the state and governed by a board of trustees. However they depend on accreditation agencies to legitimise their degrees and attract fee paying students. These universities have greater control over their research, and the ability to attract commercial players. Universities in the United States, Canada and Australia follow this model.

A combination if the second and third category of universities, state funded but trustee directed model can be seen in European Universities which remain highly dependent on state funding and charge no or limited tuition fees, but at the same time have been largely autonomous from state directives (Adapted from Richard & Gläser, t.b.p. 2014, pp. 8-11).

Further, universities around the world operate with different university models ranging from mostly private institutions, government dependent private institutions to government institutions. Among the OECD countries, Australia (96 percent), Austria

(84 percent), Finland (74 percent), Germany (96 percent), Italy (90 percent), Slovak Republic (93 percent), Slovenia (93 percent), Spain (88 percent), Sweden (93 percent), Switzerland (95 percent), Mexico (67 percent), Turkey (94 percent), United States (70 percent), the majority of students are enrolled in public institutions. Estonia (93 percent) and the United Kingdom (100 percent) have high level of student enrolment in government funded private institutions. In Chile (59 percent), Japan (75 percent), and Korea (77 percent), the majority of students are enrolled in independent private institutions (OECD, 2013) Source: (OECD, 2013)

Most universities in the Western world remain highly dependent on the government for finances. But at the same time, there is great financial autonomy where the university related decisions are made by the Board of Trustees. In the last two decades, there is a shift in laws and regulation in European countries like the Netherlands and the U.K., in some Canadian provinces and American states more autonomy and flexibility is given to public universities. The *New Public Management* approach is designed to restructure universities like the private sector to maximise output in university research and teaching. This system gives universities the authority to establish wages and salaries, reallocate expenditure from one category to another, carry over unspent funds from one year to another, enter contracts with external agencies and business, and receive and own assets along with incurring debt (Johnston & Marcucci, 2007, p. 11).



Source: (OECD, 2013)

On the other end of the spectrum, countries like Japan, South Korea, Indonesia, Brazil and Chile have avoided government costs by privatising higher education and having very small public higher education systems. Bangladesh, India, Indonesia, Philippines and Thailand have high proportions of enrolment in private institutions (Bray, 2002, p. 10). Mongolia has had a spurt of private tertiary institutes since its official transition in 1991. Similar trends were seen in Kazakhstan where 65 private higher education institutions were established from 1991-95 (Bray, 2002, p. 54).

In Asia, there are variations in private and public ownership of institutes. This is a measure of universities rather than enrolment, that is, there can be greater percent of students enrolled in private universities than the percentage privately owned universities.

University Ownership

Country	Public (%)	Private (%)
Indonesia	44	56
Malaysia	100	0
Philippines	25	75
Thailand	60	40
Vietnam	100	0
India	<70 (estimate)	>30 estimate

Source: (ADB, 2012)

The growth of private universities can often be unregulated. In China, by 2006, 10 percent students were enrolled in private institutions. In India, by 2008, 37 percent of students were enrolled in private universities (ADB, 2012, p. 8).

Understanding Revenue and Costs

While countries have different ways of accounting for revenues and costs, they mostly fall into the following categories. Revenues for universities can be from the following sources:

- Net tuition revenue: revenue earned through tuition fees, excluding institutional aid
- Sponsored research fund: external research fund to support particular research activities
- Special purpose fund: funds aligned for specific project
- Government grants: revenues received through state and local level legislative organisations
- Private grants: affiliated gifts, investment returns, investment income through interest, dividend income, rental income or royalty, endowment income from trusts and fund
- Independent Sources: revenue generated from hospitals and other independent operations
- Auxiliary services: secondary operating activities like hostels, parking, food services

The costs at university can be categorised as:

- Instruction: the cost of the salary of instructors and facilities used
- Research: salary for the researchers, principal investigator and the infrastructure
- Public services: conferences, reference bureaus and public broadcasting
- Students services: career counselling, student organisation
- Financial aid: need based or merit based aid for tuition waiver and/or living expenditure
- Academic support: libraries, academic administration
- Non-academic services: general administrative services, executive management, legal and fiscal operations, public relations
- Ancillary services: enterprises like hospitals and clinics, maintenance (campus, etc.)

Adapted from (American Institute for Research, 2010)

The last decade has witnessed rising cost with revenues failing to keep pace. There is rapidly increasing cost of teaching per student, increasing tertiary level participation, or *massification*, in higher education and falling government revenue. Ernst and Young (2012) reported that 15 Australian universities might become financially non-viable. It argues that the dominant university model with a broad based-teaching and research institution, supported by a large asset base with an in-house back office would prove unsustainable for most universities. Grant Thornton U.K. (2011) has argued that while on the whole the United Kingdom's university system is financially sustainable, a number of universities would have to shut due to their financial structures, position in the market and the reliance on certain income streams. In 2004, China's Ministries of Education and finance issued a joint circular in 2004 stressing the need to "prevent financial risk" in higher education. Many Chinese institutes had borrowed heavily, unable to pay (Wu and Gao, 2010; as mentioned in ADB, 2012, p. 9).

Increasing Education Costs

The costs of university education are rising at levels higher than inflation rates. In the United States, tuition for a public four-year institution in 1970 was \$358 per semester. If it would have grown in pace with inflation, the average tuition at public colleges should have been \$2,052 in 2010, instead it is \$6,695 (American Institute of Research, 2012). In the United States the rise in higher education cost exceeds the rise in service sector prices and healthcare cost (Martin, 2009, p. 3). According to a study conducted by Canadian Centre for Alternative Policies (2013), between 1990-91 and 2012-13, average tuition fee has increased from \$1,464 to \$6,348. Even if inflation is taken into account, prices have tripled.

This can be attributed to the following reasons. Firstly, there is greater government austerity. Secondly, in conventional bricks and mortar universities, the introduction of technology is adding to costs rather than reducing it (Johnston & Marcucci, 2007, p. 5). Thirdly, competing for better education rankings leads to

higher costs to attract students. The student demand for higher education remains inelastic to price, as students are willing to pay a high price for a good university. Fourthly, there is increasing competition for quality faculty and senior managers, with high salaries in an extremely labour intensive industry.

Education Austerity

The cost of higher education is rising faster than the generation of revenues. There is a larger trend towards government education austerity (Johnston & Marcucci, 2007, p. 1). Austerity measures have led to overcrowding of classrooms in middle and low-income countries. In these countries, the government has many other priorities such as school education, healthcare needs, public transportation, electricity supply and clean drinking water which often get priority over higher education.

Loss of faculty positions and high student debt can be seen even in affluent countries like the United States, the United Kingdom, Sweden and Canada (Johnston & Marcucci, 2007, p. 2). The financial crisis has further curtailed government funding. Available data from 2011 /2012, shows that cuts in overall education budgets have been more than five percent in Greece, Italy, Hungary and Portugal, while decreases of one to five percent were seen in Belgium (French Community), the Czech Republic, Estonia, France, Ireland, Poland, the Slovak Republic, Slovenia, Spain and the Scotland (OECD, 2013, p. 187).

Between 2005 and 2010, Austria, Iceland, Israel, the United Kingdom and the United States increased their overall expenditure on education, but not at the same rate as enrolment grew. Expenditure per student has also decreased in New Zealand, the Russian Federation and Switzerland (OECD, 2013, p. 163). Further, as of August 2010, 43 States in the US have proposed a cut on spending in higher education (Centre of Budget and Policy Priorities, 2010, as mentioned in: Deloitte, 2011, p.4). The United Kingdom's 2010 Spending Review aims at cutting higher education spending by 40 percent in 2014/15 (Grant Thornton, 2011, p. 3). Higher education remains an easier target to reduce expenditure, politically than elementary and secondary education.

These cuts have not been experienced only by the education sector. There have been cuts even in the health budget. In Greece, overall health spending dropped by 11 percent between 2010 and 2011, after a yearly growth rate of more than five percent on average between 2000 and 2009. In Ireland the health spending has dropped by more than five percent in this period. In Iceland, Portugal, Spain, Estonia, United Kingdom the budgets declined by 1-5 percent between 2009 and 2011. Israel, Japan and Chile have seen an acceleration in health spending since 2009 of over 5 percent compared with the period before (OECD, 2013a).

Government austerity in higher education has been associated with stricter measurement of institutions' performance. In the wake of the international market meltdown, governments have been stepping up on regulations in various sectors, including the higher education sector. Traditionally accountability focused on inputs such as enrolment or processes like teacher-student ratio, proper utilisation of funds, but now the focus is more towards outputs such as the number of graduates, or outcomes such as the number of students employed (Berk & Serban, 1998 and Layzell 1999, as mentioned in: Dougherty, 2004, p.23). Performance dependent

grants are being used for monitoring funds. Australia is calling for tighter regulations on accreditation especially to protect foreign students. In the United States the government has tightened regulations on student loans. (Deloitte, 2011, p. 26). Finland has goals for the industry as well as individual institutions. Denmark uses development contracts to measure long-time improvement in universities. Chile has introduced performance agreements on a trial basis in four universities for four public universities where additional resources are dependent on clear-cut improvement plans and output indicators. (Salmi, 2013, p. 6). There is greater competition for governments' resources and research is driven by public policy goals, which often reduces overall strategic autonomy. Governments around the world are imposing performance contracts that can include the target for the number of students to be taught, degrees to be delivered, and research outputs to be delivered (Vossensteyn, 2004, p. 44). There is further scrutiny of student success rates, programme outcomes and teaching standards (Deloitte, 2011, p. 26).

At the same time, some systems still continue to have strong government funding. Scandinavian countries attach special importance to free higher education. High taxes and a strong spending on higher education has been the modern followed by these historic welfare states. Such a model is unsustainable for poorer economies and for countries that have traditionally charged much lower taxation, and hence have lesser resources to invest in higher education. As a result, these countries cannot shy away from greater cost-sharing between governments and households, and often rely on private universities to fill the education gap.

Cost Impact of University Rankings

The costs are exacerbated with the need to seek recognition from league tables such as the Times Higher Education Supplement's World's Top 200 Universities, QS World University Rankings and Shanghai Jiao Tong University's Academic Ranking of the World Universities. Performing well on such indices requires increasing spending per student as the rankings measure facilities available per student. There is also increasing emphasis on research volume and research income. Research is to a great degree funded by external grants, but at times it does not include the salary costs of the principal investigator and other costs related to using university infrastructure. This ranking system also further rewards research over academics. Increased investment in such costs continues because willingness to pay for a better ranked university that offers students world class facility remains high (Johnston & Marcucci, 2007, p. 5). Further, many emerging economy universities are looking for partnerships with world leading universities which are often decided by these rankings.

Maximising the reputation is a major concern for universities. Alumni have a strong interest in their university's ranking and would donate more to further it. In the higher education industry there is a bias towards increasing revenues than reducing costs. Also, there is more focus on new sources of revenue rather than reallocating funds (Martin, 2009). The economic consequence of such rankings is that they further destroy a level playing field; where the top universities can continue charging higher fee and in turn invest into world class infrastructure and faculty. Economist Howard Bowen, who systematically studied university finance, postulated in 1980

that essentially, there is never enough money to seek sufficient prestige and fulfil the various roles and objectives of the university (Bowen, 1980; as quoted in Douglas, 2008, p.3).

Increasing Costs of Faculty

Global competition has also increased the cost of hiring world class faculty, especially among the global English language based universities. Universities risk losing top educators to higher-paying or higher-profile jobs both within and outside academia. In many countries the world class faculty salaries tend to increase more than other costs. The compensation to teachers is more than 40 percent of current expenditure in Argentina (51.8 percent), Austria (56.1 percent), Belgium (50.4 percent), Denmark (46.5 percent), Germany (46.7 percent), Luxembourg (60.8 percent), Spain (56.6 percent), Switzerland (48.1 percent) and the United Kingdom (43.7 percent) (OECD, 2013). In Higher education industry, it is extremely hard to substitute labour with capital, making it hard to reduce these costs substantially.

Slow Response to Cost Pressures

The system of shared governance with its various stakeholders, i.e. the trustees, administrators and academics, leads to a slow response to cost pressures as opposed other pure profit industries; here cutting costs and budget cuts is usually the prerogative of the trustees and may not be supported the academics and administrators if it comprises on quality (Ehrenberg, 2000, p. 29). Further, it is hard to measure the monetary and professional value of education as the ability to measure is generational. The returns on the quality of education can only be measured over the entire career span of the student, extending the period of cost-benefit analysis (Martin, 2009). Hence, the decision to enter universities is not a direct cost-benefit analysis and driven by the need for a university degree for a successful profession. The demand for higher education remains price inelastic, not giving universities a strong incentive to reduce costs. Irrespective of costs, a college degree is becoming a requirement for most high paying jobs, making it a high demand product. Higher education is one of the few industries where it is more profitable to have a higher price tag. Further, universities face a degree of uncertainty about their total funding for the coming fiscal years, which influence their behaviour of setting fees towards the higher end to meet the university's annual needs. (Douglas & Keeling, 2008, p. 3)

New Sources of Revenue: Rise of Private Financing

Tertiary education acquires maximum resources from private financing out of all levels of education. Private finance includes households, the market, various industries, alumni and philanthropy. In most OECD countries, households spend twice as much as any other private entity on higher education (Institute for Higher Education Policy, 2007, p. 4). The role of private finance has varied worldwide. Nordic countries, Belgium, and Iceland have high level of state support hence, hence not requiring much private finance. On the other end of the spectrum, in the United States, historically, private finance has played a strong role (Institute for Higher Education Policy, 2007, p. 3).

The expenditure covered by all private institutions only constitutes less than five percent of the total expenditure in Denmark, Finland and Norway, to more than 40 percent in Australia, Canada, Israel, Japan and the United States and over 70 percent in Chile, Korea and the United Kingdom (OECD, 2013, p. 202). Between 2005 and 2010, the increase in private expenditure was more than ten percent in Australia, Italy, Portugal and the Slovak Republic, and more than 50 percent in the United Kingdom (OECD, 2013, p. 201). Private financing has also made big leaps in post-communist China where from 1990 to 2001, the share of public financing in Chinese higher education dropped from 99 percent to 55 percent. In India, the government is debating 100 percent Foreign Direct Investment. In Latin American countries: Argentina, Chile, and Jamaica, money from private sources accounted for more than 40 percent of all spending on higher education (Bollag, 2007). In Latin America, Venezuela and Bolivia are exceptions; where both have reduced the role of private financing (Institute for Higher Education Policy, 2007, p. 19).

While endowments have traditionally been a large source of funding, market weakness post the financial crisis have reduced the endowment funds that most institutions rely on (Deloitte, 2011, p. 5). In Australia, many universities found themselves confronted with losses of market share of 5-10 percent in 2011 (Ernst and Young, 2012, p. 8). In many countries there is also increasing reliance on finances earned through university-industry collaboration and donations from alumni and philanthropists. Countries with the highest private non-household support for education are Canada, the United States and Australia (Institute for Higher Education Policy, 2007, p. 6).

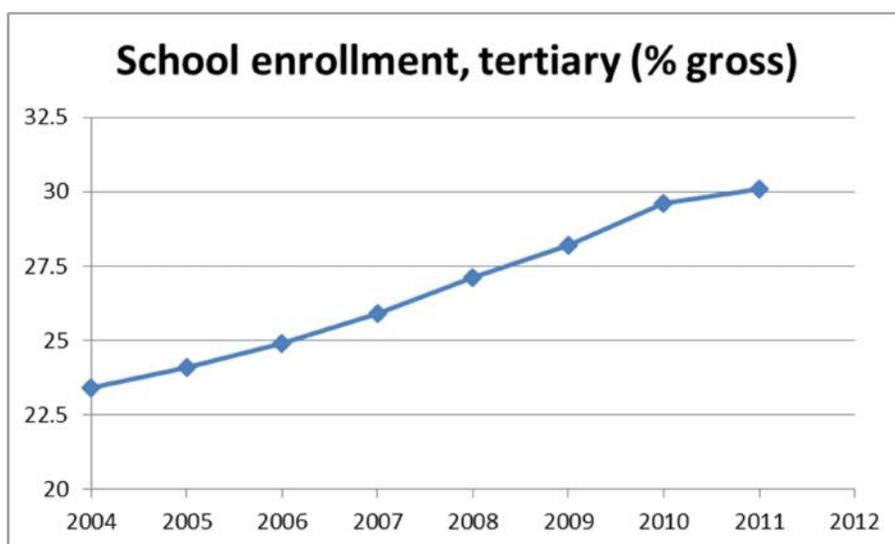
At the same time, public funds are the major source of funding for tertiary education in all countries and account for 60 percent (Chile) to nearly 98 percent (Finland and Sweden) of total expenditure amongst the OECD countries. (OECD, 2013, p. 189) Among these countries, government expenditure exceeds 2.5 percent of GDP in Canada (2.7 percent), Korea (2.6 percent) and the United States (2.8 percent). Two countries devote less than one percent of GDP to tertiary education, namely Hungary (0.8 percent) and the Slovak Republic (0.9 percent) (OECD, 2013, p. 187). The Asian giants India and China devote less than one percent of their GDP to higher education. India spent 0.8% of GDP on tertiary education in 2005 and China spent 0.4 percent of its GDP on higher education in 1999 (ADB, 2012, p. 6), while Brazil spends 0.9 percent of its income (OECD, 2013).

In many countries public expenditure also supports private universities. For example, in Belgium the direct public expenditure on private institutions is 46.3 percent, in Israel it is 86.4 percent, and in Estonia it constitutes 50.8 percent of the expenditure budget. In the United Kingdom all government budget goes to government dependent private institutions (OECD, 2013).

Asia increasingly looks at private institution to play a major role. In India, there is mushrooming of unaided private sector institutes. Philippines has traditionally had 75 percent of its student enrolment in private institution (ADB, 2012, pp. 7-8).

Worldwide Increase in Students Attending Higher Education

While countries like Italy, Germany and Russia are experiencing demographic declines in the number of students in higher education, most countries are experiencing an increase in the university age cohort (Johnston & Marcucci, 2007, p. 6). There is shortage of revenue to accommodate growing education costs and the increasing enrolments, with static or even failing revenues. Tertiary school enrolment has seen a big jump in the last few years, with 30 percent of students worldwide enrolling in tertiary education. This is fuelled by a strong belief that highly skilled labour is required to economically advance in the knowledge economy. It provides new job opportunities and economic prosperity. Human capital is seen as most central to country's advancement. Further, the economic downturn has led to higher enrolment in higher education institutions. To capture the increase in student enrolment, there has been expansion not only in the traditional bricks and mortar learning but also e-learning, often fuelled by private resources.



Source: (World Bank, 2012)

Enrolment ratios have increased in almost all parts of the world. While Western Europe and North America have maintained already high level of enrolment, Latin America, East Asia and Eastern Europe have had greater increases. Latin America and Caribbean have increased tertiary enrolment from 22.8 percent in 2000 to 43.3 percent in 2012; in the same period enrolment in East Asia has increased from 15.8 percent to 30 percent (World Bank, 2012).

Rapid enrolment changes can be seen in many Asian countries. China more than doubled college enrolment between 1998 and 2004, India saw enrolment almost quadruple between 1980 and 2004. The overall increase in enrolment in China has been much more robust than India. Asia has had dramatic but uneven growth in enrolment in tertiary education with the selected countries witnessing great increase in higher education enrolment (ADB, 2012, p. 3).

Student Enrolment in Higher Education in Selected Asian Countries, 1980-2007

Country	1980	1988	2004	2007	2007/1980 as percent
Indonesia	543,175	-	3,551,092	3,755,187	691
Malaysia	57,650	443,000	731,077	748,797	1,299
Thailand	361,400	1,814,000	2,251,453	2,469,808	683
Vietnam	114,701	810,000	1,328,485	1,590,000	1,386
China	1,662,796	7,364,000	18,090,814	25,346,279	1,524
India	3,545,818	-	11,852,936	14,862,962	419

Source: (ADB, 2012)

There is also an increase in students enrolled in part-time education. This has especially grown in Central and Eastern Europe, Latin America and Africa. Poland is an extreme case where more than half of the students are enrolled in part-time education. In Ethiopia about 35 percent of the students study part time. (Vossensteyn, 2004, p. 51). It can be postulated that many students take this route so that they can partially work and pay for the increasing education costs. Developing countries that already are trying to 'catch-up' with the developed country standards feel greater pressure for expanding higher education

In most cases, the student enrolment is increasing faster than faculty intake. Between 1987 and 2006, full time enrolment in Canada grew by 56 percent while faculty increased by only 18 percent. In the UK between 1995-96 and 2006-07, the enrolment grew by 25 percent whereas full-time faculty grew by 20 percent (The Associations of Universities and Colleges of Canada, 2008, p. 12). In Vietnam, student enrolment increased thirteen-fold between 1987 and 2009, whereas the number of teachers increased three-fold. The student-teacher ratio has increased from 6:1 to 28:1 (ADB 2010; as mentioned in ADB, 2012, p.6).

A steady stream of overseas students helps maintaining stable income stream for many Western countries. But with increasing visa restrictions, traditionally attractive countries like the U.K. are becoming less appealing for overseas students, though income from overseas students continues to increase. A research by Universities UK, a firm that lobbies for British higher education institutes has claimed that tighter rules will cost UK £ 2.4 billion (\$4 billion) in a decade (The Guardian, 2013). European countries like Netherlands, Germany, France and Italy are developing English programmes to compete for international students (British Library, 2010, p. 17). The traditional countries that send students abroad are further improving their domestic capacity. Universities in countries such as China and Malaysia are building domestic capacities so that students can receive quality education within their own countries. China now enrolls more than 240,000 international students, an almost six-fold increase since 1998. Most student are still

enrolled in non-degree programmes, but those in degree programmes are increasing, being recorded at 35.8 percent in 2008 (Jian and Ma, 2011; as mentioned in ADB, 2012). In 2010, Malaysia enrolled about 24,000 international students in its public universities and 62,700 in its private universities (Malaysia department of Higher Education, 2010, 201; as mentioned in ADB, 2012). Hong Kong and Singapore are also building their higher education capacities with the establishment of many high quality universities. International enrolment comprises of 3.3 percent of Singapore's national income (Ng and Tang 2010; as mentioned in ADB, 2012)

The competition for students is not just international but domestic. It is becoming problematic to attract paying domestic student to the second and third tier schools (Deloitte, 2011, p. 8). Grant Thornton (2011) argues that while the world class universities would continue to thrive in the United Kingdom, the second and third tier schools would need to restructure to survive.

Tuition

There has been a trend towards shifting the burden from governments to students and parents. Tuition was introduced in China in 1997, the United Kingdom in 1998 and Australia in 2001. As mentioned earlier, very sharp increase in tuition was seen in most parts of the United States and provinces in Canada. Special tuition paying track for a few students while maintaining free higher education in state supported education is practised in Russia, East and Central Europe, and countries in East Africa with the legacy of African communism (Johnston & Marcucci, 2007, p. 17). Egypt, Ethiopia, Hungary, Kenya, Poland, Romania, Russia, Uganda, and Vietnam are a few countries offering "dual-track" tuition fee. There is a quota of students who get free tuition, many times based on high entrance exam scores, and the remaining are offered spots on the basis of nationally determined tuition fee. This is a result of traditional opposition to tuition but the lack of government funds to keep up with continued higher education investment. As a result, universities ration the number of seats that are tuition free.

Marcucci et al. (2006) noted from their studies in East Africa that the publicly sponsored 'free seats' were occupied by the traditional elite that tended to perform better in merit based exams, while the privately sponsored students come from lower-income families. The dual track only adds a limited amount to the depleting resources from universal free higher education. Also, the government spends a significant proportion of its funding on few students. Vietnam is struggling with dual track in universities where as it is 10 percent students are able to access education due to the limited places, substantially reducing the number of seats available on merit (Levy 2007; as mentioned in: Armstrong & Chapman, 2011). China followed the dual-track policy till 1997, finally abandoning it for charging the majority a tuition fee (Marcucci, et al., 2006, p. 2). In 2005, Tanzania also moved from a dual track tuition policy to system where all students pay a substantial fee, and costs are deferred as loans (Marcucci, et al., 2006, p. 4).

A greater trend towards private financing can be visible in many parts of the developing world. China allowed for an education fee in 1989 which has coincided with the great increase in the number of students. Indonesia passed a legislation in 1998 that allowed private universities to determine their tuition level; this right was

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subsequently extended to all universities. More than a nominal tuition fee was introduced in India in 1997. Private expenditure has increased fourfold in India between 1983 and 2003 (Agarwal, 2006, as quoted in: Institute for Higher Education Policy, 2007, p. 7). In Indonesia, some public universities have quadrupled their earning from fees in a few years. In Vietnam, most institutes earn 40-45 percent of their income from tuitions (ADB, 2012, p. 10) .

In Europe, Ireland, Scotland and Hungary have gone against the trend by eliminating tuition. In 2000, the Scottish government replaced tuition with a graduate tax. The Irish government removed tuition fee in 1995. In 1998, Hungary abolished the tuition fee that had only been introduced in 1998. Students continue to pay tuition for some evening courses (Vossensteyn, 2004, p. 48). Germany also abolished tuition fees in most states in 2013; post a brief experimentation phase with tuition fee. Tuition fee is no longer permitted for regular full-time students (Times Higher Education, 2014).

There are different ways in which tuitions are determined. Australian institutions tie tuition fees to the alleged needs of the labour market. In the United States tuition can be determined by the field of the study. This can often deter low-income families from selecting certain subjects.

Country	Annual average tuition fee for first degree for domestic population (USD, PPP)	Annual average tuition fee for first degree government dependent private institutions (USD PPP, 2011)	Annual average tuition fee for first degree private independent institutions (USD PPP, 2011)
Australia	3924		10110
Austria	860	860	11735
Belgium	576-653	576-754	
Canada	4288		
Chile	5855	6924	6230
Denmark	no tuition		
Estonia	3527	3527	5322
Ethiopia*	128-180		
Finland	no tuition		
France	200-1402	1138-8290	
Hong Kong*	6398		
Ireland	no tuition		
Italy	1407		4406
India*	25-479		
Indonesia*	133-433		
Japan	5,019		8039
Kenya*	457-2857		
Korea	5,395		9383
Mexico	no tuition		5684
Mongolia*	1125-1688		
Netherlands	1966		
New Zealand	3645		

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Norway	no tuition		5868
Poland			1242
Singapore*	1340-4800		
South Africa*	2575-7385		
Spain	1129		
Sweden		no tuition	
Switzerland	863	863	
Taiwan*	980-1440		
Turkey	332		
United Kingdom		4980	
United States	5402		17163

Source: (OECD, 2013)

Source*: (Johnston & Marcucci, 2007)

“User charges” or fees are increasingly imposed to recover what were traditionally heavily subsidised services (for example: resident halls and dining halls) in former socialist / communist countries. In Norway and Finland, higher education remains free but living costs are borne by students who have access to loans.

As of 2011, Denmark and Sweden have introduced tuition fees for international students to increase the resources available for their tertiary institutions (OECD, 2013, p. 189). Australia, Canada, Netherlands, New Zealand, the United Kingdom and the United States have very high tuition fee but supportive public system for loans. Australia introduced the Higher Education Contribution Scheme in 1996 where the contributions by students increased by 40 percent from the previous average student contribution. The very generous grants which were earlier given to students in Britain have been eliminated. United Kingdom has steadily increased the tuition fee since 1997-98. It has the second highest ratio of private to public expenditure among European countries (Institute for Higher Education Policy, 2007, p. 6). Tuition fee is usually paid upfront in Japan, China and Canada, deferred payment option is exercised in Australia, the United Kingdom and Ethiopia (Johnston & Marcucci, 2007).

Around the world, the percentage of students accessing loans is increasing more rapidly than other forms of aid (Vossensteyn, 2004, p. 49). Kazakhstan, Georgia, Azerbaijan have experimented with supply side vouchers. In Kazakhstan, such vouchers are given to students who study the subjects of national priority. Eligibility tests are used to determine the qualified students. In Brazil, under the Universities for All Programme, the government uses tax incentives to “buy” space for academically qualified low-income students who did not qualify for public universities. The Colombian government also encourages private universities to reduce 75 percent fee for deserving candidates and provides loans for the left 25 percent (Salmi, 2013, pp. 6-9).

Japan, Korea, the Philippines, Indonesia, Brazil and other countries in Latin America and East Asia have avoided such costs by having limited public expenditure and encouraging the growth of private universities. Chile and Japan charge high tuition fees, but with very limited public expenditure. In 2011, Korea introduced reforms to increase the level of public support for higher education, with the goal of

expanding access to and improving equity in tertiary education (Johnston & Marcucci, 2007, p. 17) & (OECD, 2013, p. 189).

	Low/no percentage of students with financial aid	High percentage of students with financial aid
Tuition below \$1500	Austria, Belgium, France, Italy, Mexico	Denmark, Finland, Norway, Sweden
Tuition above \$1500	Chile, Japan	Australia, Netherlands, New Zealand, United Kingdom, United States

Source: (OECD, 2013)

High tuition fees, without state support can lead to skewed access to education. Chile has one of the highest university costs relative to its per capita income along with insufficient student aid. This hinders any upward mobility, in a country which as it is as high income inequality. Chile has new private universities sprouting everywhere with limited quality control. There is lack of state support and about 50 percent of students do not get any benefits from loans and or scholarships (OECD, 2013). In 2011, Chilean students protested in the streets about the cost of higher education, high interest for student loans, low social integration and unequal quality of universities. Although, in response to the protests the government has made some financial concessions, the overall system remains unchanged (González, 2013). Many Latin American countries like Mexico, Peru, Brazil and Colombia remain concerned about the affordability of tertiary education with high costs of non-governmental education (Murakami & Blom, 2008, p. 27). Further, high costs of education in Sub-Saharan African countries have led to participation in higher education being highly skewed in favour of better of student from urban metropolitan regions (Knight, 2009, p. 20). Highly private sector oriented universities without adequate loan mechanisms create problems where the wealthier students are able to crack the public education exams and have access to state-subsidised higher education, whereas the poorer students need to pay the fees for private universities. Providing affordable university education to the masses has been low on priority for most governments.

Trends in Research

Instruction, research and community service tend to be the three main aims of universities. Some authors have argued that there are economies of scope (that is, cost advantages associated with more than one product in the same institution) if research activities and teaching are conducted together. It is more efficient to produce teaching and research in the same institution by the same faculty. Nerlove argued that research and instruction are mutually supportive and reduce waste when conducted together (Nerlove, 1971, as quoted in: Smart, 1999, p.89). It has also been argued that the American university system with joint instruction and research is more efficient than its European counterpart with separation of research and instruction (Smart, 1999, p.89). At the same time, empirical proof for economies of scope remains limited.

Financial austerity is changing how research is conducted. Depending on the country, the research grants may fall only to a few universities or in the hands of business and investment. Many countries have also felt the pressure of research grant value declining. Some suggest that in today's climate, universities have to collaborate with industries to determine research useful for social benefit (Deloitte, 2011, p. 5). In some universities, increasing competition among colleges for research grants has become the main priority of the faculty. For example, in the United Kingdom there is increasing competition between universities for getting state support. This is further strained with the end of block grants and increasing number of private licenses. With block grants the majority of the research funds are allocated directly to institutions according to performance indicators, budget negotiations and other factors. This is replaced by project based which support short-term, low-risk projects at the cost of longer term fundamental research. (OECD, 2011).

There is greater focus on output oriented funding for research and teaching. South Africa has designed a funding model specifically based on teaching-related and research-related services. Institutes are paid for delivering on teaching and research outputs. While the research funds are granted according to outputs, teaching funds are determined by full-time student enrolment and by approved teaching output (Knight, 2009, p. 32). Australia, Germany and New Zealand have input-oriented research funding. While the United Kingdom, United States and Australia have an output-oriented research funding (Vossensteyn, 2004, p. 43). In the United States, the research grants are negotiated with the federal government. According to the 2004 National Study of Postsecondary Faculty, professors in the United States spend one third of their time on research (National Study of Postsecondary Faculty, 2004, as quoted in: The Association of Universities and Colleges of Canada, 2008, p.84). Individual research has become more important with the researchers competing for grants and concentrating on teaching graduate school and post-doctoral researchers. Undergraduate teaching is left to teaching assistants. In the United States, private players compete with public players to receive funding. In the United Kingdom, the National Research Councils use research track records as criteria for awarding research grants. This encourages institutes to invest in its best research niches, rather than a very broad focus (European Universities Association, 2011, p. 28)

Competitive funds are being used in countries like Chile, Egypt and Indonesia. The fund system can vary from country to country, for example, the proposals in such cases can be submitted either by the institution or a particular researcher. In Argentina and Indonesia both universities and researchers can submit the proposal. In Chile, both public and private universities can compete for the grants (Salmi, 2013, p. 6). Such competitive grants can often increase transparency and help institutions strategically plan their research. Ultimately a combination of block and earmarked grants can be the solution. Block grants give a degree of freedom to institutions usage of fund while the goal-oriented funds help attain specific aims.

The accounting for research costs also varies according to country. Universities in Canada and Australia tend to underwrite institutional costs and the cost of the time spent by the primary investigator in conducting research. The United Kingdom's Transparent Approach to Costing method of accounting includes the institutional cost

and cost of the primary investigator separately. This helps determine the exact cost of research conducted (The Associations of Universities and Colleges of Canada, 2008, p. 51).

Because of lack of sufficient funds and infrastructure, university R&D is low priority for some countries. The expenditure is low in terms of share of GDP in Brazil (0.05 percent), Chile (0.14 percent), Hungary (0.18) and the Slovak Republic (0.14 percent), and forms a substantial chunk in countries such as Norway (0.70 percent), Finland (0.80 percent) and Sweden (0.94 percent) (OECD, 2013, p. 188). Research areas and funding are dependent on the governments' policy priorities and industrial needs. Funding is often skewed in the favour of medicine, science and engineering.

Role of Technology

In the last decade the pace of enrolment in Massive Open Online Courses (MOOCs) has expanded rapidly. MOOCs are seen as a solution to rising education costs as they avoid many expenses associated with a bricks and mortar university. It avoids high labour costs as one teacher can more efficiently teach a larger group of students than face to face teaching and the costs associated with ownership: it also negates costs associated with the maintenance of a campus. With MOOCs students have greater flexibility on when, where and how to work. MOOCs also have the greater ability to reach new markets in developing countries that lack adequate quality higher education.

Technology has played a major role in improving the accessibility of higher education. It is increasingly being used to tackle the challenges of access, quality, and equity. Many countries are using distance learning models to meet the growing demand for education, with a cost-efficient way of increasing access. This rapid growth in the number of private and distance learning institutes; this has been partially attributed to the government not being able to keep pace with the growing demand for higher education (Butcher & Hoosen, 2012, pp. 2-3).

The long-term impact of ventures like Coursera, edX and Udacity remains unclear, but their contribution to access of knowledge has been profound. For example, Coursera is an online university created by two academics from Stanford University. In April 2012, Coursera secured \$16 million in venture capital funding. More than 30 international universities offer courses on this platform which have a 'paid' and a free track and reaches around 6 million students (Ernst and Young, 2012, p. 21). At the same time, in the past, many high-profile initiatives have been initially driven by aid money and been unable to sustain themselves in the long run. For example, the Utah State University online programme received multiple rounds of funding from the William and Flora Hewitt Foundation and the Bill and Melinda Gates Foundation, but suffered in transition to a financially sustainable institution. The failure was blamed on lack of integration between the university's regular programmes and the online programmes (Butcher & Hoosen, 2012, p. 7).

MOOCs need to design their financial models very carefully. Lower cost per student does not necessarily mean that the overall cost is less. There are large initial expenses for equipment and training for developers to implement online programmes effectively. Online courses have their share of capital and recurrent costs: the capital costs are those on buying the equipment and the recurring costs are the one

involved with maintaining the technology and designing the courses. IT, unlike other capitals costs such as building equipment and furniture has a more frequent recurrent maintenance costs.

The online education costs include: developing e-materials, teaching and assessing the students online, accessing the website, administering students online, infrastructure and support, planning and managing the e-education at a macro level (Rumble, 2001, p. 78) Costs of online courses can vary substantially because of difference in the number of assessments, interaction with the teachers and other students. Boettcher (2006) argues on the basis of her real experience and anecdotal evidence that over the last ten to 15 years of building computer-based material that it takes an average of about 18 hours of faculty time to create an hour of instruction for publication on the Web as the element of design is more important for web publication (Boettcher 2006, Butcher & Hoosen, 2012, p. 11). With online classes teachers spend less time per student, as more time is spent studying the material rather than lecturing (Rumble, 2001, p. 81). The cost of developing material such as text, audio, video material and learning simulations with a commercial software company's design can cost over \$500,000 (Rumble, 2001, p. 80). But, once these courses are developed, they can often be used again subject to annual revisions. Further, there are costs of e-administration, cost of building a commerce website and acquiring various software licenses and copyright clearances. Online courses can restructure the labour as compared to campus universities with different academic designing, delivering and assessing the course.

Besides MOOCs, technology is also playing a pivotal role in campus institutes. Delivery of e-content can be much more effective than paper based delivery. As a result, there has been an escalation in university costs with the purchase and maintenance of IT equipment. At the same time, many of these costs are unavoidable as technology has become important for providing good learning experience. Technology has changed how lectures are delivered, assessment is conducted and student feedback is provided (Ernst and Young, 2012).

While MOOCs enrich learning, they are unlikely to replace the current on-campus university model. The quality of education provided by open universities is not subjected yet to the same standards of quality control. At the same time, some open universities are supported by well-known traditional universities which give their name and reputation to increase credibility. MOOCs also have significantly higher rates of dropouts than regular universities. While the median number for online courses is 33,000 students and it total of 6 million students registered, only 280,000 certificates of completion have been issued. At the same time, its model differs significantly from the traditional university model where most students intend to complete the course. The rates of completion for students that are seriously inclined are much higher; for example those submit the first assignment, the completion rate leaps to 45 percent. And for those who take the paid track with safeguard for identity proof, this number is up to 70 percent (Kolowich, 2013).

MOOCs also have to be cautious in developing countries, where they need to include the cost of reception. Africa Virtual University, a pan-African intergovernmental organisation has had wide expansion, operating in 27 working with over 50. Initially it has been funded by the World Bank. But the university is unable to

be cost effective because the provider is often responsible for the student's Internet connection, workstation, and space. Developing countries are also concerned that most material is still created in the developed world leaving the developing countries as only consumers (Butcher & Hoosen, 2012).

While on the face of it, MOOCs are an economically efficient solution, it is a challenge to conduct an empirical analysis of whether online learning is more cost effective than face-to-face learning, because of very different online models as well as on-campus models. Other than that, another important question is what is more effective rather than cheaper. There is lack of data on evaluating learning achievement difference between traditional and online classrooms.

Conclusion

There is a worldwide trend of increasing university costs, which requires universities to diversify their source of revenue, as they can depend less on government grants. The increase in costs can be attributed inelastic demand for education, higher faculty costs, and increasing per student spending to excel in academic university rankings. On the revenue side this has led to increase in tuition and greater dependence on non-household private sources. While the degree of reliance on private sources varies from drastically from the Nordic model and Soviet model to highly private sector oriented players in East Asia, the general trend toward finding new sources of income cannot be ignored. While all countries struggle to keep up with financing education, the solution can differ from high tax Nordic model that can sustain on "user" charges to the Japanese model that is highly reliant on private universities. While the European countries still tend to depend highly on the government, other western countries like the United States, Australia and the United Kingdom are aggressively exploring new income sources. Despite the different models, Governments continue to play a major role in higher education institute funding, providing student loan and grants, and maintaining the quality of higher education institutes.

Note

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