

SPECIAL REPORT: UNIVERSITIES

EXCELLENCE V EQUITY

March 28, 2015

IF YOU LEARNED that the top dogs in a particular market were the same as 100 years ago, you would probably surmise that the business concerned had suffered a century of stagnation. In the case of higher education, which has been dominated by American universities since the early 20th century, you would be quite wrong. It grew slowly for the first quarter-century, gathered pace in the middle half and took off in the fourth quarter. You might then conclude that the top dogs were truly outstanding, or that there was something very odd about the market. In the case of higher education, you would be right on both counts.

America gave the world the modern research university. The American elite imported the model of the Oxbridge college in the 17th century to give its rough sons a polish. In 1876 the trustees of the estate of Johns Hopkins, a banker and railroad magnate, decided to use what was then the largest bequest in history to marry up the Oxbridge college with the research university, an institution the Germans had developed at the beginning of the 19th century. Both private and public universities adopted the model, and Harvard, Yale, Princeton, Caltech and the rest of America's top rank emerged as the prime movers of the world's intellectual and scientific life shortly afterwards.

These institutions have produced a startling number of the inventions that have made the world safer, more comfortable and more interesting. "Imagine life without polio vaccines and heart pacemakers...or municipal water-purification systems. Or space-based weather forecasting. Or advanced cancer therapies. Or jet airliners," wrote a bunch of America's business leaders to Congress in 1995, pleading with the government not to cut research funding to universities. Since then, those institutions have also powered the digital revolution that has improved life in every corner of the planet.

America led the world, too, in creating mass higher education. That transformation was driven in part by the economy's need for higher skills and in part by society's desire to give the men who fought in the second world war a chance to better themselves. America thus became the first country in the world in which the children of the middle classes went to college, and college became a passport to prosperity.

Given its success, it is hardly surprising that the American approach to higher education is spreading. Mass education has taken off all over the world. The American-style research university is the gold standard, and competition among nations to create world-class research universities as good as America's is intensifying. Spending on higher education is rising: across the OECD, from 1.3% of GDP in 2000 to 1.6% in 2011. Provision, financing and control everywhere is moving away from the European model, where everything is done by the state, towards the American one, in which the private sector provides a large part of the education and individuals pay for most of their tuition.

But just as the American model is spreading around the world, it is struggling at home. America's best universities still do more top-class research than any other country's; the problem lies in getting value for money on the teaching side. Tests suggest that many students do not learn enough these days. They work less than they used to. The average performance of America's graduates, compared with those of other countries, is low and slipping. Higher education does not increase social mobility but reinforces existing barriers. At the same time costs have nearly doubled in real terms in the past 20 years. The enrolment rate is falling. Technology offers the promise of making education both cheaper and more effective, but universities resist adopting it.

This special report will argue that the problems spring in part from the tensions at the heart of higher education between research and teaching, and between excellence and equity; but that technology and better information can help make the teaching side of the business more effective. America, having exported its model to the world, could learn some lessons from other countries about how to improve its own system.

How much is too much?

"Everybody's gettin' so goddam educated in this country there'll be nobody to take away the garbage...You stand on the street today and spit, you're gonna hit a college man," says Keller in Arthur Miller's play, "All My Sons", written in 1946. Higher education in America started to spread from the elite to the masses as early as the 19th century, with the establishment of the land-grant universities, but got its biggest boost with the 1944 GI bill that paid servicemen to go to college.

What happened in America then happened in Europe and Japan in the 1960s and 1970s, in South Korea in the 1980s, and is now happening the world over. Student numbers are growing faster than global GDP. So hungry is the world for higher education that enrolment is growing faster than purchases of that ultimate consumer good, the car (see chart 1). The global tertiary enrolment ratio – the proportion of the respective age cohort enrolled in university – increased from 14% to 32% in the two decades to 2012; the number of countries with an enrolment ratio of more than half went up from five to 54 over the period. Sub-Saharan Africa is the only part of the world where "massification" is not much in evidence yet.

Some countries, such as South Korea, where pretty much everybody goes to university, have probably reached saturation point. Others are still seeing phenomenal growth. In China, student numbers grew from 1m to 7m in 1998-2010. In the decade to 2009, Chinese universities hired nearly 900,000 new full-time faculty members. The country now produces more graduates than America and India combined, and by 2020 aims to enroll 40% of its young people in universities.

All over the world labour-market changes, urbanisation and demography have fuelled the boom. The "knowledge economy" has increased the demand for workers with well-furnished minds. When people go to live in cities, universities become more accessible so more people attend them. Rising numbers of young people have fuelled the boom, and – especially in Arab countries – combustible politics increase the need to offer opportunities to teenagers.

In most countries the number of 18- to 24-year-olds will shrink in the next half-century, but the demand for higher education seems likely to more than counteract that demographic effect. Simon Marginson of University College London's Institute of Education reckons that

“the tendency to growth of participation in higher education appears to have no natural limit” once a country’s GDP per person rises above \$3,000.

The laws of supply and demand suggest that this vast increase in the number of graduates should reduce the return on investment in a degree, and to some extent that seems to have happened. By and large, the return to higher education is higher in poor countries than in rich ones (see chart 2), except in the Middle East, where high enrolment combined with low growth has led to high graduate unemployment. Harry Patrinos, the lead education economist at the World Bank, reckons that globalisation has increased the chances for well-qualified people in poor countries of getting a good job.

In the rich world, even though nearly half of young adults are graduates and numbers are continuing to rise, the graduate premium (the wage difference between those with and those without degrees) has remained high enough for it to be worth going to university. Part of the explanation may be credentialism in some rich countries. The more people have degrees, the more employers will insist on recruiting graduates. In many countries jobs such as teaching and nursing, which did not require a degree 30 years ago, are now reserved for graduates. When just a small elite went to university, plenty of decent jobs were available to those with only secondary schooling. That is no longer true.

But changes in the labour market also help to explain the ever-growing pressure to get a degree. Automation has created what Claudia Goldin and Lawrence Katz, two Harvard academics, have called “a race between education and technology” which only those with plenty of education will win. As automation depresses wages at the bottom of the pile, inequality grows, and the more unequal society becomes, the riskier it is not to have a degree. For all the stories of university dropouts who became software billionaires, non-graduates have little chance of joining the ranks of the prosperous few.

As first degrees become standard, more people are getting postgraduate qualifications to stand out from the crowd. In both America and Britain, 14% of the adult workforce have a postgraduate degree; and despite the increase in supply, the postgraduate premium has increased in both America and Britain, especially since 2000. There was a time, points out Stephen Machin, professor of economics at University College London, when a postgraduate degree depressed wages; but that was when maths PhDs worked mainly in academia, not in the financial sector.

Although individuals enjoy decent returns to their investment in higher education, it is less clear that society as a whole does. The big question is whether the graduate premium is the consequence of higher productivity or of establishing a pecking order. If universities increase people’s productivity, then society should invest in having more graduates, but if they are merely a mechanism for signalling to employers that graduates are cleverer than non-graduates, then it should not. And since little effort goes into measuring whether universities actually educate people – a matter to which this special report will return – society does not know whether investing in education is worthwhile.

Even if the social returns on investment in higher education were poor, there would be a strong political argument for the state to provide access to it. If people need a degree to get ahead, then democratic governments must offer everybody with sufficient brains a chance of getting one. The market alone will not lend money at a reasonable rate to students who can provide no security, so even governments that rely heavily on private finance tend to offer loans to students.

But access to higher education is not binary. Some provision is excellent and some is not, and the returns to low-quality higher education are poor. So the ambition expressed by pretty much all governments everywhere to widen access to good-quality higher education conflicts with another global force: competition to create the best universities.

TOP OF THE CLASS

AS JAMIL SALMI leaves the stage at a Times Higher Education conference in Qatar, he is mobbed by people pressing their cards on him. As a former co-ordinator of the World Bank's tertiary-education programme and author of a book entitled "The Challenge of Establishing World-Class Universities", he is the white-haired sage of the world-class university contest. And he is greatly in demand, for the competition to climb the international rankings has become intense.

Higher education in America has long been a strongly competitive business. Students and university presidents alike keenly watch the rankings produced by the US News and World Report. Such rankings encourage stratification. One of the metrics is the proportion of students a university turns away, which encourages selectivity. That in turn encourages differentiation between better and worse universities. The American model is thus quite different from the continental European one, which (aside from France's grandes écoles) is a lot less selective and more homogeneous.

Now competition and stratification are spreading. According to Ellen Hazelkorn, author of "Rankings and the Reshaping of Higher Education", there are around 150 national rankings around the world. But thanks to globalisation and the growth in international student flows, attention has shifted from national to international rankings.

Governments want top-class universities because the modern economy is driven by human capital. The goal is to nurture people who will create intellectual property and clusters of high-tech companies similar to those around Stanford and Cambridge. A great research university is not a sufficient condition for creating such a cluster, says Jean-Lou Chameau, former president of Caltech and now president of Saudi Arabia's King Abdullah University of Science and Technology (KAUST); but "you can't do it without having more than one great university around."

Increasing reliance on tuition fees is another reason for more competition. Students "want to be sure that they have got a big global brand on their certificate that's going to be a passport to their future", says Phil Baty, editor-at-large of Times Higher Education. America's state universities, he says, used to show little interest in the international market. Now that their budgets have been cut, he sees a lot more of their presidents.

The qualities that matter

Nian Cai Liu of Shanghai Jiao Tong University started the international race in 2003. "My university was one of the first that the government picked to become a world-class university. I decided to benchmark us against those in the West," he says. He came up with six indicators of research excellence, used them to rank the world's top universities and published the result. It caused uproar in countries that did badly – particularly Germany, birthplace of the research university. Times Higher Education and another company, QS, followed with their own rankings. Shanghai focuses purely on research; THE and QS also look at things like staff-student ratios and reputation.

American institutions take the top slots in the Shanghai rankings (see chart 3), with Britain as the runner-up. Private universities dominate, though some state universities (such as California's) are also excellent. But in relation to their population size, the Nordic countries, Switzerland and the Netherlands do best, and there is movement in the rankings. Emerging markets are on the rise; America's state universities and Britain's second tier are slipping.

The rankings matter because of their impact not just on the amour propre of politicians and university presidents, but also on how universities are run. "Rankings force institutions and governments to question their standards. They are a driver of behaviour and of change," says Professor Hazelkorn.

One way of improving your rankings is to set up a top-class research outfit from scratch and hire a former head of Caltech to run it, as Saudi Arabia has done with KAUST. But not many countries can afford the \$20 billion endowment that KAUST is said to have received from the late King Abdullah. An alternative luxury model is to get a top-class foreign university to set up on your soil. The United Arab Emirates has got NYU (see article), which has also set up a campus in Shanghai, while Yale has a partnership with the National University of Singapore.

Qatar is doing something different again. Education City is a collection of eight foreign universities in grand new buildings on the outskirts of Doha, each of which teaches a subject the government considers useful to the country. Texas A&M does engineering (for the gas industry); Northwestern does journalism (for Al Jazeera, Qatar's news outfit); Georgetown does foreign studies (for Qatar's regional foreign policy); and so on. Nazarbayev University in Kazakhstan and Songdo University in Incheon, South Korea, have adopted the same model.

Competition has intensified not just for excellent academics but also for excellent students. Most countries, though, work with the universities they have got and try to improve the quality of their top institutions. China has a project called "985", launched in May 1998, to which the Shanghai rankings were a response. Germany launched its Exzellenzinitiative in 2005. In 2011 Nicolas Sarkozy, then France's president, announced a programme to create a "Sorbonne league" – clusters of universities and organisations affiliated to its Centre National de la Recherche Scientifique – to compete with America's Ivy League. Russia has started a project called "5-100" to get five universities into the Times Higher Education top 100. Japan, under its Super Global Universities Programme, will give selected universities extra funds, with the bulk going to 13 research universities. Britain has tweaked its system to hand more research money to the top tier and less to the middle-rankers (the bottom layer never got any anyway).

Excellent universities need excellent faculty, so competition for them has increased. Among the big markets, Australia, America and Canada universities are (on average) the best payers, but some of the new Gulf employers offer twice as much.

Pay for the best is rising in China, too. The country's universities were destroyed during the Cultural Revolution. As part of Deng Xiaoping's modernisation programme, Chinese students were sent abroad to study, and many did not return. In 2008 the country launched a programme, "Thousand Talents", to entice more of them back. Scholars get a 1m yuan (\$160,000) "resettlement grant", and universities use research funds from the government and industry to raise salaries. One of its successes is Shi Yigong, a former Princeton professor who is now professor of life sciences at Tsinghua University. He has (somewhat) narrowed the gap between salaries in his department and those in Western universities. When he returned in 2008, a full professor earned around 100,000 yuan (\$14,400) a year; now the figure is more like 300,000-500,000 (\$50,000-80,000) a year. Professor Shi is particularly proud of having recruited a scientist who had a job offer from Cambridge, though he says that he still has difficulty attracting talented young scientists with faculty positions from Harvard, Stanford or Princeton.

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Germany, too, is keen to welcome foreign students. Again, this is not to make money, since the universities do not charge tuition fees. Chinese students are prominent, as they are everywhere else. "Our demographics mean we are in need of foreign talent," says Georg Krücken, director of the international centre for higher-education research at Kassel university. "These students are nodes in a global network of talent."

There are plenty of worries about the effects of rankings. Bahram Bekhradnia, president of Britain's Higher Education Policy Institute, reckons that "they're worse than useless. They're positively dangerous. I've heard presidents say this all over the world: I'll do anything to increase my ranking, and nothing to harm it." That is hardly surprising, since universities' boards commonly use rankings as a performance indicator for determining presidents' bonuses.

One concern is that these metrics measure inputs rather than outputs. "The indicators are resource-intensive. They're about wealth," says Professor Hazelkorn. Some are also unreliable. A staff-student ratio is easily manipulated and says nothing about the quality of the teaching. But the main objection is that most of the metrics, directly or indirectly, concern research. There are no good internationally comparable measures of teaching quality. So one of Mr Salmi's favourite universities, the Franklin W. Olin College of Engineering in Massachusetts, which he says "provides a superb learning experience to its students", does not feature in international rankings because it does no research.

Justin Lin, a former chief economist at the World Bank and currently director of the China Centre for Economic Research at Peking University, has a habit of swimming against the tide. In 1979 he defected from the Taiwanese army to China, swimming across the narrow strait from Taiwanese-administered Kinmen to the mainland. These days his contrarian nature has tamer outlets: he doubts that China should be in the race to create world-class universities if the concept is defined by the number of its faculty's publications in journals dominated by the West's research agenda. "Who cares about world-class research if it doesn't apply to the conditions that you are in?" he asks.

The tallest poppies

Higher salaries for academics returning home are causing rancour. When Professor Shi circulated a proposal for offering generous salaries and ample research funds to top-flight scientists from abroad, he was criticised. "Some people said that they contributed to China's past development while these recent returnees stayed away in the West, but now these guys want luxury." In Singapore the shortage of places for locals has caused anger. Incentives for clever foreign students have been cut back.

In Germany the idea of promoting a few universities above the rest has met with resistance. "The myth of the German university is that all universities are equal. There has been a lot of criticism of [the excellence initiative]," says Professor Krücken. The government has

responded by setting up a new initiative, focused on teaching, not research, and covering more universities.

Europeans, cross that they did so badly in rankings designed by the Chinese and the Anglo-Saxons, have started their own systems. France's Ecole des Mines has produced the "Professional Ranking of World Universities" – the number of graduates from an institution who are running Fortune 500 companies – in which the French do nearly as well as the Americans and better than the British. The European Union has created the U-Multirank, a ratings system which gives different answers depending on the search criteria, to get away from the zero-sum competition of rankings. There is a virtue in that: a single indicator is rarely a good measure of quality.

But since the U-Multirank offers students little information on British or American universities, it is of limited use to those with global horizons. Anyway, politicians and university presidents, like the rest of humanity, are competitive creatures: nothing will stop them measuring themselves against each other. The main constraint on the race is not aversion to competition but the scarcity of funds. That is one reason why higher education is, increasingly, turning to the private sector for money.

A PEARL IN THE DESERT

JOE JEAN, A 25-year-old Haitian, cannot believe his luck. In the aftermath of the earthquake of 2010, University of the People, an American online university, offered scholarships to Haitians. Mr Jean took one of them up to study computer science and, as one of UoPeople's top students, was offered a place at New York University's Abu Dhabi campus. He gets his tuition and living expenses paid, plus a stipend of \$500 a quarter and two flights home a year.

NYU Abu Dhabi started up in 2008. In 2014 it moved to a new campus on Saadiyat Island, which, in contrast to the rest of the emirate, is intended as a haven of culture and beauty. The path that snakes past its minimalist white buildings is bordered by neat lawns, water features and shaded benches; an elevated walkway recalls New York's Hi-Line park. For now, most of Saadiyat Island is a building site, but NYU's neighbours will soon be local outposts of the Guggenheim, the Louvre and the Sorbonne, housed in equally elegant buildings.

Abu Dhabi's rulers want to turn the emirate into "one of the world's true cultural capitals" and to improve its education system, according to Khaldoon al Mubarak, an aide to Abu Dhabi's crown prince, who is on NYU's board of trustees. The country's ambitions may have been piqued by the extraordinary flourishing of culture in neighbouring Qatar, capped by I.M. Pei's stunning Museum of Islamic Art. For the privilege of hosting NYU, Abu Dhabi has forked out an initial donation of \$50m and paid for the campus. It also covers most students' tuition and living costs. When it is full, there will be 2,000 of them, the great majority of them non-Emiratis. If they cost as much to educate as do students at top American universities, the bill must be over \$100m a year.

The Abu Dhabi campus, along with one in Shanghai, fulfils the dream of John Sexton, NYU's president, to create a "global networked university". It has, he says, led to "an extraordinary elevation of brand", as well as more concrete benefits, including contributions to overheads (including his salary), new jobs and the ability to hire people who would not have come otherwise. "For 15 years I had been trying to get Anthony Appiah [a British philosopher, formerly at Princeton] to come to NYU. One trip to Abu Dhabi, and he came."

Some faculty are hired directly to the Abu Dhabi campus; some come from New York for stints of a few weeks to a few years. The money is good – up to twice as much as at home – and conditions are exceedingly comfortable, with pleasant apartments on campus and drivers on tap. One academic describes it as "like living in business class". The material rewards are not the only attraction. "The teaching is amazing here," says Justin Blau, a professor of biology at the campus. "The classes are really small, the students more motivated." And everything is so new that "it allows us to do things differently." The experimental research building, for instance, brings together biology, engineering and chemistry, enabling scientists to work across departmental boundaries.

Not everybody is happy. Mr Sexton has rubbed the faculty in New York up the wrong way over pay and property development, and the Abu Dhabi venture is another manifestation of his "imperial presidency", according to Andrew Ross, president of the local chapter of the American Association of University Professors in New York. There have been allegations of abuses of the workers who built the campus, and questions about whether an institution that depends on freedom of speech can flourish in an autocracy. "It's a monarchy, not an autocracy," says Mr Sexton, describing the crown prince, Mohammed bin Zayed al Nahyan, as a "philosopher-king".

Mr Al Mubarak has described Abu Dhabi's commitment to NYU as "a Catholic marriage. It's forever." But the campus is, inevitably, vulnerable to the vagaries of the oil price and Middle Eastern politics. A visit to it in a sandstorm, with clouds of dust blowing into the pristine buildings, makes an Ozymandian fate easy to imagine. For now, though, it provides a first-class education to young people from all over the world who would not otherwise be able to afford one. Back on the mainland, the Emirates Palace Hotel, with its Las Vegas-style decor and a vending machine that sells gold bars, serves as a useful reminder that there are worse ways to use surplus wealth.

MIX AND MATCH

THE STUDENT STRIKE in Quebec in 2012 did not just bring down the province's government; it also revealed deep cultural differences in ideas about university funding. French Canadian students, influenced by European thinking, were outraged that their government had proposed raising tuition fees from C\$2,168 (\$2,168) a year to C\$3,793; the rest of Canada, used – American-style – to much higher fees, was baffled by their fury.

In most European countries the state pays 80-100% of the costs of tuition. The main advantages of this model are equity and cost control. Where it works well – in northern Europe – graduate education levels are uniformly high. Where it works badly – in southern Europe – they are uniformly low.

Americans use mixed funding, with individuals paying most of the costs of tuition and the government helping out with loans and grants. In some countries with similar models, such as Japan and South Korea, individuals and families pick up the tab. These systems tend to be better funded and more expensive than the European ones (see chart 4) because people fork out readily, and costs are harder to control.

The mixed-funding model is spreading. That's partly because rising demand has increased the burden that higher education places on government budgets. So has "Baumol's disease", which increases the relative cost of labour-intensive industries, such as health and education, as technological change lifts the productivity of capital. Ageing populations are pushing up health bills, so education – another huge chunk of government spending – loses out; and since the social benefits of primary and secondary education are clearer than those of tertiary education, universities tend to suffer the most.

One option is to allow quality to deteriorate. That has happened in many European countries. In Germany students commonly pack lecture halls in their hundreds. "We have more and more students," says Georg Krücken of Kassel university, "but the number of professors doesn't grow at the same pace."

Another option is to make individuals pay more. In America, retrenchment in state budgets has pushed up tuition fees. In California, for instance, they have tripled over 15 years, and a further 28% rise is proposed. Outside America, the first big shift towards private funding happened in Australia, where tuition fees were jacked up in the late 1980s. A host of other countries followed, including New Zealand, Chile, South Africa, some of the former Soviet republics, Britain and Thailand. China used to impose no fees at all; now it charges 5,000-10,000 yuan (\$800-1,600) a year, not much for an urban family but a lot for a rural one. Countries with good universities increasingly rely on foreign students – who tend to pay more than domestic ones – as a source of revenue. In Britain, for instance, nearly a fifth of students are foreigners. International flows of students are up from 1.8m in 2000 to 3.5m in 2012.

Another source of private funds for universities is philanthropy. Endowments at some American universities dwarf income from fees. Institutions elsewhere are scouring the globe for wealthy alumni. Cambridge, which has done best out of the British universities, had collected £4.9 billion (\$7.6 billion) by 2012. Sometimes philanthropy extends across borders: in 2013 Stephen Schwarzman, chief executive of Blackstone, a private-equity company, handed over \$100m to establish a scholarship programme at Tsinghua University.

Horses for courses

The biggest provider of higher education that nobody has ever heard of is Laureate, an American for-profit education company with revenues of \$4 billion, nearly 1m students and 70,000 staff. It does not promote its brand because it prefers to be known through the names of the 80-plus universities and colleges it owns all over the world.

Private provision is growing. In some systems, private colleges (usually non-profit ones) provide a first-class education. That is true in America and is beginning to happen elsewhere, including India. Philip Altbach, director of the Centre for International Higher Education at Boston College, describes India's higher-education system as "a sea of mediocrity in which islands of excellence can be found". But those islands – such as the Indian Institutes of Technology – are accessible only to a lucky few. New private non-profit institutions are helping to broaden the provision, including Azim Premji University in Bangalore (whose eponymous founder made his fortune from Wipro, an IT company) and Shiv Nadar University near Delhi (the money for which came from HCL, another IT company). These new non-profits are too few and far between to transform India's system, but they may well create a wider choice of high-quality islands.

In much of Latin America, governments have handed over the job of providing mass higher education to the private sector. The results are patchy. In some countries, such as Brazil and Colombia, the state does a decent job of providing quality assurance, and there are many good private-sector outfits, both local and foreign-owned. Laureate has 11 colleges and universities in Brazil; nine have seen their scores improve since Laureate took them over, one has deteriorated and the remaining one has been bought too recently for the effects to have become clear.

In most of the world the private sector is active at the margins of higher education. Private for-profit companies, such as Kaplan and Apollo, both American companies serving the global market, tend to supply the more vocational end, like courses in law and accountancy. They cater to older students, often working people or parents, for whom the standard campus-based three- or four-year degree is not suitable. They also bring international students up to the level of the rich-country universities in which they have enrolled. The numbers in both categories are large and growing, so these are healthy markets.

As the protests in Quebec showed, raising tuition fees can be politically explosive. Several German states introduced such fees a decade ago and all have since abandoned them. "Tuition fees didn't fit well into the German tradition," says Professor Krücken. "Here higher education is seen as a public good." In Chile, student protests against the cost of higher education helped oust the government in 2013; the new government is committed to eliminating tuition fees. And Britain's Labour Party promises that if it wins the general election in May, it will bring down the maximum fee from £9,000 to £6,000 a year.

He who pays the piper

Advocates of private funding say that it makes students more demanding and universities more responsive (though they often forget to add that it may also increase the pressure to inflate grades). Sir Steve Smith, vice-chancellor of Britain's Exeter University, says his university spent £470m in 2009-14, raised from donations, borrowing, the government and its own cash, on getting the campus up to scratch: students paying fat fees expect decent facilities. The university is also making extra academic efforts: it has, for instance, promised that students will get essays marked and returned within three weeks of submitting them.

A decade ago Exeter had 11,000 students. Now it has 19,000 and plans to expand to 22,000. As better universities get bigger, worse ones will come under pressure. More reliance on philanthropy will mean that rich universities, which tend to produce rich alumni, will get richer still. Greater independence from government tends to make higher education systems more stratified, and thus more American – just when America itself is increasingly worried about its own system.

A FLAGGING MODEL

IN HIS PROPOSAL for reforming the curriculum at William and Mary College in Virginia, Thomas Jefferson wrote that it should nurture “those talents which nature has sown as liberally among the poor as the rich, but which perish without use, if not sought for and cultivated”. Inspired by Jefferson, Americans expect higher education to boost the chances of disadvantaged people, but it seems to be failing in that task – and in some of the other jobs its customers want it to do.

Higher education has two sets of customers: students and the government. Students want all sorts of things from it – to make friends, sharpen their minds and get away from home. But most of all they want it to improve their economic prospects.

Despite rising costs, college still does that. An investment in a four-year degree offers a return of around 15% a year for somebody working until the age of 65, a figure that has been steady since 2000. But the returns have held up not because graduates have done so well but because those with only high-school degrees have done so badly (see chart 5). And although average returns remain decent, the range is vast. According to Payscale, a pay consultancy, it varies from +22% to -21%. Rising inequality increases the range of possible outcomes, and hence the risk of taking on student debt.

Governments want three things from higher education: research, human capital and equity. On the research side, America’s government has little to complain of. Although several European countries have more Shanghai top 100 universities in relation to their population than the United States does, America still dominates the summit of research: 19 of the world’s top 20 universities in Leiden University’s ranking of most-cited scientific papers in 2014 were American.

On the human-capital side, things look less good. In 1995 America had the highest graduation rate in the OECD. Now it lags behind seven other countries. President Barack Obama has set a target for his country to return to the top of the graduation league by 2020, but it is unlikely to be met. Young American graduates are below the OECD average in numeracy (see chart 5) and literacy, and are doing relatively worse than older ones. Some of the explanation lies with the poor performance of America’s schools, but the most expensive tertiary-education system in the OECD might be expected to help students catch up.

Recent work by American academics suggests that it does not. Richard Arum of New York University and Josipa Roksa of the University of Virginia, authors of “Academically Adrift”, looked at the results of 2,300 students who took the Collegiate Learning Assessment (CLA), a test of critical thinking, complex reasoning and writing, and found that 45% of the sample showed no significant gains between their first and third years.

On equity, the results also look bleak. Graduation rates between rich and poor are diverging (see chart 5). Given the difference in spending on those at the top and at the bottom, that is perhaps not surprising. “Community colleges”, says Derek Bok, a former president of Harvard, “spend roughly \$10,000 per student. Harvard probably spends over \$100,000. And our students are much easier to teach.” The combination of state spending cuts, which have led some community colleges to restrict entry, and endowments lifted by booming stockmarkets is increasing the gap further.

In real terms, tuition fees have nearly doubled over 20 years. Big bills mean big debts (see chart 5). Nearly a third of students are in default, and the rate is rising. Student loans can rarely be discharged, even by bankruptcy, so default damages people's credit history, makes it hard to get mortgages and thus both harms people's welfare and acts as a drag on the economy. Given unprecedented default rates, there are worries that the federal government will be stuck with a lot of the debt.

Not what it seems

In most markets, the combination of technological progress and competition pushes price down and quality up. But the technological revolution that has upended other parts of the information industry (see article) has left most of the higher-education business unmoved. Why?

For one thing, while research impact is easy to gauge, educational impact is not. There are no reliable national measures of what different universities' graduates have learned, nor data on what they earn, so there is no way of assessing which universities are doing the educational side of their job well. Universities are paid on the basis of research, not educational, output.

Students, meanwhile, are not buying education any more than the government is. They are buying degrees, whose main purpose is to signal to employers that an individual went to a – preferably highly selective – university. Harvard degrees are valuable because there are so few of them. Harvard therefore has no incentive to make them cheaper, nor to produce more of them: that would make them less precious.

This helps explain why America's universities are failing to deliver equity. People are prepared to pay through the nose to buy advantage for their children, so top institutions charge ever higher prices and acquire ever more resources, while those at the bottom get less. That does not serve the Jeffersonian ideal of nurturing the talents of the poor as well as the rich for the greater good of society. So higher education has a divided soul: it is both a great collective enterprise to increase the nation's welfare and a fight to the death between status-hungry parents.

Employers are not much interested in the education universities provide either. Lauren Rivera of Northwestern University's Kellogg School of Management interviewed 120 recruiters from American law firms, management consultancies and investment banks. Their principal filter was the applicant's university. Unless he had attended one of the top institutions, he was not even considered. "Evaluators relied so intensely on 'school' as a criterion of evaluation not because they believed that the content of elite curricula better prepared students for life in their firms...but because of the perceived rigour of the admissions process," Ms Rivera wrote. After the status of the institution, recruiters looked not at students' grades but at their extracurricular activities, preferring the team sports – lacrosse, field-hockey and rowing – favoured by well-off white men.

If employers are not interested in grades, students might as well take it easy. That is, indeed, what they seem to be doing. Time-use studies show that the time students spend in class or studying has dropped from 40 hours a week in the 1920s to the 1960s to 27 hours a week now. And since academics are promoted largely on the basis of their research, they might as well give up teaching. That is, indeed, what they seem to be doing. Tenured faculty – the ones with the well-paid, secure jobs – spend less and less time with undergraduates. Increasingly, teaching is done by "non-tenure-track" faculty on short

contracts. Mr Arum and Ms Roksa conclude that “no actors in the system are primarily interested in undergraduate student academic growth.”

The peculiar way in which universities are managed contributes to their failure to respond to market pressures. “Shared governance”, which gives power to faculty, limits managers’ ability to manage. “It was thought an affront to academic freedom when I suggested all departments should have the same computer vendor,” says Larry Summers, a former Harvard president. Universities “have the characteristics of a workers’ co-op. They expand slowly, they are not especially focused on those they serve, and they are run for the comfort of the faculty.”

Cost control is especially hard. As Clark Kerr, who designed the Californian higher-education system in the 1960s, wrote: “The call for effectiveness in the use of resources will be perceived by many inside the university world as the best current definition of evil.” Bringing about change is also tough. Change is rarely welcome, but in most organisations competition makes it inevitable. Mr Kerr doubted that university faculty “can agree on more than the preservation of the status quo”. Academics’ resistance to change gains added strength from their belief that education is not an occupation but a calling; and that to defend it against barbarians is not self-interest but moral duty.

But the pressure for change is growing. Some of it comes from the federal government, which is trying to make higher education more equitable and to get more value for money. On the equity side, Mr Obama announced in his state-of-the-union address in January that attending community college would be free for most people. But since the least well-off already get grants to cover their living expenses as well as tuition costs, it is not clear how much difference that will make.

On value for money, the government has launched an attack on for-profit colleges. A report by a congressional committee published in 2012 found that for-profits had a 64% drop-out rate and spent 22% of revenues on marketing, advertising, recruiting and admissions, against 18% on teaching. The government is asking colleges to ensure that average debt repayment of graduates on their programmes is below a set percentage of graduates’ incomes. For-profits point out that they don’t control students’ borrowing, nor can they control incomes, which depend on the economic cycle. They maintain that the measure – currently stuck in the courts – would damage equity: since poorer students are more likely to get into financial trouble, “the powerful incentive”, says Andrew Rosen, chairman of Kaplan, “is to jettison the least-prepared students.”

Better information about the returns to education would make heavy-handed regulation unnecessary. There is a bit more around, these days, but it is patchy. The CLA has been used by around 700 colleges to test what students have learned; some institutions are taking it up because, at a time of grade inflation, it offers employers an externally verified assessment of students’ brainpower. Payscale publishes data on graduates’ average income levels, but they are based on self-reporting and limited samples. Several states have applied to the IRS to get data on earnings, but have been turned down. The government is developing a “scorecard” of universities, but it seems unlikely to include earnings data. “A combined effort by the White House, the Council of Economic Advisers and the Office of Management and Budget is needed,” says Mark Schneider, a former commissioner of the National Centre for Education Statistics. It is unlikely to be forthcoming. Republicans object on privacy grounds (even though no personal information would be published); Democrats, who rely on the educational establishment for support, resist publication of the data because the universities do.

There is pressure on the sector from the market as well as from the government. After years of big increases in tuition fees, universities are facing resistance from the customers, and financial prospects for the sector are looking gloomy. Moody's has a negative outlook: universities are "expecting the weakest net tuition revenue in a decade in fiscal year 2015". It expects tuition fees at public universities to rise by an average of only 1.9%, though at private universities the increase is likely to be a more comfortable 2.7%. In the past five years college enrolment among those finishing high school has fallen, as cash-strapped community colleges turn applicants away and for-profits restrict recruitment of marginal students.

"America seems to have hit a wall," says Simon Marginson. The country that has given the world so many ideas about how to run higher education could do with some new ones itself.

NOT CLASSY ENOUGH

WHEN MASSIVE OPEN online courses (MOOCs) took off three years ago, there was much concern that they would destroy traditional universities. That isn't happening. "We're doing a better job of improving job skills than of transforming the university sector," says Rick Levin, a former president of Yale, who runs Coursera, the biggest of the MOOCs.

At the margins, technology is making education cheaper, more convenient and more effective. University of the People, a non-profit American-accredited online university, offers degrees to students all over the world at a total cost of \$4,000; if they are poor, they can get scholarships. It started teaching in 2009, was accredited last year, has produced 65 graduates so far and now has 1,500 students. The faculty is made up of academics who volunteer their services.

The convenience of online study makes it especially suitable for working people. According to Phil Regier, dean of Arizona State University (ASU) Online, the market for online degrees in America is the 30m or so 25- to 40-year-olds who dropped out of college first time round. Mr Levin says that 85% of Coursera's students are over 22. The for-profit companies are also big providers of education to older people, and they increasingly rely on the internet. Of Kaplan University's 42,000 students, 94% study online. A handful of state universities are also in the online market: ASU has 13,000 online students as well as 70,000 on campus.

Derek Bok, the former Harvard president, is optimistic that computers can make teaching more effective: "Technology is gradually causing a number of professors to re-examine the way they teach, away from a passive form of learning to a more interesting and active form." Carnegie Mellon University developed an introductory statistics course in which professors teach for less than half the time they do in the traditional model, and students spend more than half their time on a computer programmed to help them when they get stuck. Only when a student has got the hang of that part of the course will he move on to the next.

William G. Bowen, a former president of Princeton University, tested such courses at several universities and found that students learned as much as with conventional teaching in three-quarters of the time, with cost reductions of 19-57%. Carol Twigg, president of the National Centre for Academic Transformation, tested similar methods in 156 projects, with similar results.

Established companies such as Kaplan, Apollo and Pearson (which owns 50% of The Economist) are all investing in "edtech", and a host of startups are piling in too. Kevin Carey, author of "The End of College", believes that electronic "badges" now being created by a number of startups, proving that the holder has earned a particular qualification (at a relatively low cost), will eventually undermine traditional high-cost university education. But so far edtech has not made much of a dent in it.

One reason is that universities are wary of undermining the value of their degrees. So the certificates that students get for completing MOOCs do not, by and large, count towards degrees, and are therefore unlikely to make much difference to their earnings. And online degrees tend to be priced so that they do not undercut the traditional, campus-based sort: at ASU they cost \$60,000, compared with \$40,000 for campus-based degrees for in-state students and \$80,000 for out-of-state students. Thus they have not helped hold down costs.

Resistance by faculty also slows down the adoption of new technology. When academics at San Jose State University were asked to teach a course on social justice created for EdX, a MOOC, by Michael Sandel, a Harvard professor, they refused, telling Mr Sandel that such developments threatened to “replace professors, dismantle departments and provide a diminished education for students in public universities”. Similar protests have been echoing around the country. For now, the interests of academics generally prevail over those of students.

HAVING IT ALL

IN ORDER TO produce innovative research and to stretch the best brains, a modern, democratic country needs excellent universities. In order to provide equality of opportunity and exploit people's talents to the full, it needs to give its cleverest young people a chance of getting into the best institutions regardless of their incomes and to offer everybody who wants to earn a degree a chance of doing so at a reasonable cost.

America's higher education system is doing well at creating excellence, but struggling with access and cost control. Given that much of the world is heading in its direction, the problems it is experiencing are likely to be replicated elsewhere. But measures can be taken to mitigate them.

Finance can make it easier to access higher education. In America, the government provides loans for all, which students have to repay irrespective of their earnings, and grants for the poor. The Obama administration has increased grants and eased loans to reduce the burden on the least well-off, but the combination of high costs and a fundamentally unforgiving loan system is discouraging the squeezed middle.

Australia's system of income-contingent loans lets students off making repayments unless and until their earnings reach a certain threshold. While leaving individuals to bear the bulk of the costs of tuition, they have not deterred the less well-off from going to university. There is a danger that the state may end up with a large bill, if the threshold is set too high or the economy underperforms; to keep the bill down, Australia's government charges higher earners more. Eight other countries have adopted similar systems. America should do the same.

Greater efforts need to be made to control the costs of higher education. Technology can help. Universities should be more adventurous in giving people access to their offerings online and in using technology to make education more effective. They might think that controlling costs is not important to them, but they would be wrong: in America the universities' customers are fed up with high fees and have started to vote with their feet.

Higher education needs to do more to prove its worth. At present, although it is clear that individuals, on average, benefit from a college education, it is not clear whether this is because their degree certificate signals to employers that they were clever enough to go to university or because their studies added to their human capital.

Latin American countries are leading the way in trying to find out. Their reliance on the private sector makes them especially conscious of the need to get value for money. In Brazil a federal government agency tests all graduate students before they enter a programme and after they have finished in order to measure the value the degree has added. Brazil now produces about as many scientific papers as the rest of Latin America put together.

Colombia has gone one further. In 2010 it started testing undergraduate students when they leave university, and compares the results with tests taken when they arrive to assess how much they have learned. It publishes average grades, along with average earnings, of graduates from different programmes at different universities, thus helping students decide where to go to university and what to study. Such rich information obviates the need for the heavy regulation that the American government is currently applying to for-profit universities.

The OECD is trying to establish a system for assessing what students all over the world have learned at tertiary institutions, similar to its widely watched PISA assessment of secondary-level achievement. AHELO, the proposed tertiary system, would start with economics and engineering, testing students both on their subjects and on their reasoning abilities. This would help young people decide where to study and employers to understand the value of their qualifications; it would encourage complacent universities to sharpen up their act and governments to put pressure on them to do so. "Nobody is telling young people the truth," says Andreas Schleicher, director of education and skills at the OECD. "They work hard to get a degree, but often when they get into the labour market they find it's not worth what they thought."

The OECD has been trying to get AHELO off the ground for eight years. A successful pilot convinced Mr Schleicher that the problems were not methodological or operational but political. The Japanese, Chinese and South Koreans are keen, he says: "They know that if they're going to compete in a global market they need proper metrics." The Americans are not. "It's difficult to get buy-in from elite institutions that have a lot to lose." There is no public opposition, but not much progress either. A former American official describes their approach as "foot-dragging". That is a shame: governments and students both need to know what they get for the money they pour into universities.

The American model of higher education has brought immense benefits to the world, and its global spread is to be applauded. But for all its virtues, it is expensive and inequitable. Costs are hard to control and value for money is hard to measure. Resolving these problems is partly up to governments, the universities' most powerful customers, but also up to the universities. The institutions that have done so much to change the world need to embrace change themselves.