

Global Education Primer - Stay in school

Education: a global thematic megatrend

We believe that education presents one of the most pressing socioeconomic challenges today, with 100m children never having attended school, tens of millions of dropouts, 800m illiterate adults, and major gaps in lifelong skills and training in both emerging and developed markets. We also believe that education for all (EFA) offers a once-in-a-generation investment opportunity to build healthy, prosperous and equitable societies, with every dollar invested in education generating US\$10-15 in economic returns (source: UN).

US\$4.5-5.1tn market today, US\$5.9-7.8tn by 2017E

The global education sector is worth US\$4.5-5.1tn today, encompassing K-12, post-secondary, corporate and government learning, e-learning, child care and language learning. Going forward, we see the fastest growth coming from e-learning and for-profit education, as well as from emerging markets' increasing focus and spend (notably China and Brazil). By 2017E, global education is on target to become a US\$5.9-7.8tn market (source: GSV Advisors, BofA Merrill Lynch estimates).

Strong growth drivers, EMs leading the way

Growth drivers include strong spending (c5% of global GDP), increasing enrolment rates (90% for primary completion, 71% for secondary enrolment), demographic opportunities (booming population of 5-17 year olds in EMs), more women in education, EMs upping their spend on education (disposable spending on education in China, India and Brazil is 10-13%), increasing global mobility, and a growing realisation of employment, earnings and economic development needs and opportunities (developed market graduates earn >US\$1m more than high school dropouts over their lifetime).

Structural shifts, for-profit/private & EdTech

We believe the high cost of education is placing a burden on cash-strapped governments and households, which means increasing dependence on private spending (32% of funding for higher education in the OECD, 62% in the US), a growing role for for-profit education companies, and an increasing focus on affordability and results. Further, we think the integration of ICT and the shift to EdTech (from print to digital and from classroom to online learning) means e-learning is set to become a US\$250bn+ market by 2017E, posing threats and opportunities for many incumbents.

Global Education Exposure Stocks

We have identified c.40 stocks with exposure to education-related products, services, technologies, themes, and solutions across K-12, post-secondary, content and EdTech.

**Bank of America
Merrill Lynch**


Sarbjit Nahal >>

+44 20 7996 8031

Equity Strategist

MLI (UK)

sarbjit.nahal@baml.com

Valery Lucas-Leclin >>

+44 20 7996 8058

Equity Strategist

Merrill Lynch (France)

valery.lucas-leclin@baml.com



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Refer to important disclosures on page 106 to 108. Link to Definitions on page 104.

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"Education is the most powerful weapon which you can use to change the world." – Nelson Mandela

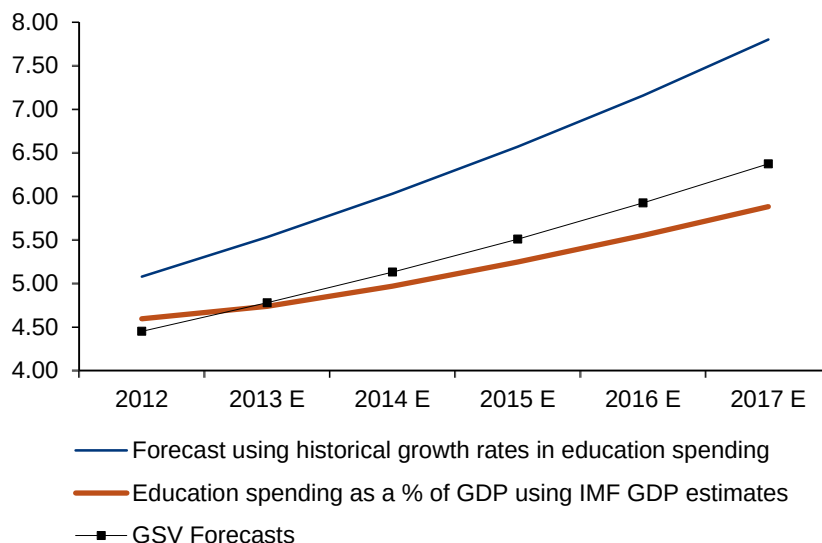
"An investment in knowledge always pays the best interest" – Benjamin Franklin

Stay in school, global education

We believe that education for all (EFA) offers a once-in-a-generation investment opportunity to build healthy, prosperous and equitable societies, with every dollar invested in education generating US\$10-15 in economic returns according to the UN.

- **Global education is a US\$4.5-5.1tn market today, on target to reach US\$5.9-7.8tn by 2017E, representing 7-9% CAGR**, with the fastest growth coming from e-learning and for-profit education, as well as from emerging markets (Source: GSV Advisors, BofA Merrill Lynch estimates).
- **Strong growth drivers with EMs leading the way:** healthy spending, increasing enrolment rates, demographic opportunities, more women in education, EMs raising spend on education, increasing global mobility and a growing realisation of the employment, earnings and economic development opportunities from education.
- **Structural shifts, for-profit/private and EdTech:** Education is undergoing two major structural shifts. First, a growing role for for-profit education companies, and an increasing focus on affordability and results, due to the high cost of education leading to greater dependence on private spending. Second, the growing integration of game-changing ICT and the shift to EdTech (i.e., from print to digital and from classroom to online learning).

Chart 1: Total Educational Spending US\$ tn



Source: IMF, GSV Advisors, BofA Merrill Lynch Global Research. Historical growth rates = based on IMF data for 2000-2010

Global Education Exposure stocks

In conjunction with our sector analysts, we have identified c.40 global stocks covered by BofAML that have exposure to education-related products, services, technologies, themes, and solutions including across K-12, post-secondary, content and EdTech.

Global Education Exposure stocks

With our BofAML Global Research sector analysts, we estimate the level and materiality of companies' exposure to education-related themes and the role of education as a long-term growth driver. For each company, we characterise its education exposure as follows:

- **Low** – Education-related products, services, and solutions are not very material to global revenues and/or growth but are a factor, among others, for the business model, strategy and R&D of the company.
- **Medium** – Education-related products, services, and solutions are an important factor for the business model, strategy and R&D of the company; and are material to sales and/or growth.
- **High** – Education-related products, services, and solutions are core to the business model, strategy and R&D of the company; material sales and/or growth driver; pure play (i.e. 100% of sales from products, services or solutions which help to promote education for all).

It is difficult to accurately gauge the link between education exposure and share price performance for these stocks, as many factors outside the scope of this analysis are likely to play a role in short- and long-term price development. However, we consider education exposure an important and positive element to track, given that education is a global megatrend with a 5-50Y lifespan.

The aim of identifying Education Exposure stocks and its underlying themes is to provide investors with information to identify company and sub-sector specific risks and opportunities that are inherent in the education theme.

Table 1: Global Education Exposure stocks

BBG Ticker	Company Name	Country	BofAML Ticker	Education sub-sector	Education exposure
LRN US	K12	United States	LRN	EdTech	High
SMT US	SMART	Canada	SMT	EdTech	High
ADBE US	Adobe	United States	ADBE	EdTech	Medium
AAPL US	Apple	United States	AAPL	EdTech	Medium
ARUN US	Aruba Networks	United States	ARUN	EdTech	Medium
CSCO US	Cisco Systems	United States	CSCO	EdTech	Medium
GOOG US	Google	United States	GOOG	EdTech	Medium
HPQ US	Hewlett-Packard	United States	HPQ	EdTech	Medium
INTC US	Intel	United States	INTC	EdTech	Medium
992 HK	Lenovo Group	Hong Kong	LNVG	EdTech	Medium
LNVG US	Lenovo Group	Hong Kong	LNVG	EdTech	Medium
MERU US	Meru	United States	MERU	EdTech	Medium
MSFT US	Microsoft Corp	United States	MSFT	EdTech	Medium
AMZN US	Amazon.com	United States	AMZN	EdTech	Low
IBM US	IBM	United States	IBM	EdTech	Low
005930 KS	Samsung Elec	Korea, Republic Of	SSNLF	EdTech	Low
ABRE11 BZ	Abril	Brazil	XEMEF	K-12 & childcare	High
9783 JP	Benesse Holdings	Japan	BSEFF	K-12 & childcare	High
BFAM US	Bright Horizons	United States	BFAM	K-12 & childcare	High
LRN US	K12	United States	LRN	K-12 & childcare	High
KROT3 BZ	Kroton	Brazil	XERUF	K-12 & childcare	High
XRS US	TAL Education	China	XRS	K-12 & childcare	High
XUE US	Xueda Education	China	XUE	K-12 & childcare	High
APOL US	Apollo Group	United States	APOL	Post-secondary, Colleges & Universities	High
CPLA US	Capella	United States	CPLA	Post-secondary, Colleges & Universities	High
COCO US	Corinthian Coll	United States	COCO	Post-secondary, Colleges & Universities	High
DV US	DeVry	United States	DV	Post-secondary, Colleges & Universities	High
ESTC3 BZ	Estacio	Brazil	ECPCF	Post-secondary, Colleges & Universities	High

Table 1: Global Education Exposure stocks

BBG Ticker	Company Name	Country	BofAML Ticker	Education sub-sector	Education exposure
EDMC US	Education Mgmt	United States	EDMC	Post-secondary, Colleges & Universities	High
LOPE US	Grand Canyon	United States	LOPE	Post-secondary, Colleges & Universities	High
ESI US	ITT Education	United States	ESI	Post-secondary, Colleges & Universities	High
KROT3 BZ	Kroton	Brazil	XERUF	Post-secondary, Colleges & Universities	High
LINC US	Lincoln	United States	LINC	Post-secondary, Colleges & Universities	High
STRA US	Strayer	United States	STRA	Post-secondary, Colleges & Universities	High
UTI US	UTI	United States	UTI	Post-secondary, Colleges & Universities	High
9783 JP	Benesse Holdings	Japan	BSEFF	Publishing & content	High
INF LN	Informa	United Kingdom	IFPJF	Publishing & content	High
PSO LN	Pearson	United Kingdom	PSORF	Publishing & content	High
PSO US	Pearson	United Kingdom	PSO	Publishing & content	High
REL LN	Reed Elsevier	United Kingdom	RUKEF	Publishing & content	High
ENL US	Reed Elsevier NV	Netherlands	ENL	Publishing & content	High
NWSA US	News Corp	United States	NWSA	Publishing & content	Medium
DISCA US	Discovery Comm	United States	DISCA	Publishing & content	Low
EBAY US	eBay	United States	EBAY	Publishing & content	Low
MMB FP	Lagardere	France	LGDDF	Publishing & content	Low
TRI US	Thomson Reuters	Canada	TRI	Publishing & content	Low
NVT AU	Navitas Limited	Australia	NVTZF	Miscellaneous	High

Source: BofA Merrill Lynch Global Research

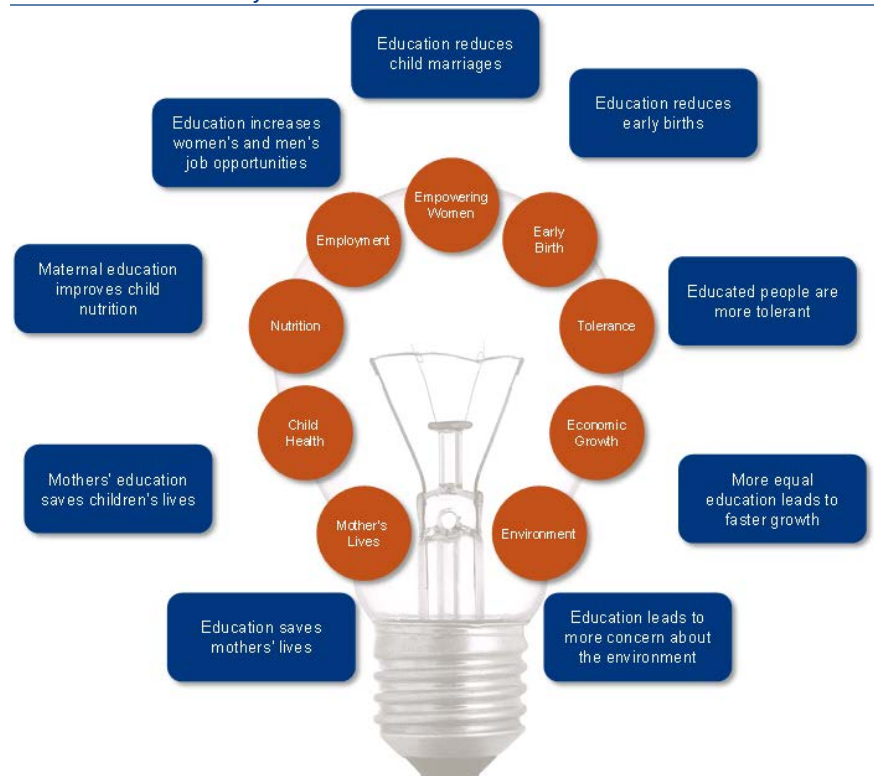
Education for all: a-once-in-a generation opportunity

Every dollar invested generating US\$10-15 in economic returns (source: UN)

Despite universal agreement on the need for education for all (EFA), the world is falling well short with over 100m children between the ages of 6 and 11 having never attended school, tens of millions more entering school only to drop out within a few months or years, and over 800m illiterate adults, most of whom have never been enrolled in school. (Source: UN). The challenges go beyond basic education to life-long skills and training, where many developed markets are also falling short. As we explore throughout this report, we believe that we have a once-in-a generation opportunity to realise EFA, which could have huge socioeconomic impacts in terms of:

- human capital (employment, equality, and development);
- building prosperous, healthy and equitable societies;
- tackling the disastrous human, social, economic and political consequences that have arisen from neglecting education; and
- avoiding long-term socioeconomic unrest.

Chart 2: Education's ability to transforms lives



Source: UNESCO, BofA Merrill Lynch Global Research

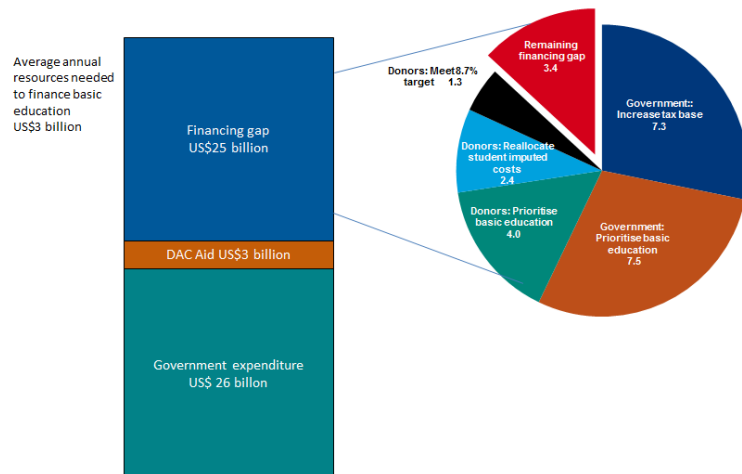
US \$26bn would fill the financing gap for basic education for all by 2015 (source: UN)

Six easy ways to achieve EFA goals

There is international consensus on six “education for all” (EFA) goals – under the auspices of UNESCO (United Nations Educational, Scientific and Cultural Organization) – with the aim to meet the learning needs of all children, youth and adults by 2015:

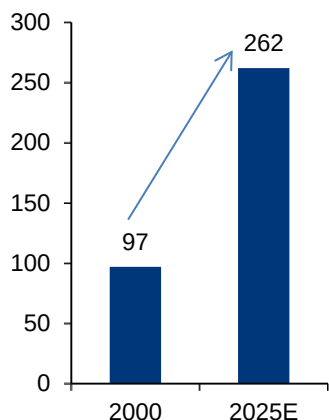
1. Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children.
2. Ensuring that by 2015 all children, particularly girls and children in difficult circumstances as well as those belonging to ethnic minorities, have access to, and complete, free and compulsory primary education of good quality.
3. Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life-skills programmes.
4. Achieving a 50% improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults.
5. Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality.
6. Improving all aspects of the quality of education and ensuring excellence of all so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

Chart 3: US\$26bn would fill the financing gap for basic education by 2015



Source: UNESCO

Chart 4: Worldwide student growth in higher education (m)



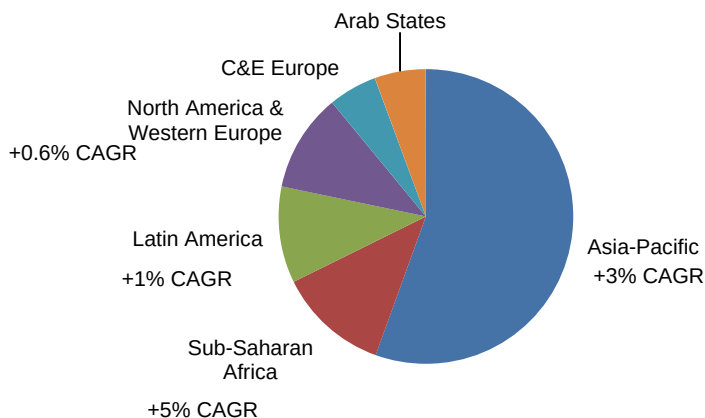
Source: Deloitte

Enrolment - on the rise

We have seen huge improvements in enrolment rates globally over the past 50 years. The proportion of people that attend school has risen from 57% to 85% and we have witnessed significant improvements in literacy rates, the combined primary, secondary and tertiary gross enrolment ratio (GER), and female enrolment (source: UNESCO).

Global enrolments in primary and secondary education rose from 400m and 184m in 1970, respectively, to 691m and 544m in 2010. Over the same period, the number of students in tertiary education increased from 33m to 178m. School enrolment rates at 2011 (% gross) had reached 90% for primary completion and 71% for secondary enrolment (source: World Bank, UNESCO). Nevertheless, there remains room for improvement in certain regions and countries and on girls' and women's enrolment, and on lifelong learning and skills.

Chart 5: Global K-20 student population (1998-2010 CAGR)



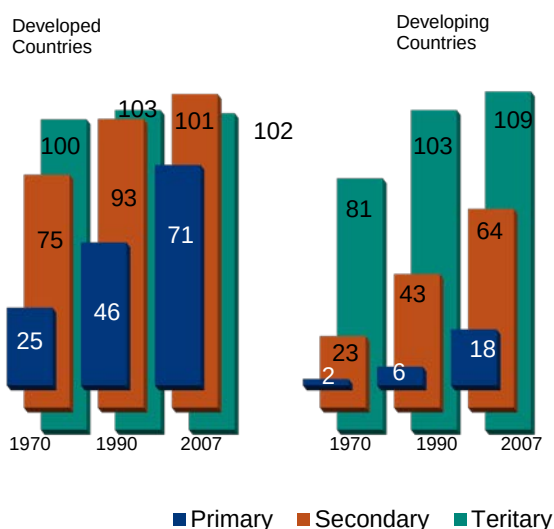
Source: Pearson based on UNESCO, BofA Merrill Lynch Global Research

No country has seen declines in literacy or years of schooling since 1970. And education has been extended to many more people: since 1960 the proportion of people that attended school has risen from 57% to 85% (Source: UN)

50 years of global progress on education levels

Global progress on education over the past 50 years has been widespread across a number of possible measures. For instance, years of schooling for 15+ year olds doubled globally (from less than four to eight) and tripled in EMs (from 1.9 to 6.4 years for each child from 1960-2010). Since 1990, the average number of years of schooling globally has risen by two and the gross enrolment ratio (GER) by 12%, while literacy rates have risen from 73% to 84% (source: UN Human Development Report).

Chart 6: Gross enrolment ratios by level of schooling, 1970–2007 [re-do as ML body chart]

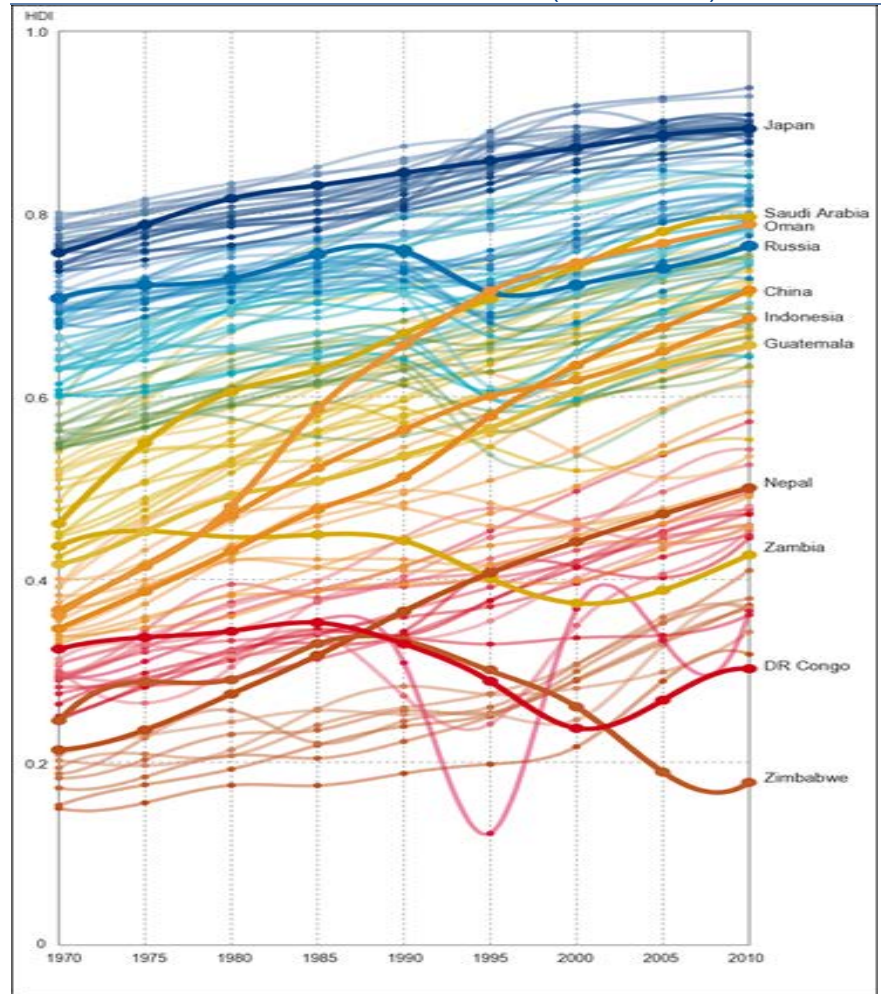


Source: HDRO calculations using data from World Bank (2010g)

Progress on the global education index

Over the past 50 years, we have seen widespread progress in education as quantified by the UN's education index – which is measured by the adult literacy rate (a two-thirds weighting) and the combined primary, secondary, and tertiary gross enrolment ratio (a one-third weighting). The adult literacy rate provides an indication of the ability to read and write. The Gross Enrolment Ratio (GER) is a pointer on the level of education from kindergarten to postgraduate.

Chart 7: Worldwide trends in education levels, 1970–2010 (Education Index)



Source: UNDP Human Development Report 2010, BofA Merrill Lynch Global Research

Primary completion rates have risen from 84% to 94% since 1991 (source: UN)

Progress on GER

Enrolment ratios and expected years of schooling (the number of years of schooling that today's children can expect, given current enrolment ratios) give a picture of current access to education. Average world enrolment ratios are 100% (statistically) for primary education in both developed and emerging markets. Furthermore, both groups have made substantial strides in higher levels of education, although EMs still have large gaps to close. More children are going to school and more are finishing: primary completion rates have risen from 84% to 94% since 1991. Increased enrolment is reflected in expected years of schooling, which has risen from nine in 1980 to 11 years today and from five to eight for low UN "human development index" countries (source: UN Human Development Report).

Table 2: GER in education – by level of development (%)

	GER in pre-primary education		GER in secondary education		GER in tertiary education	
	1999	2010	1999	2010	1999	2010
World	33	48	59	70	18	29
Countries in transition	47	64	90	93	41	58
Developed countries	76	85	100	100	56	73
Developing countries	27	43	52	66	11	22

Source: UNESCO, World Bank

Table 3: GER in education – by region (%)

	GER in pre-primary education		GER in secondary education		GER in tertiary education	
	1999	2010	1999	2010	1999	2010
World	33	48	59	70	18	29
Arab States	17	22	59	69	20	24
Central and Eastern Europe	52	69	88	88	40	66
Central Asia	20	30	84	95	19	24
East Asia and the Pacific	39	57	63	80	15	29
East Asia	39	57	62	80	14	28
Pacific	67	78	109	95	46	57
Latin America and the Caribbean	54	70	80	90	21	40
Latin America	55	72	81	91	22	41
North America and Western Europe	77	85	100	102	61	76
South and West Asia	22	48	44	59	8	17
Sub-Saharan Africa	10	17	25	40	4	7

Source: UNESCO, World Bank

Table 4: GER in education – by income level (%)

	GER in pre-primary education		GER in secondary education		GER in tertiary education	
	1999	2010	1999	2010	1999	2010
Countries with low income	11	15	29	42	4	8
Countries with middle income	32	52	58	71	14	26
Countries with high income	72	82	99	102	56	72

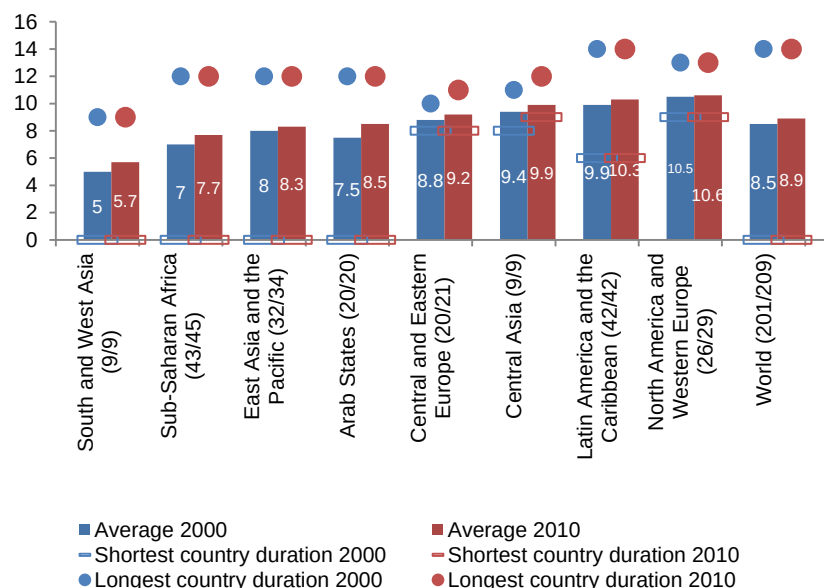
Source: UNESCO, World Bank

The global average duration of compulsory education was 8.9 years in 2010 (source: UN)

Number of years of compulsory education on the rise

Globally, the number of years of compulsory education has been generally on the increase since 2000. The global average duration of compulsory education was 8.9 years in 2010, a slight increase from 8.5 years in 2000. In 2010, the longest average duration of compulsory education was in North America and Western Europe (10.6 years) and in Latin America and the Caribbean (10.3 years). The shortest average duration was in South and West Asia at 5.7 years and in sub-Saharan Africa at 7.7 years (source: UNESCO).

Chart 8: Average duration of compulsory education by region, 2000 and 2010



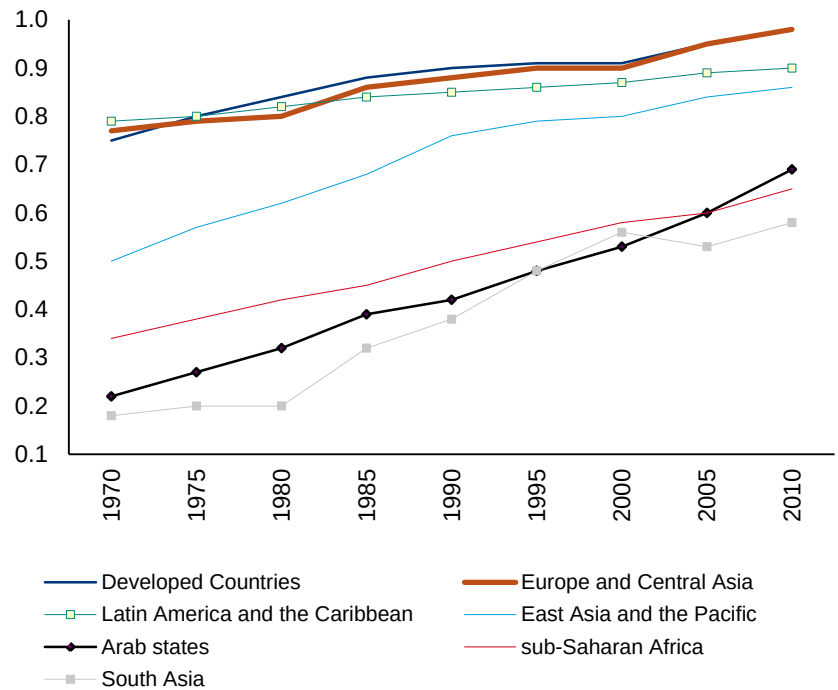
Source: UNESCO Institute for Statistics database and International Bureau of Education database

Secondary school enrolment of girls relative to boys exceeds 98% in 79 of the 134 countries with available data (source: UN)

Significant improvements in female enrolment

Enrolments have increased faster for girls than for boys over the past few decades, and from 1991 to 2007 the ratio of female to male primary enrolment rose in all regions. Both primary and secondary school completion rates have improved more rapidly for girls. On average between 1991 and 2007, girls' completion rates rose by 29 percentage points to 87%, while boys' rates rose 17 percentage points, to >90%. Improvements in girls' rates are reflected in the progress in secondary school enrolment. Secondary school enrolment of girls relative to boys exceeds 98% in 79 of the 134 countries with available data. In a further 17 countries, the enrolment ratio of girls relative to boys is at least 95% (source: UN HDR).

Chart 9: Ratio of female to male mean years of schooling by region, 1970–2010



Source: UN Human Development Report 2010

In the Arab States, the average for higher education is now 132 women for every 100 men (source: UN)

Female enrolment in higher education exceeds males in many countries

Female enrolment in higher education exceeds that of males in many parts of the world. In the Arab States, for example, where enrolment in higher education rose 45% from 1991–2007), the average is now 132 women for every 100 men. Lagging are South Asia and Sub-Saharan Africa, with female to male ratios of 75% and 51%, respectively (source: UN HDR).

But plenty of room for improvement

However, there is plenty of room for improvement: of the 156 countries with data, only 87 have primary school enrolment ratios for girls close to or above those for boys. While gender gaps are small on average for young children in EMs, they remain pronounced for older children in rural areas (source: UN HDR).

Progress on adult literacy

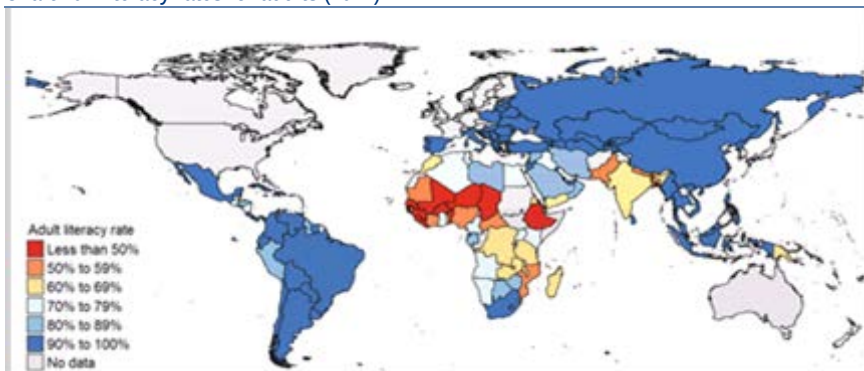
In 2011, the global adult literacy rate was 84.1% compared with 89.5% for youth. By 2015, the target year for Education for All and the Millennium Development Goals, the global literacy rate is estimated to reach 86% for adults and 92% for youth. Adult literacy rates are estimated to continue to rise but to remain below the youth literacy rate in nearly all regions (source: UNESCO).

Table 5: Global literacy rates and population numbers for adults and youth, 2011

Adult & Youth literacy	Rate
Adult literacy rate, total	84.10%
Adult literacy rate, male	88.60%
Adult literacy rate, female	79.90%
Adult illiterate population, total	773.5 mn
Adult illiterate population, female share	63.80%
Youth literacy rate, total	89.50%
Youth literacy rate, male	92.20%
Youth literacy rate, female	86.80%
Youth illiterate population, total	123.2 mn
Youth illiterate population, female share	61.30%

Source: UNESCO Institute for Statistics, September 2013

Chart 10: Literacy rates for adults (2011)



Source: UNESCO Institute for Statistics, September 2013

64% of the world's illiterate adults are women
(source: UN)

Still a long way to go

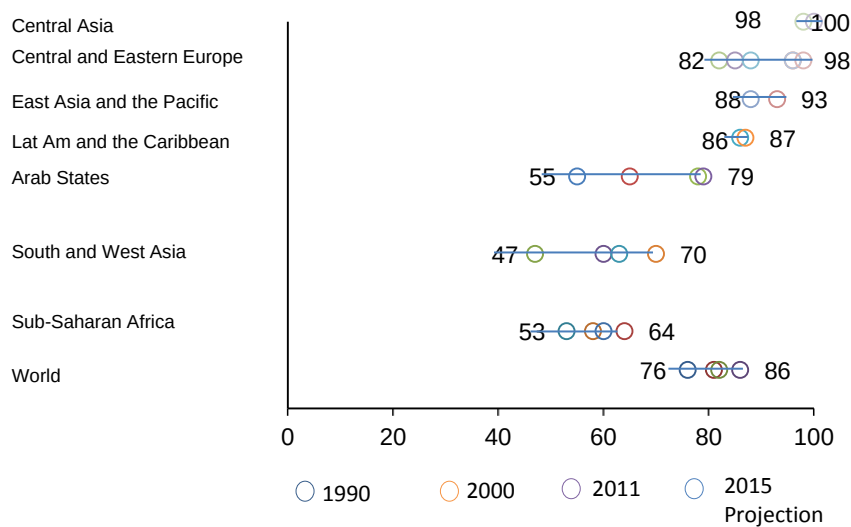
While the number of illiterate people has fallen over the past decade, 774m adults, of whom 64% are women, still lack basic reading and writing skills. The lowest literacy rates are in sub-Saharan Africa (24% of illiterate adults) and in South and West Asia (53% of illiterate adults), with 11 countries having literacy rates of less than 50% (source: UNESCO).

Chart 11: Global literacy rates



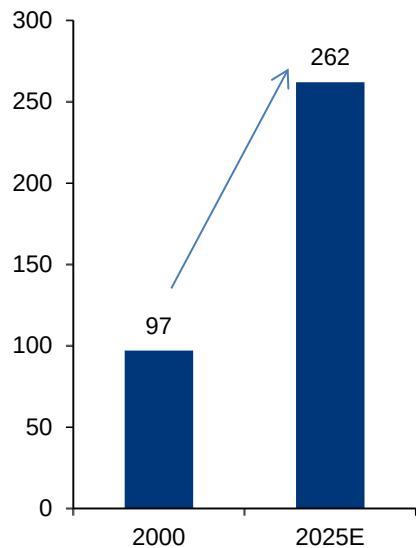
Source: UNESCO, World Bank, BofA Merrill Lynch Global Research

Chart 12: Adult literacy rate, 1990-2015



Source: UNESCO Institute for Statistics, September 2013

Chart 13: Worldwide student growth in higher education (m)



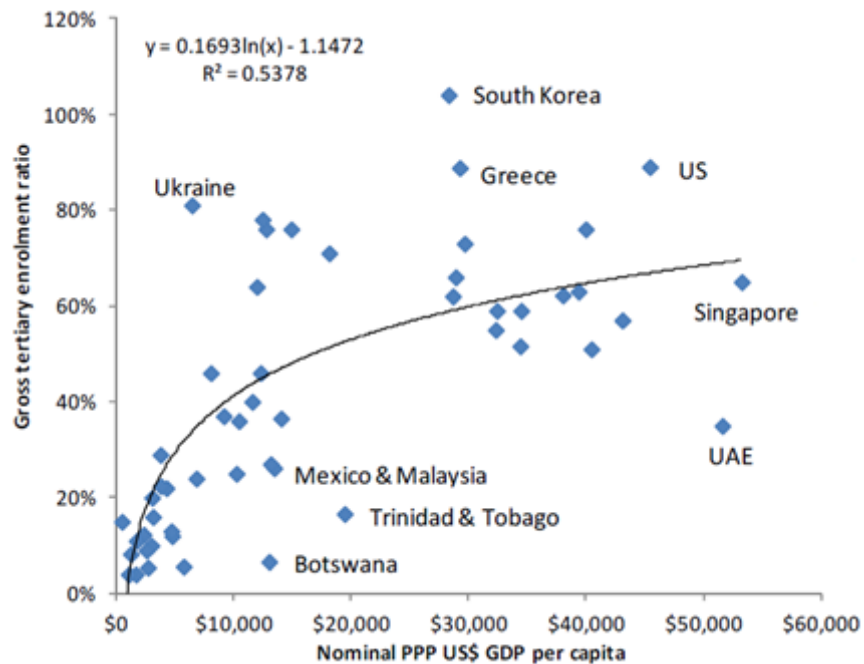
Source: Deloitte

Significant improvements in tertiary education

From 1970 to 2010, the number of students in tertiary education rose from 33m to 178m (source: World Bank). From 1990 to 2010, tertiary enrolment grew 5% pa vs. 1% for the world's population aged 18-22 – meaning significant growth in the gross tertiary education ratio (source: UN). China, India, the US and Russia account for 45% of total enrolments (source: British council).

- **EMs will drive higher education demand off the back of demographics:**
By 2020, four countries will account for more than 50% of the world's 18-22 year olds (India, China, the US and Indonesia) and a further 25% will come from nine countries (Pakistan, Nigeria, Brazil, Bangladesh, Ethiopia, the Philippines, Mexico, Egypt and Vietnam). In contrast, we will see significant declines for China (>20m), Russia, Germany and South Korea.
- **Tertiary enrolments will continue to grow to 2020** at 1.4% pa globally.
The highest growth in tertiary enrolments is expected in China (from 24% to 38% by 2020) and India (16% to 23%). Other EMs with significant growth are Brazil (+2.6m), Nigeria (+1.4m), and the Philippines, Bangladesh and Turkey (+0.7mn each) (source: British Council). The largest tertiary systems by 2020 will be China (37m), India (28m), the US (20m) and Brazil (9m). By 2025, global HE enrolments should hit 262m (source: Deloitte).

Chart 14: PPP per capita and tertiary enrolment (2009)



Source: British Council based on Haver Analytics, Oxford Economics, UNESCO

Demographics, opportunities and risks

The demographic pieces of the puzzle on education are in place: the world's population is on track to hit 9bn by 2050; the percentage of school-age children (under 15s) is on the rise; EMs need to step up to the educated-workforce challenge; education for girls is improving

"Ambitious education policies can enable medium and high HDI countries to curb projected increases in their dependency ratios, in order to make their demographic transition towards an ageing population less difficult." (Source: UN HDR 2013)

We believe there is a close relationship between the opportunities and risks that that arise off the back of both demographics and education. But we think both demographic and education policy trends are not deterministic and can be influenced by one another. Improvements in educational opportunities can give the growing number of young women and men in many countries (e.g., sub-Saharan Africa, India) the skills they need to move into formal-sector jobs, earn higher wages and allow countries to realise a potential demographic dividend. On the flipside, we think failure to create jobs and expand into more high-skilled opportunities for a newly educated workforce and/or tackle challenges around the fall in working-age population (e.g., Asia-Pacific) invites the risk of social unrest and/or economic decline.

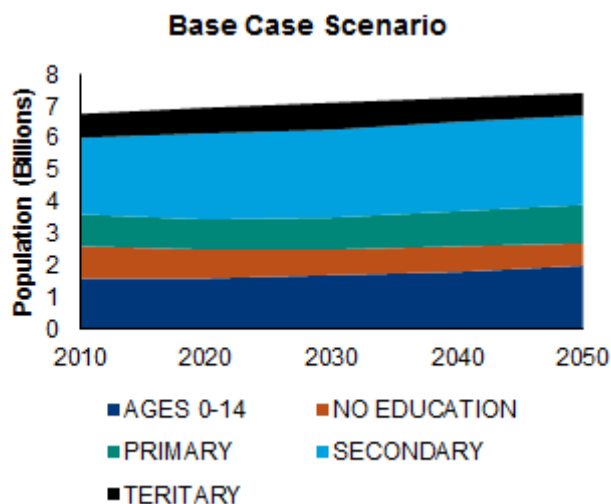
Pieces of the demographic puzzle are in place

We believe the demographic pieces of the puzzle on education are in place: the world's population is on track to hit 9bn by 2050; the percentage of school-age children (under 15s) is on the rise; EMs need to step up to the educated-workforce challenge; education for girls is improving, but progress is still uneven; and globalisation is being realised via more internationally mobile students.

A fast track scenario on education will boost educational outcomes

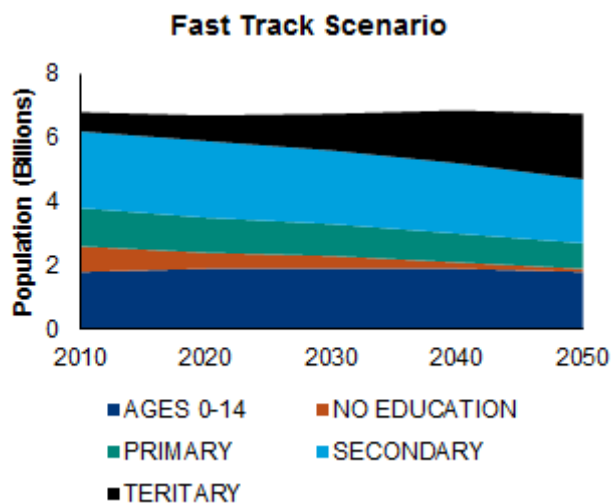
Under a "fast track" scenario for 2010–2050 in which the countries with the lowest initial education levels embrace ambitious education targets, the decline in the dependency ratio for low human development index countries is more than twice that under the base case scenario in which enrolment ratios remain constant at each level of education. We believe this would play a significant role in easing their demographic transition towards an ageing population (source: UN HDR).

Chart 15: The base case scenario, in which enrolment ratios remain constant at each level of education



Source: UN HDR

Chart 16: The fast track scenario, in which countries with the lowest initial education levels embrace ambitious education targets



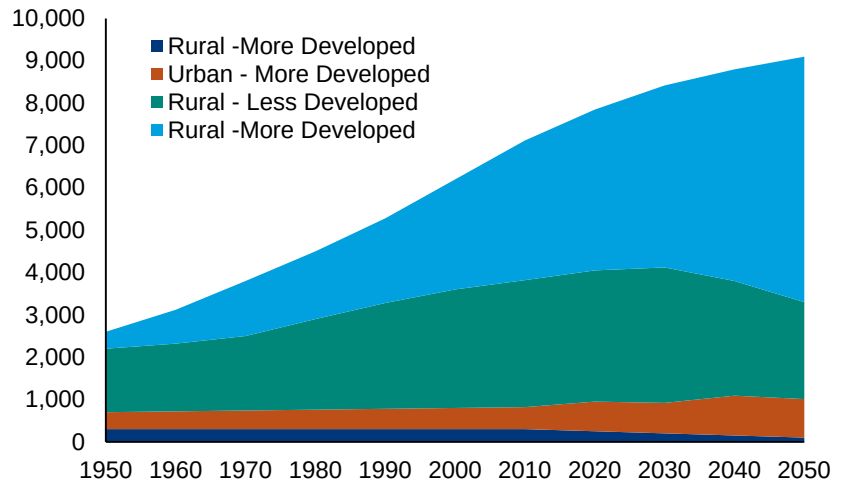
Source: UN HDR

Eight countries will account for half of the projected increase from 2013-2100: Nigeria, India, Tanzania, Democratic Republic of Congo, Niger, Uganda, Ethiopia and the US (source: UN).

Population growth, more potential students

The world population grew from 2.5bn in 1950 to 7bn in 2011, and is forecast to reach 7.6bn by 2020 and 9bn by 2050 (source: UN).

Chart 17: Global population trends



Source: UN Population Division

- **Average fertility rates will continue to decline** from 5.0 live births per woman in 1955 to 2.53 in 2005-10, 2.24 in 2045-50, and 1.99 by 2100 (source: UN DESA).
- **Life expectancy will continue to rise:** from 46 years in 1955 to 69 in 2005-10 to 76 in 2045-50, and to 82 by 2095-2100. Life expectancy in more developed regions will increase from 75 years in 2005 to 82 by 2050. Among the least developed EMs, life expectancy is projected to increase from >50 years to 66 by 2050 (source: UN DESA).
- **Almost all of the population growth will come from EMs**, which currently account for 5.3bn people, rising to 7.8bn by 2050, according to the UN.
- **Eight countries will account for half of the projected increase from 2013-2100:** Nigeria, India, Tanzania, Democratic Republic of Congo, Niger, Uganda, Ethiopia and the US. Half of all population growth is concentrated in a small number of countries (source: UN DESA).
- **Developed markets' population will be largely unchanged** going from c.1.25bn in 2013 to 1.28bn by 2100bn globally. The exception is the US – its population is expected to grow 44% to reach 439m in 2050. The populations of Germany, Italy, Japan, and most of the former-USSR/CIS are expected to decline to 2050 (source: UN DESA).

Table 6: Most populous nations – 2014 vs. 2050

2050	2014	Country	2050	2014	% change
1	2	India	1,523,482,000	1,224,614,000	24.40%
2	1	China	1,393,076,000	1,341,335,000	3.90%
3	3	United States	361,680,000	310,384,000	16.50%
4	4	Indonesia	279,659,000	239,871,000	16.60%
5	7	Nigeria	257,815,000	158,423,000	62.70%
6	6	Pakistan	234,432,000	173,593,000	35.00%
7	5	Brazil	220,492,000	194,946,000	13.10%
8	8	Bangladesh	181,863,000	148,692,000	22.30%
9	9	Russia	136,429,000	142,958,000	-4.6%
10	11	Mexico	135,398,000	113,423,011	19.40%
—	—	World	8,321,380,000	6,895,889,000	20.70%

Source: UN Population Fund

By 2020, four countries will account for over 50% of the world's 18-22 year olds: India, China, the US and Indonesia

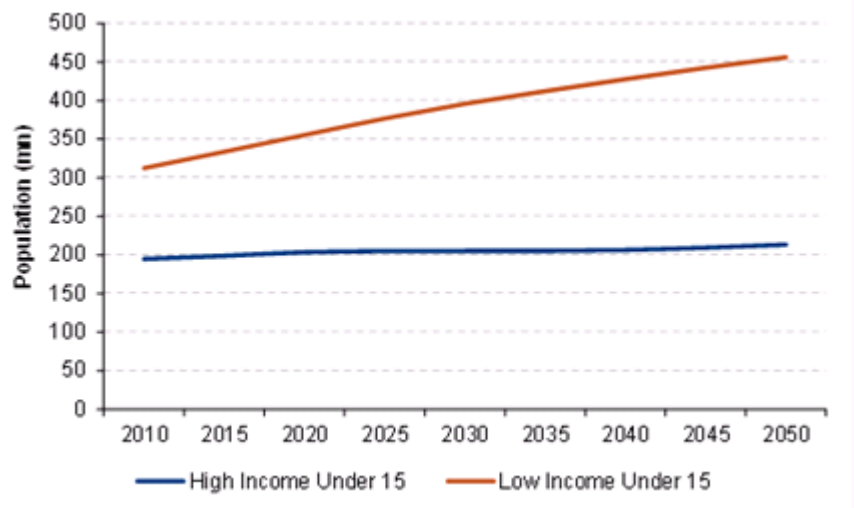
Number of school-aged children booming in EMs

Rapid population growth and reduced mortality rates in EMs mean that the number of 5-17 year olds is forecast to grow by nearly 50m (3.1%) from 2010 to 2020 (source: UK Department for Business, Innovation and Skills).

Low-income countries have 2x the number of under 15s

Low-income countries have large under-15 populations (e.g. India at 374m and Nigeria at 63m). Globally, the percentage of the population under 15 in low-income countries is more than double that of high income countries (source: IFC).

Chart 18: Under-15 population to 2050

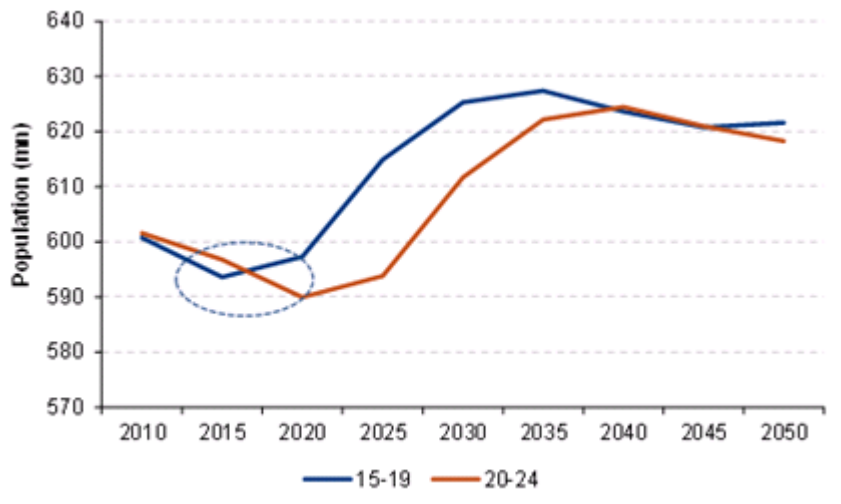


Source: World Bank

18-24s set to decline slightly

The population of 18-24 year olds is, however, forecast to decline slightly to 2020, due primarily to a falling birth rate in China – and as fertility rates fall in other EMs in the coming decades.

Chart 19: 18-24 population to 2050



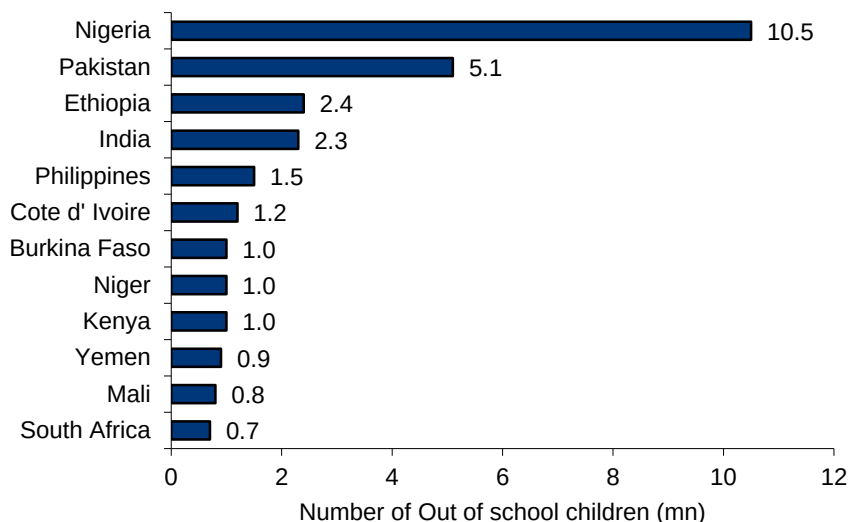
Source: World Bank

Many EMs face a significant challenge in realising a demographic dividend by educating the young to act as a vehicle for social and economic mobility and a driver for national economic growth

EMs need to meet educated-workforce challenge

With low literacy rates and high illiteracy rates, many EMs face a significant challenge in realising a demographic dividend by educating the young to act as a vehicle for social and economic mobility and a driver for national economic growth. Failing to capitalise on the dividend invites a greater risk of social unrest. We believe this risk will only increase in the coming years on the back of automation trends.

Chart 20: Almost half the world's out of school children live in just 12 countries



Source: OECD , Number of children of primary school age who were out of school in 2010 or nearest

Population prospects vs. educational attainment

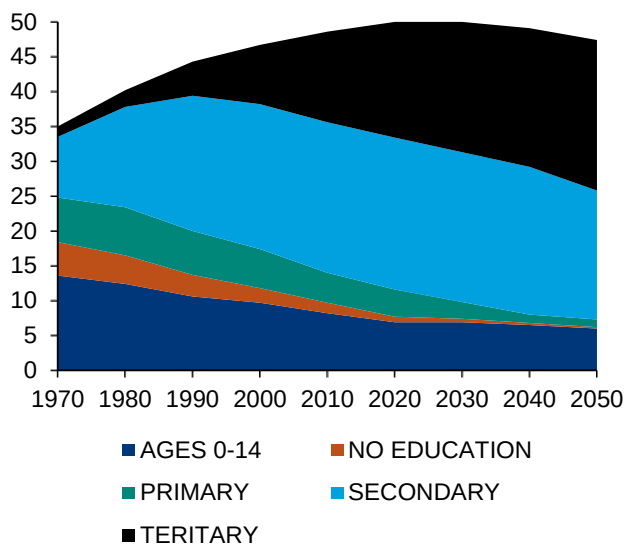
If we look at the case of South Korea vs. India, we can see the long-term interrelationship and knock-on effects between demographics and education:

- **Educational attainment has risen rapidly in South Korea since 1950** – and the elderly Koreans of the future will be much better educated than the

elderly Koreans of today (as well as healthier given the positive correlation between education and health). The proportion having a tertiary education will rise from 26% to 47% (source: UN Human Development Report 2013).

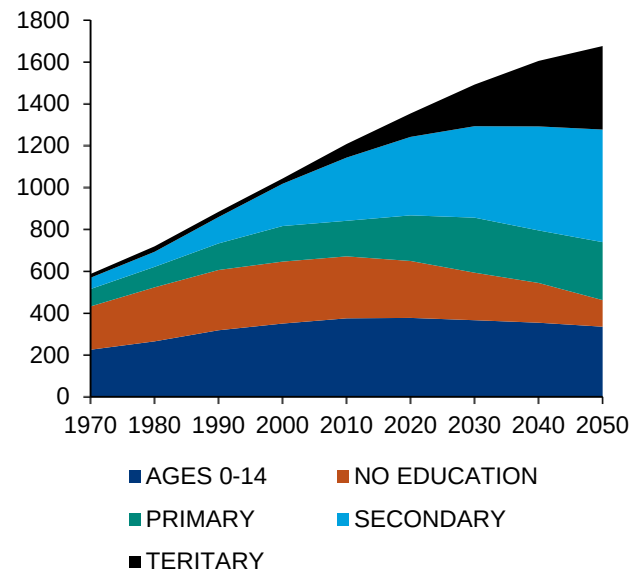
- **Before 2000, over half the population in India had no formal education.** Despite recent improvements, this lower level of education, especially among women, means sizeable population growth to 2050 with a large proportion of uneducated, elderly adults. Rapid expansion in tertiary education will, however, build a very well-educated young labour force (source: UN Human Development Report).

■ Chart 21: Korea constant enrolment ratios (population mn)



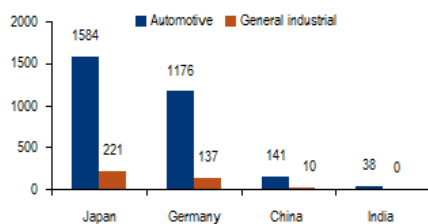
Source: UN Human development Report 2013

Chart 22: India, fast track scenario (population mn)



Source: UN Human development Report 2013

Chart 23: Robot density (no of robots per 10k employees)



Source: BofA Merrill Lynch Global Research Estimates, Kuka, IFR World Robotics 2012

"Education empowers girls and young women, in particular, by increasing their chances of getting jobs, staying healthy and participating fully in society – and it boosts their children's chances of leading healthy lives." (Source: UN)

Automation, robots & industrial internet = more pressure

Strong secular drivers for automation (e.g. wage inflation, productivity, energy efficiency, peaking working age in China), the increasing adoption of robots (which can work 24-7), and the move to the "industrial internet" (mass integration of machines, plants and processes) – means a growing threat of human disintermediation, especially at the low-end of manufacturing in many EMs. This adds to the pressures on EMs to move away from manual labour and to move up the value chain in terms of education and lifelong skills, training and learning. Long-term adaptation to these issues will be key to determining whether many EMs can strike a balance between maintaining income equality and social harmony, while also aggressively moving into higher value added industries – or face growing social unrest.

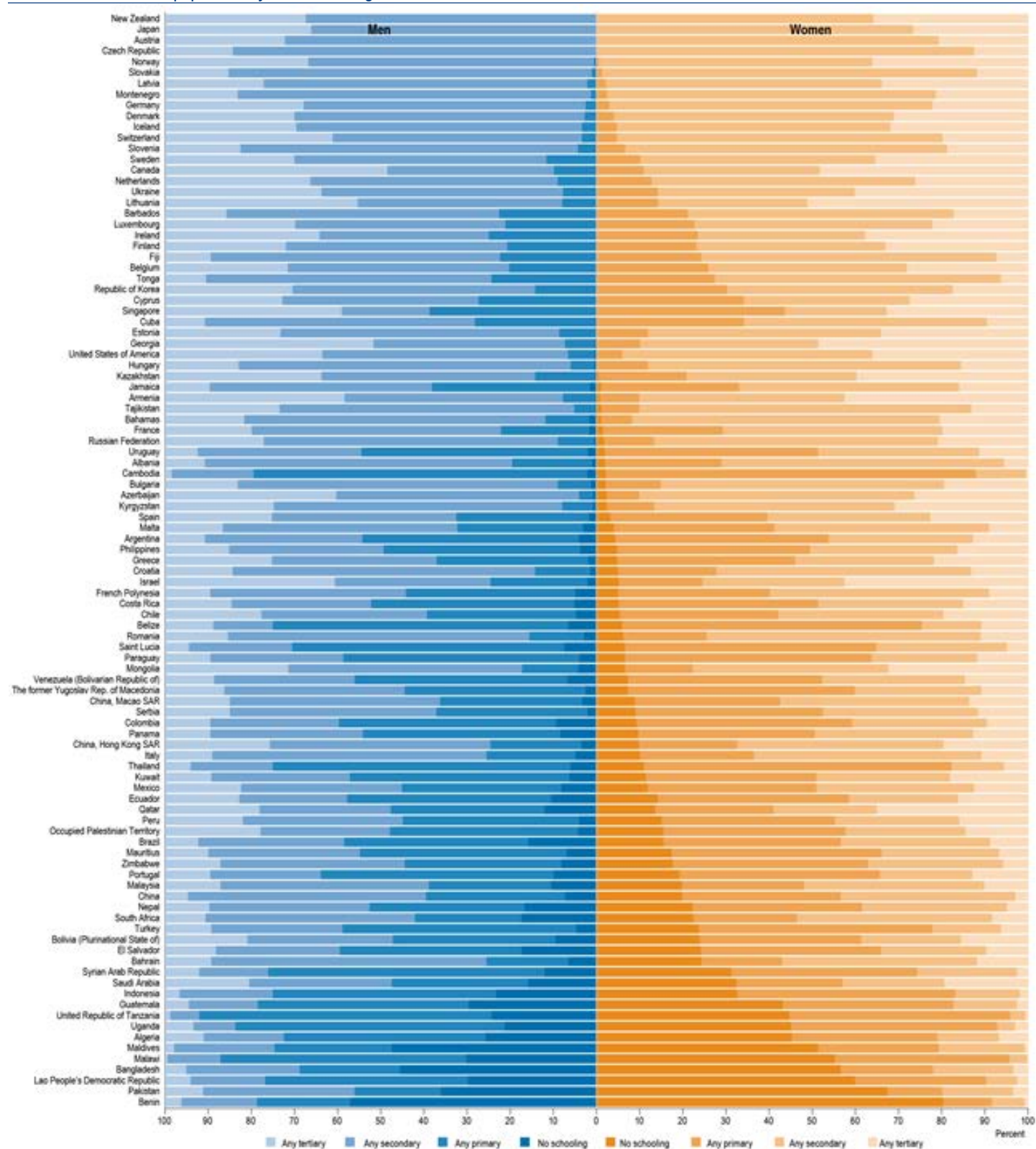
Need more women in education

Women outnumber men in most countries – except for China and India – meaning that there are 57m more women than men globally. There is a growing surplus of women in older age groups because of their longer life expectancies. While global fertility rates are declining, early marriage and still-high fertility rates in many parts of the world limit women's opportunities for socioeconomic advancement.

Slow but uneven progress: literacy, primary, secondary

There has been slow and uneven progress on literacy for women, who account for two-thirds of the world's 774m adult illiterates, a proportion that is unchanged over the past two decades. Positively, primary enrolment of girls is increasing globally and approaching parity in most regions, with improving literacy accompanied by declining gender disparities. But again, major gaps remain, with girls accounting for 54% of the 72m children out of school. There is increased female participation in secondary education, but progress lags that in primary education, and gender disparities are more marked across more countries (source: UN Department of Economic and Social Affairs).

Chart 24: Distribution of population by sex and the highest level of education attained, 1995–2007



Source: : United Nations Statistics Division based on UNESCO Institute for Statistics and United Nations, Demographic Yearbook data collections. Data refer to educational attainment of population aged 25 and over. The population whose education level is unknown has been proportionately distributed over the four categories of educational attainment.

Nearly 87% of Chinese parents said they were willing to fund study abroad

One-third of 1/3 Chinese students studying abroad in 2010 were from working-class families (Source: Chinese Academy of Social Sciences)

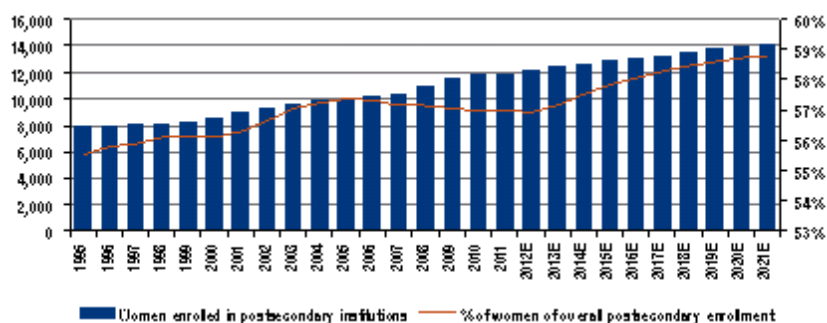
Most notable achievements at tertiary level

One of the most noticeable improvements in women's enrolment has taken place at the tertiary level. Men's dominance in this space has been reversed globally and gender disparities currently favour women, ex-sub-Saharan Africa and Southern and Western Asia. That said, there are significant gender disparities with women predominant in the fields of education, health and welfare, social sciences, humanities and art – but severely underrepresented in the fields of science and engineering (source: UN Department of Economic and Social Affairs).

US women to account for 54-62% of degrees by 2021E

In 2011, 64% of mothers with children under six in the US were part of the workforce, in line with 2001. Although the rate could be constant over the next several years, the absolute number of mothers with children under six in the workforce should grow given population trends and that an estimated 2.2m more women are expected to enrol in post-secondary institutions over the next decade. According to the Department of Education, women will earn 58% of all bachelor's degrees, 62% of all master's degrees, and 54% of all doctorate degrees by 2021.

Chart 25: US post-secondary enrolment trends and forecasts for women

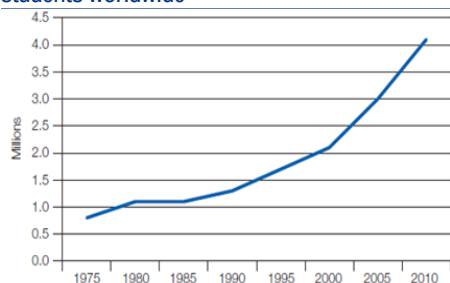


Source: Department of Education (U.S.)

More internationally mobile students

Demographic change and rising incomes in EMs is increasing the number of internationally mobile students. In 2011, there were 4.3m internationally mobile higher education (HE) students (vs. 0.8m in 1975, 2.1m in 2000 and 4.1m in 2010). Nearly one-fifth of internationally mobile students were Chinese, with Indian and German students the next biggest groups.

Chart 26: Number of internationally mobile HE students worldwide



Source: OECD

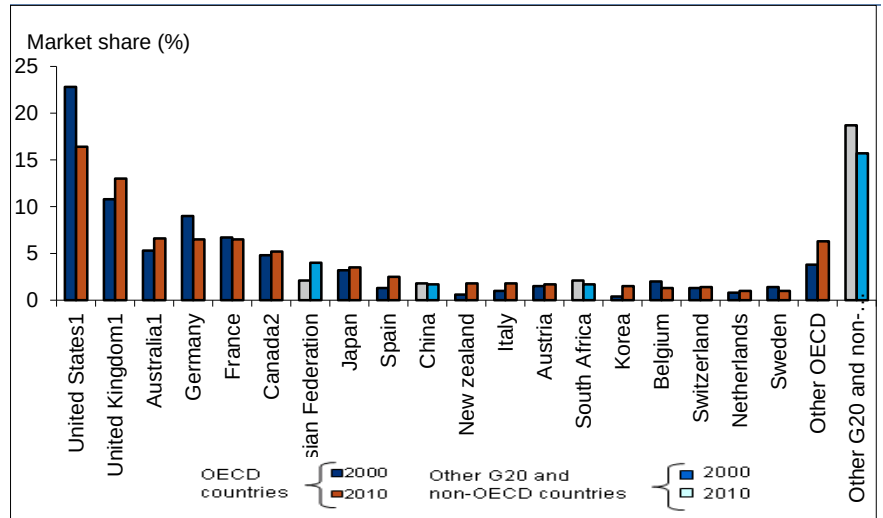
The British Council estimates that 2.1% of the additional 21m students enrolling in HE by 2020 (vs. 2011) will be internationally mobile with the largest numbers going to the US, UK, Australia, Canada, Germany, France and Japan). (Source: UK Department for Business, Innovation and Skills).

Table 7: Top-10 countries of origin for internationally mobile students

2000			2010		
	Number	% of global int'l mobile students		Number	% of global int'l mobile students
China	140,500	8.1%	China	548,500	18.2%
South Korea	71,100	4.1%	India	192,000	6.4%
Greece	63,600	3.7%	Germany	93,700	3.1%
Japan	59,300	3.4%	USA	55,000	1.8%
India	55,900	3.2%	Malaysia	53,900	1.8%
Germany	54,500	3.1%	France	53,300	1.8%
France	50,200	2.9%	Vietnam	47,200	1.6%
Turkey	48,000	2.8%	South Korea	46,500	1.5%
Italy	44,400	2.6%	Canada	44,900	1.5%
Morocco	42,500	2.4%	Turkey	42,600	1.4%

Source: World Bank

Chart 27: Trends in international education market shares



Source: OECD, UNESCO, BoFA ML

Increasing demand for ELT, US\$50bn market

The English language teaching market was estimated to be worth over US\$50bn in 2012 (source: GSV Advisors). The British Council estimates that the global market for English language learners is 1.5bn. Of these, more than 1.5m study English outside their home country – a market worth US\$11.6bn in 2011 (source: UK Department for Business, Innovation and Skills).

Table 8: Value of global market for ELT students studying outside their home country

	2007	2008	2009	2010	2011
Value of global market (US\$bn, constant 2011 prices)	11.6	12.8	12.1	10.8	11.6
Growth on previous year	-	10.1%	-6.0%	-10.4%	7.4%

Source: UK Government based on Study Travel Magazine

Internationally mobile HE = big business for governments

The international student market is gaining importance for many governments; for instance, in July 2013, a new International Education Strategy was introduced in the UK, revealing that its education export industry is worth £17.5bn to the economy.

Table 9: Global higher education opportunities to 2020E

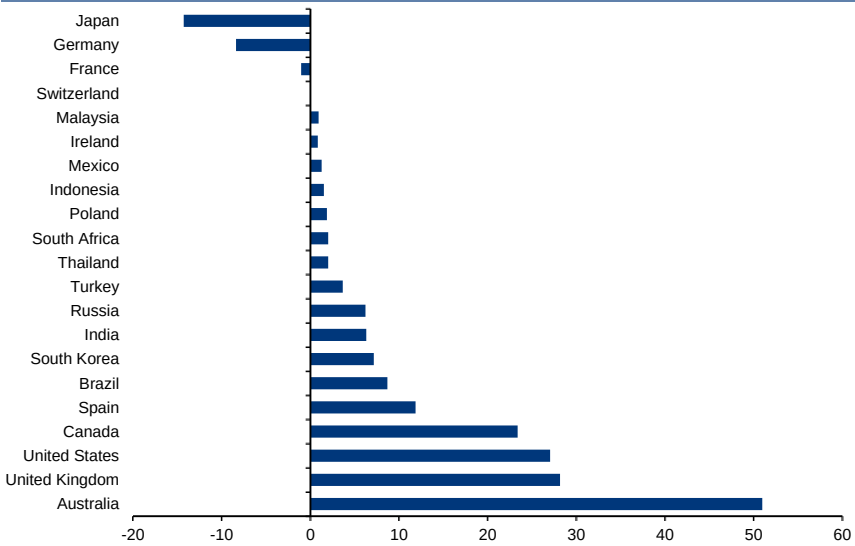
R A N K	Domestic tertiary education system		International student mobility – outbound		Transnational Education (TNE) Countries currently offering favourable environments and opportunities for developing TNE
	Growth to 2020	Size in 2020	Growth to 2020	Size in 2020	
1	India	China	India	China	Most favourable: Hong Kong, Malaysia, Singapore, UAE Others offering TNE opportunities: Bahrain, Botswana, China, India, Mauritius, Oman, Qatar, Spain, South Korea, Thailand, Vietnam
2	China	India	Nigeria	India	
3	Brazil	USA	Malaysia	South Korea	
4	Indonesia	Brazil	Nepal	Germany	
5	Nigeria	Indonesia	Pakistan	Turkey	
6	Philippines	Russia	Saudi Arabia	Malaysia	
7	Bangladesh	Japan	Turkey	Nigeria	
8	Turkey	Turkey	Iraq	Kazakhstan	
9	Ethiopia	Iran	Zimbabwe	France	
10	Mexico	Nigeria	Angola	USA	

Source: R UK Government based on British Council

The UK government has identified five broad areas in which it can operate:

- **Internationally mobile students** – those students who choose to study outside their home country for Higher Education (HE), Further Education (FE) and school level, and for English Language Teaching (ELT).
- **Transnational education (TNE)** is provided in a country other than the one in which the awarding institution is located. TNE can take various forms and occurs in the HE, FE, schools and ELT sub-sectors.
- **Research collaboration** with academics in other countries and international organisations.
- **Education products and services**, such as learning materials, education technology, laboratory equipment, consultancy and facilities management.
- **Capacity building** supporting the development of domestic education systems in developing countries (source: UK Department for Business, Innovation and Skills).

Chart 28: Growth in global inbound tertiary students by destination market 2011-20 (000s)



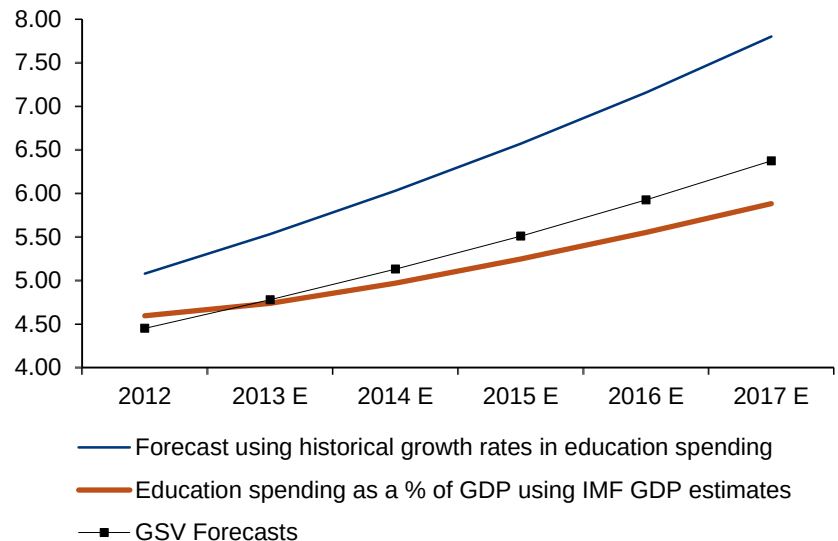
Source: Oxford Economics

Financing: the high cost of education

Financing education is becoming an increasing challenge for both cash-strapped developed and EM governments (as well as for households), striking a balance between financing primary, secondary and tertiary education, and achieving meaningful results.

Positively, global spending on education reached US\$4.5-5.1tn in 2012 and is set to grow, driven by strong public spending levels (4.8% of global GDP), rising affluence in EMs, an increasing role for private funding (largely from private households with EMs spending up to 13% of disposable income on education), and higher R&D spend. An emerging trend is that EM governments, such as in Brazil, are doing more government sponsored financing. We are also seeing a larger shift from state-controlled education, dominated by national providers and national norms, towards for-profit providers taking a larger role, on the realisation that state provision alone cannot meet demand. By 2017E, global spending could reach US\$5.9-7.8tn (source GSV Advisors, BofAML estimates).

Chart 29: Total educational spending to 2017E (US\$ tn)



Source: IMF, GSV Advisors, BofA Merrill Lynch Global Research. Historical growth rates = based on IMF data for 2000-2010

US\$5.9-7.8tn in education spend by 2017E

The total global spend on education was estimated at US\$4.5-5.1tn in 2012 with a 2012-2017 global growth forecast of 7%+, with K-12 growing at 6%+, post-secondary and corporate and government at 8%+, and e-learning at 23%+. The value of the global education market is forecast to rise to US\$5.5-6.7tn in 2015 and US\$5.9-7.8tn in 2017 (source GSV Advisors, BofAML estimates).

Table 10: Global education market (2012-2017, US\$bn)

Global Market Size(US\$ bn)	2012	2015	CAGR 2012-17	2017
Global Education Expenditure	4,450.9	5,508.7	7%	6,372.5
K-12	2,227.0	2,625.6	6%	2,930.3
Postsecondary	1,495.2	1,883.5	8%	2,196.9
Corporate & Govt. Learning	356.6	449.3	8%	524.0
eLearning	90.9	166.5	23%	255.5
K-12 eLearning	16.6	39.0	33%	69.0
Higher Ed eLearning	48.8	95.4	25%	149.0
Corporate eLearning	25.5	32.1	8%	37.5

Table 10: Global education market (2012-2017, US\$bn)

Global Market Size(US\$ bn)	2012	2015	CAGR 2012-17	2017
For-Profit Postsecondary	96.1	146.1	15%	193.2
Social Learning/Communities	1.0	2.9	40%	5.6
Child Care	200.0	266.2	10%	322.1
Edu Gaming	2.0	4.4	30%	7.4
Global Language Learning	115.0	198.7	20%	286.2
Global English Language Learning	63.3	123.6	25%	193.2
Test Preparation/Tutoring Market/Counselling	54.0	78.2	13%	100.0
For-Profit	590.9	952.2	17%	1,311.0

Source: GSV Advisors

Rising affluence, EMs focusing on education

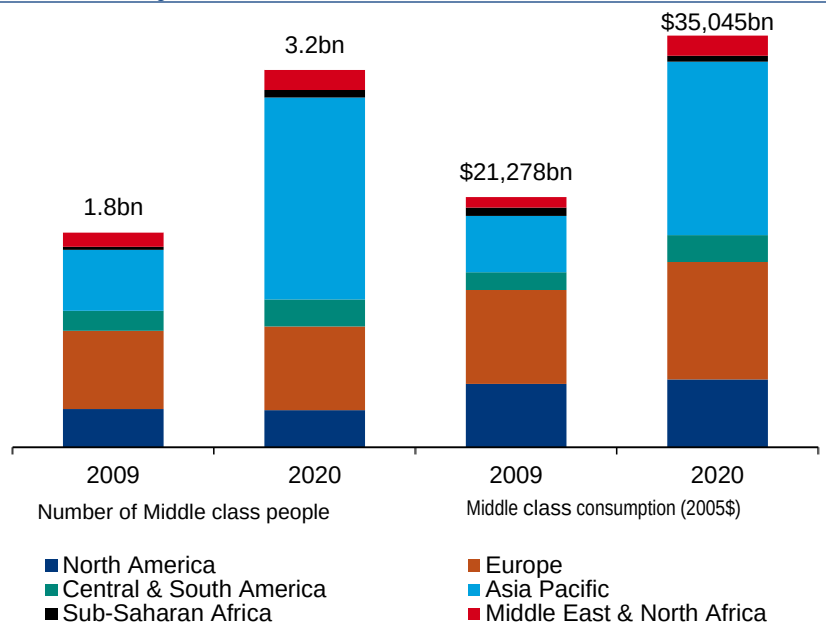
The rise of the middle class in EMs is important for education-exposed companies because “as consumers join the middle class and earn higher incomes, they tend to invest more in education – either to advance their careers or give their children a good start in life” (source: Pearson).

Growing global middle class

The global middle class is expected to almost double in size to 3.2bn by 2020 (vs. in 2009) and to reach 4.9bn by 2030 (source: Brookings Institution). Nearly all of this growth will come from EMs:

- **Asia's middle class** is expected to grow to 1.7bn by 2020 and 3bn by 2030. By 2030, the Asian middle class could be 10x greater than North America's and 5x larger than the EU's.
- **Latin America's middle class** is expected to grow from 181m to 313m by 2030, led by Brazil.
- **Africa's and the Middle East's middle class** is expected to more than double from 137m to 341m (source: Brookings Institution).

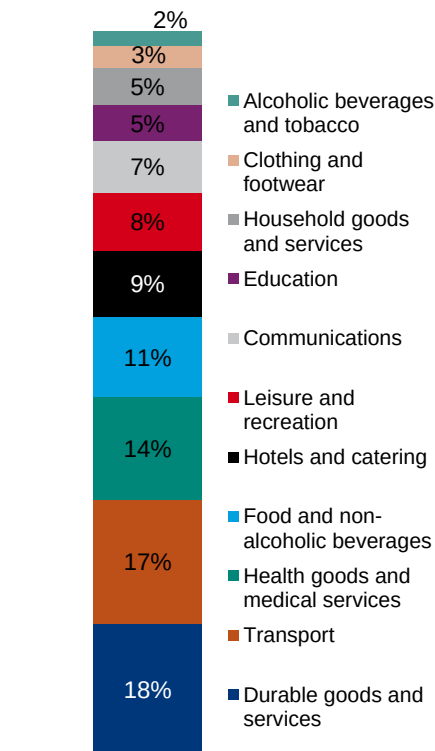
Chart 30: Rise of the global middle class



Source: Pearson based on Brookings Institution

The definition of middle class includes those earning or spending US\$10-100 per day (Source: OECD, UN)

Chart 31: Category breakdown of additional consumer spending to 2020



Source: AT Kearney

Per-capita annual disposable income in China rose by 63.3% in the five years to 2012, but consumer expenditure on education rose by almost 94%. (Source: Euromonitor)

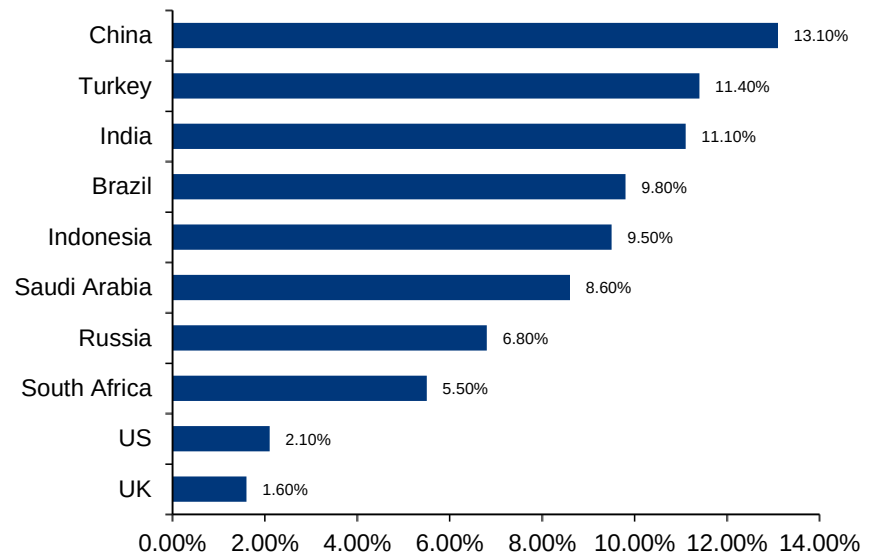
70% of Korean household expenditure goes toward private education, to get an educational edge over other families (Source: Samsung Economic Research Institute)

9/10 children from middle class families in China attended fee-charging after-school activities (Source: Mintel).

EMs spending disposable income on education

Middle-class consumers in EMs tend to invest more in education, either to advance their careers or give their children a good start (source: Pearson). Many EMs are already spending comparatively high proportions of household income on education and this trend is expected to continue – 13% in China, 11% in India and 10% in Brazil vs. 2% in the US and the UK (source: Pearson based on Bureau of Labour Statistics).

Chart 32: % of household income spent on education



Source: Pearson

Spending does not follow traditional paths

Contrary to Maslow's hierarchy of needs theory or the US precedent, as EMs become more sophisticated, their spending does not always follow traditional paths. This could benefit education; for instance, the Chinese are spending a greater proportion of their wallet on education and less on lifestyle choices, such as alcohol and tobacco. By 2020, the Chinese are estimated to spend 6x more on education and one-fifth that amount on alcohol and tobacco (source: AT Kearney).

Danger of 'education fever' in many Asian markets

'Extreme' spending on education is thought to be creating a phenomenon of 'education fever' in Asian markets like China, South Korea, Taiwan, Hong Kong, Singapore and India where families are being forced to make difficult choices to afford education bills (e.g., selling apartments, indebtedness, foregoing investments in health, retirement and holidays). The combination of culture, highly competitive examination systems and rising aspirations is often blamed by academic experts.

Poor are losing out

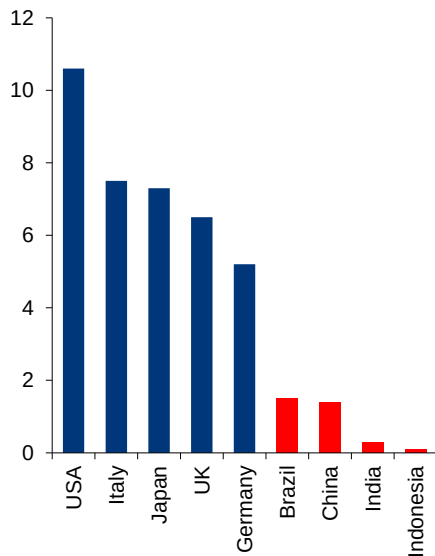
The high cost of education for households, as observed in several EMs, has a negative impact on students from poor families. These households are less likely to be able to bear the costs of secondary school, such as enrolment fees, textbooks, etc. Additionally, opportunity costs are higher for secondary school-age adolescents than for primary school-age children, since the former have

greater working and earning potential; this has a further negative impact on secondary school enrolment (source: UNESCO).

EMs still have a long way to go on per-capita PPP spend

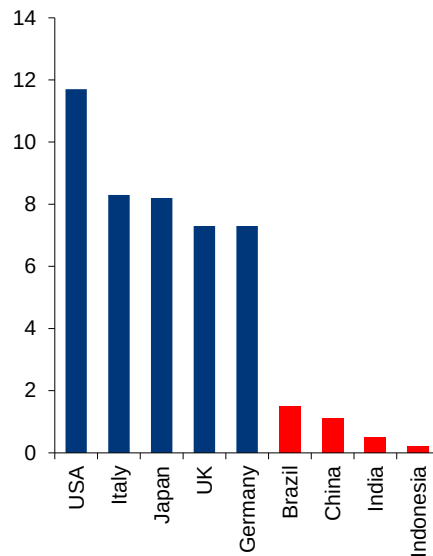
Despite significant efforts, EM education spending in PPP terms significantly lags advanced economies, with marked differences for primary and secondary education expenditure per student. The gap is narrowing considerably for tertiary spending (source: Bain).

Chart 33: Primary education expenditure per student in PPP terms (2010 USD)



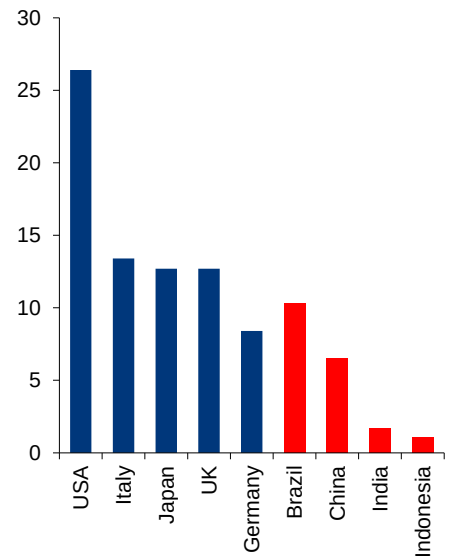
Source: Bain based on Euromonitor

Chart 34: Secondary education expenditure per student in PPP terms (2010 USD)



Source: Bain based on Euromonitor

Chart 35: Tertiary education expenditure per student in PPP terms (2010 USD)

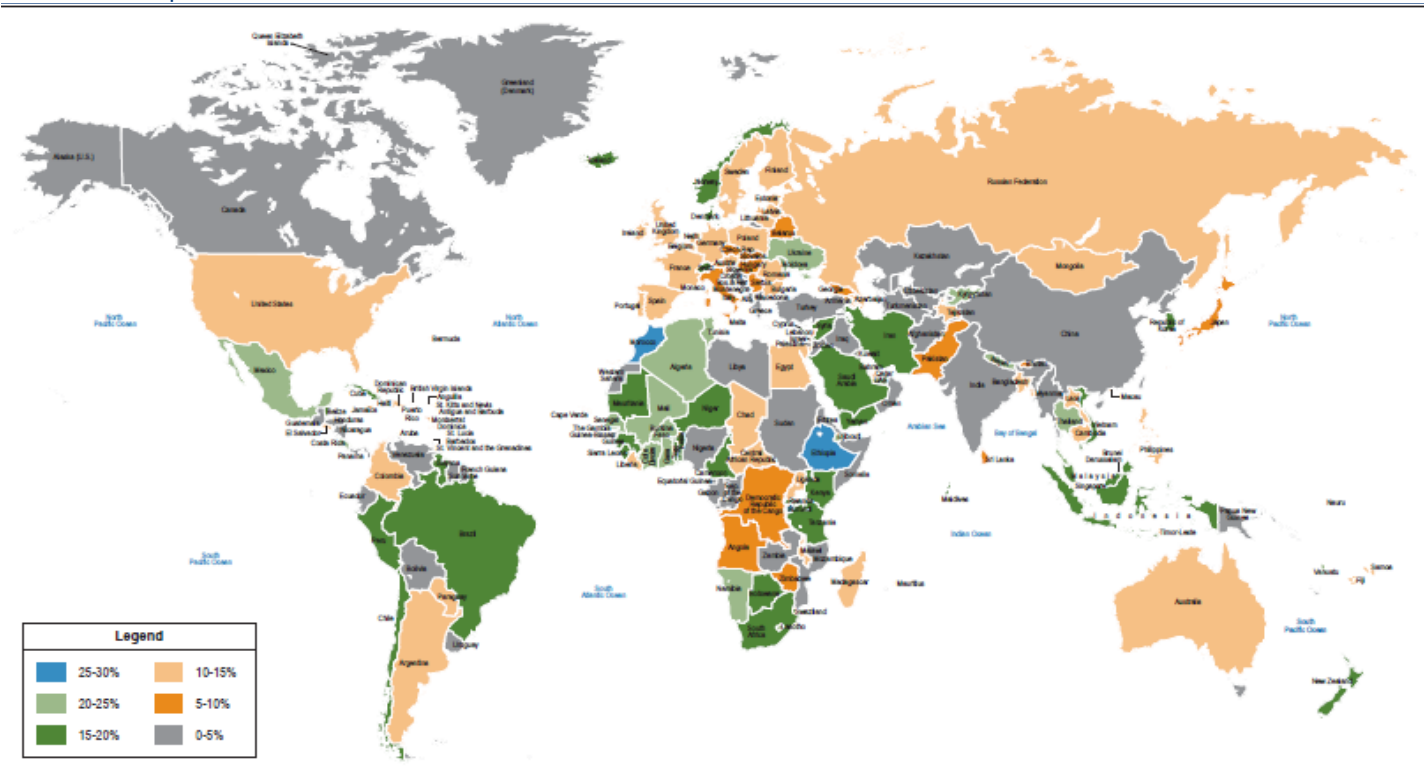


Source: Bain based on Euromonitor

Public spending on education is on the rise

Total global spending on education including government spending on national systems makes it the largest sector after healthcare (Source: Alpen).

Exhibit 1: Total expenditure on education as % of GDP

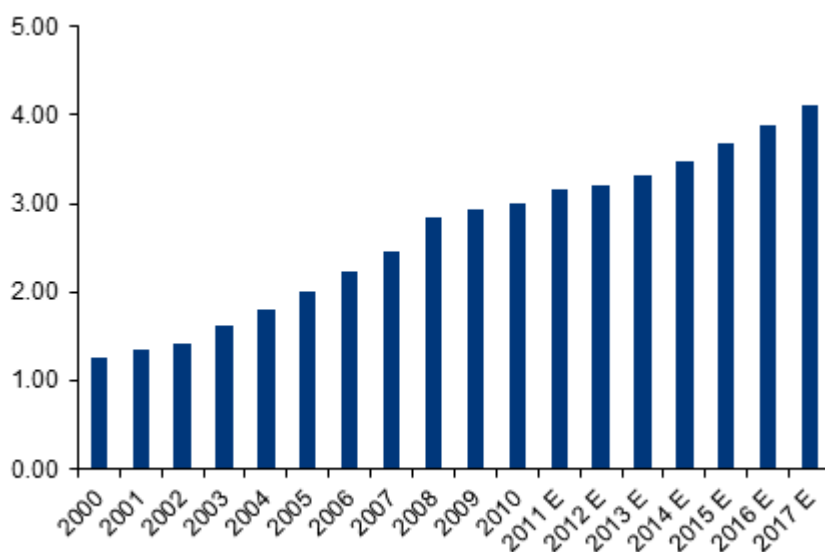


Source: UNESCO, World Bank, BofA Merrill Lynch Global Research

Public spending on education represents 4.8% of global GDP

The global average of total public expenditure on all levels of education in 2009 totalled 4.8% of GDP.

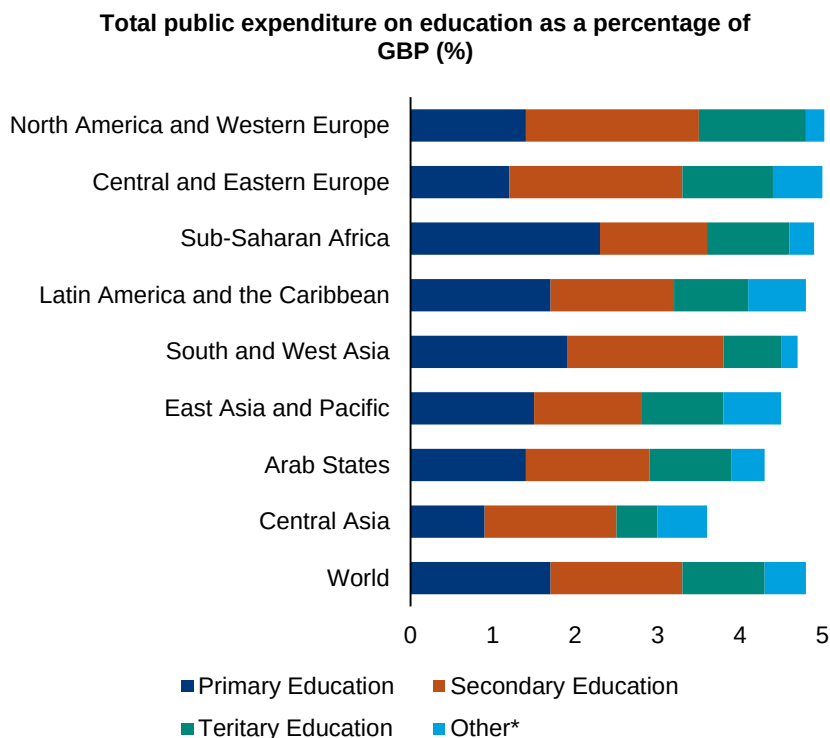
Chart 36: Public education spending (US\$ tn)



Source: IMF, BofA Merrill Lynch Global Research. Forecasted education spending as a % of GDP using IMF GDP estimates

Public spending on education (as a % of GDP) was highest in North America and Western Europe (5.2%), followed by CEE (5.0%) and sub-Saharan Africa (4.9%). The lowest public share of national resources in education is in Central Asia, with an average of 3.6%. Globally, public spending on primary and secondary levels of education as a % of GDP is equally distributed. However, the picture varies considerably between and within regions (source: UNESCO).

Chart 37: Public expenditure by education level (% of GDP, 2009)



Source: UNESCO

Recession has hit OECD education spending

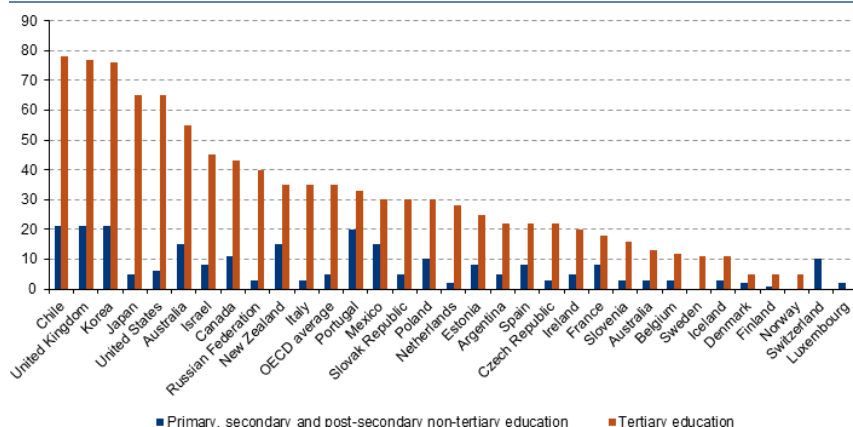
The economic crisis has hit the long-term trend of rising investment in education in developed markets. Public spending on educational institutions between 2009 and 2010 as a percentage of GDP fell by 1% on average across OECD countries. Education budgets were cut in 15 OECD countries with drops of 2%+ in Estonia, Hungary, Iceland, Italy and Russia. OECD data also reveal that spending per tertiary student fell in eight countries – including the UK and US – from 2005 to 2010 as expenditure did not keep up with expanding enrolments (source: OECD).

Increasing dependence on private spending

Higher education institutions now obtain on average 32% of funds from private sources according to the OECD's Education at a Glance 2013 report. As a percentage of GDP, private spending is highest in tertiary education, representing between 1.7% and 1.9% of GDP in Chile, Korea and the US, most of which is by individual households.

62% of US higher funding comes from private sources (vs. 30% across the OECD)

Chart 38: Share of private spending on educational institutions in OECD countries

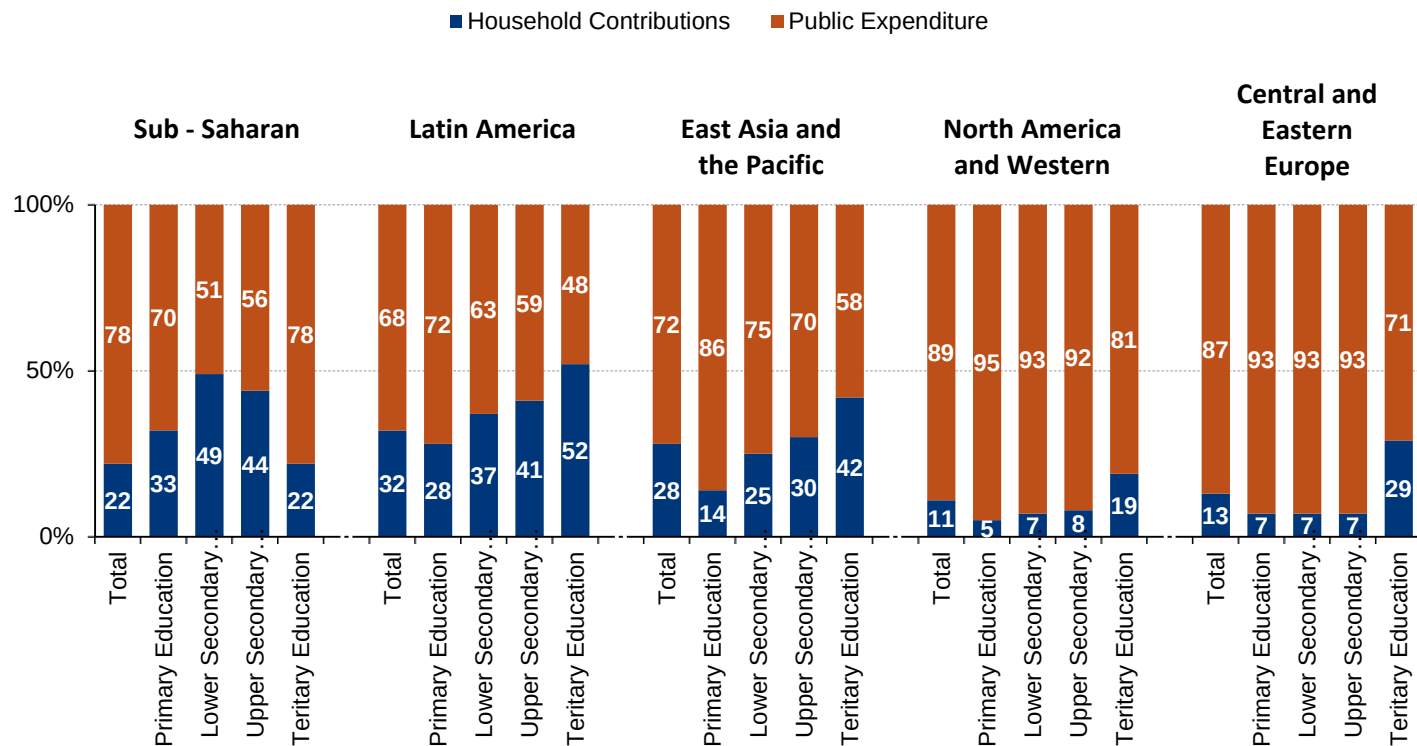


Source: OECD, BofA Merrill Lynch Global research

Households are bearing an increasing burden

Globally, individual households are increasingly sharing the cost of education, mainly through tuition fees, and account for most of the private expenditure on higher education (source: OECD). On the flipside, high costs (especially for secondary and higher education) raise concerns about the equity of access to education, especially for students from poor families, both in developed and emerging markets.

Chart 39: Household expenditure on education as % of total education expenditure (2009)



Source: UNESCO

US private spending is 62% of higher education funding

A higher-than-average proportion of US education spending comes from private sources. For all levels of education, public sources account for 72% of educational expenditure in the US (vs. 82% across the OECD). For higher education, the US stands apart from most OECD countries with 62% of funding coming from private sources (vs. 30% across the OECD). Additionally, 45% of expenditure on HE comes from households.

The high cost of US education

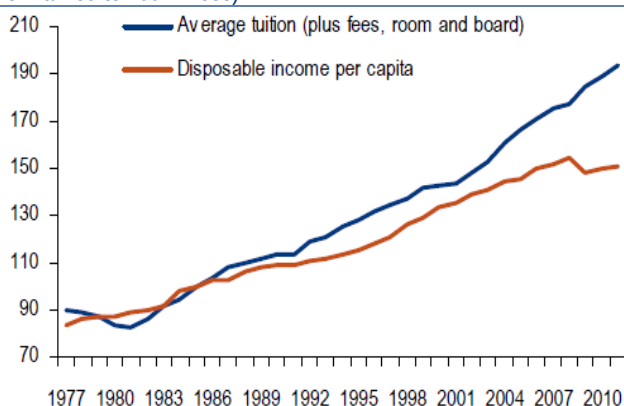
See our US Business, Education & Professional Services (Sara Gubins, David Chu) and Economics (Michelle Meyer) teams' report: Business, Education & Professional Services: The high cost of education 28 September 2012

With the US economy still licking its wounds from the worst housing bubble and subsequent bust in post-war history, there is much concern about creating new areas of excess. One area of concern is higher education – the rapid rise in tuition fees fuelled by student debt and high levels of financial aid is a potentially troublesome mix. In a society that is undergoing a difficult deleveraging process, the acceleration of tuition and student debt is unsettling. Growth in tuition fees has steadily outpaced income over the past 25 years, accelerating more recently, and the primary source of funding is the government. Therefore, this is not a typical asset “bubble” in that we do not expect a violent correction. In our view, the rapid rise in tuition costs and debt is unsustainable and unlikely to persist.

The climbing cost of tuition

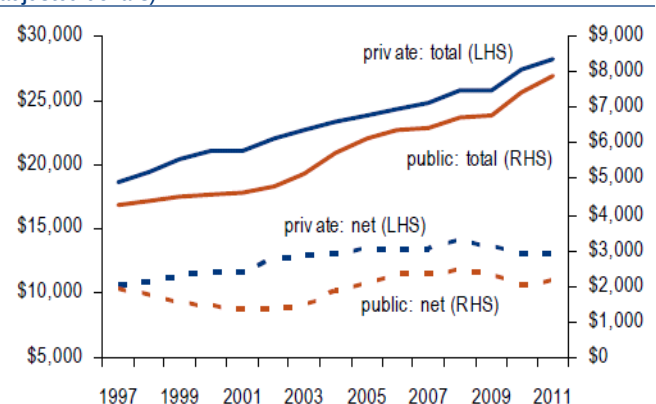
The cost of higher education has continued to climb, fuelled by debt and government aid. Over the past 20 years, tuition fee growth exceeded the average rate of inflation by nearly 3% annually, while both grant aid and federal loans per full-time undergraduate exceeded by about 5% pa. This trend is not sustainable, in our view. The challenging labour market has left the youth population underemployed and underpaid. The spotlight is now on the burden of student debt. We expect a correction in the price of tuition and reduction in debt. Unlike historical asset bubbles, we do not anticipate a sudden correction in tuition costs. Rather, we expect a gradual deflation. The speed of this adjustment will be determined, in part, by changes in policy, in our view.

Chart 40: Tuition has outpaced income growth (inflation adjusted, normalized to 100 in 1985)



Source: BofA Merrill Lynch Global Research, Dept of Education National Center for Education Statistics

Chart 41: Net tuition little changed while total tuition climbs (inflation adjusted dollars)



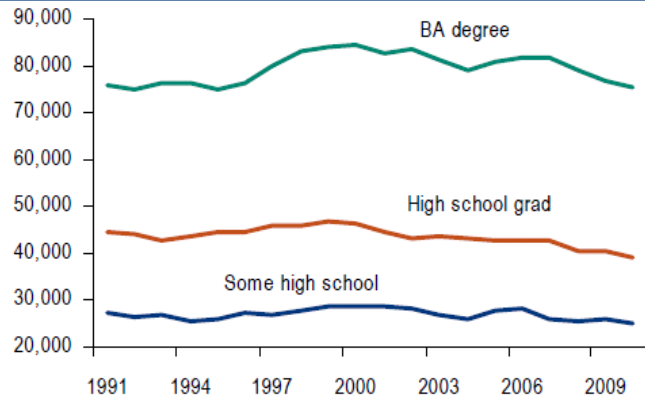
Source: BofA Merrill Lynch Global Research, College Board “Trends in Student Aid 2010”, Oct 2011

Graduating with debt

The high cost of education and large debt burden will likely have lasting effects on the economy. About 68% of students in private four-year schools have taken on debt, 60% in public four-year colleges and nearly 85% in for-profit four-year institutions. The average debt for an undergraduate is US\$25,000; more than half

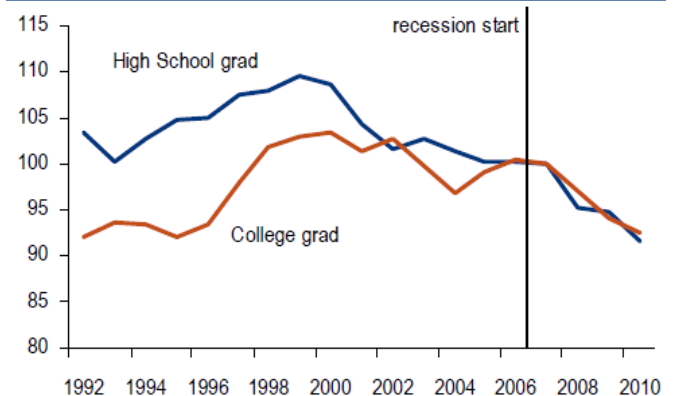
of the average starting salary. Underutilisation in the labour market and high student debt has delayed life decisions, such as household formation and discouraged new credit creation. Graduating during a recession leads to permanently lower earnings growth, making it that much harder to service the debt burden.

Chart 42: Household median income by education level (\$, inflation adjusted, annual)



Source: BofA Merrill Lynch Global Research, Census Bureau

Chart 43: Real income of high school vs. college graduates (indexed to recession start in 2007 to normalize growth rates)



Source: BofA Merrill Lynch Global Research, Census Bureau

Pearson: Obama published plan for Higher Ed ratings 23 August 2013

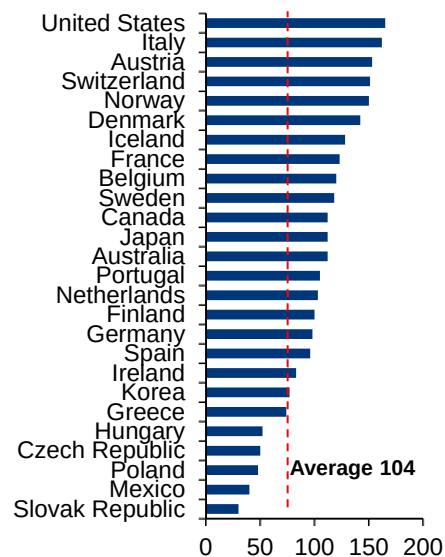
Plans to make college more affordable

In August 2013, President Obama published a fact sheet on plans to make college more affordable. Declining state budgets have forced students to shoulder a bigger proportion of college costs. Tuition fees are increasing much faster than incomes and average debt on graduation and subsequent loan defaults are rising.

Paying colleges for performance

Obama's new agenda will introduce a college rating system to allow students to pick the school that offers the best value, to be implemented before the 2015 school year. Furthermore, Congress plans to tie federal funding to these schools by 2018. This essentially links student aid to outcomes. Greater transparency could put more pressure on colleges to improve their performance and ratings over the next four years. There are also plans to increase access to the Pay As You Earn scheme that caps loan payments at 10% of income.

Chart 44: School spending cost effectiveness
(US\$ per student per point on PISA maths)

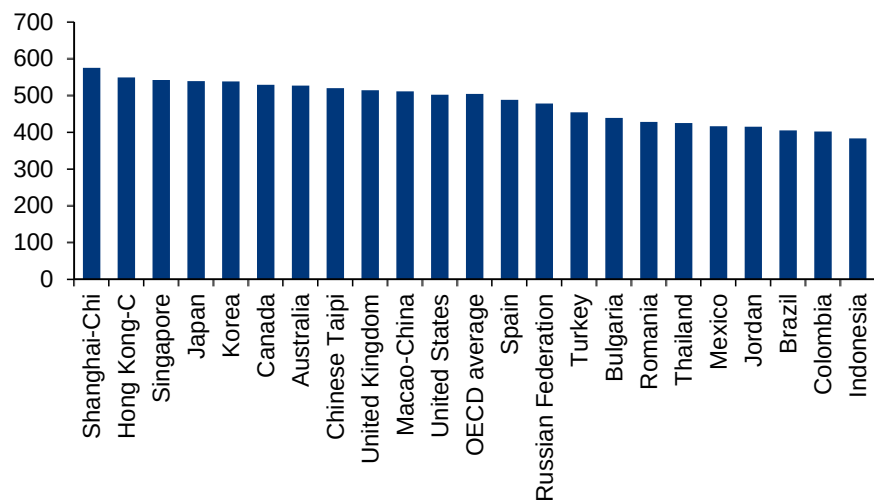


Source: OECD, McKinsey

Increasing focus on ‘bang for your buck’

At national government level, there is an increasing focus on the cost effectiveness of school spending – particularly in many budget-stressed developed markets. This can be seen via the phenomenon of ‘PISA envy’ vis-à-vis the OECD’s Programme for International Student Assessment (PISA) scores which help monitor student achievements and facilitate comparisons of students on reading, maths and sciences. For example, Shanghai now tops the table while the US has failed to make the top 25 in the maths category and has performed poorly in science and reading.

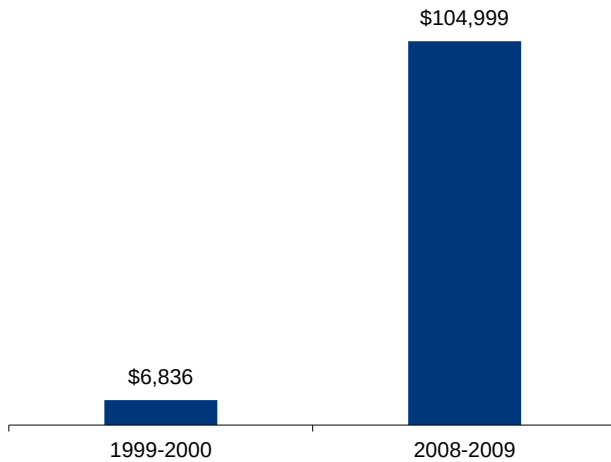
Chart 45: OECD’s mean PISA scores on reading, maths & science



Source: OECD

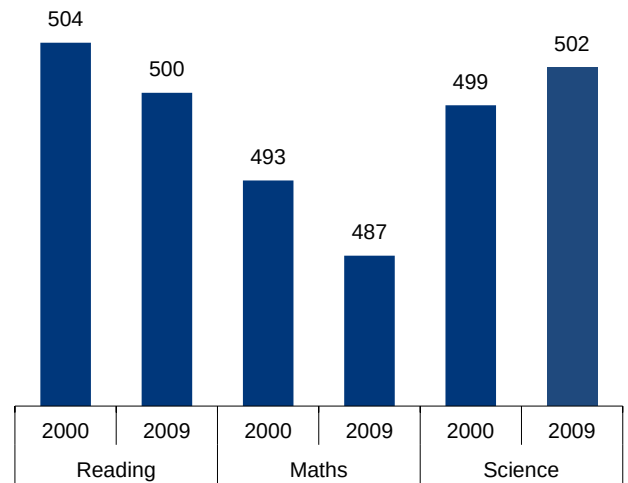
At governmental level, it is also ramping up pressure in terms of “bang for your buck” and the link between education spending and learning outcomes.

Chart 46: US K12 spend per student



Source: Pearson based on, National Center for Education Statistics, OECD

Chart 47: US PISA test scores



Source: Pearson based on, National Center for Education Statistics, OECD

Increasing household focus on best value for money

Value for money is also becoming an increasing focus for many cash-strapped households and students, as is evidenced by the growing number of rankings of U.S.; post-secondary institutions on “best value” across criteria such as cost of tuition, availability of subsidies, return on investment (e.g. earnings), student satisfaction, academic ranking, and graduation rates, among others.

Table 11: Top ten lists that ranked colleges based on the best value for students vary widely

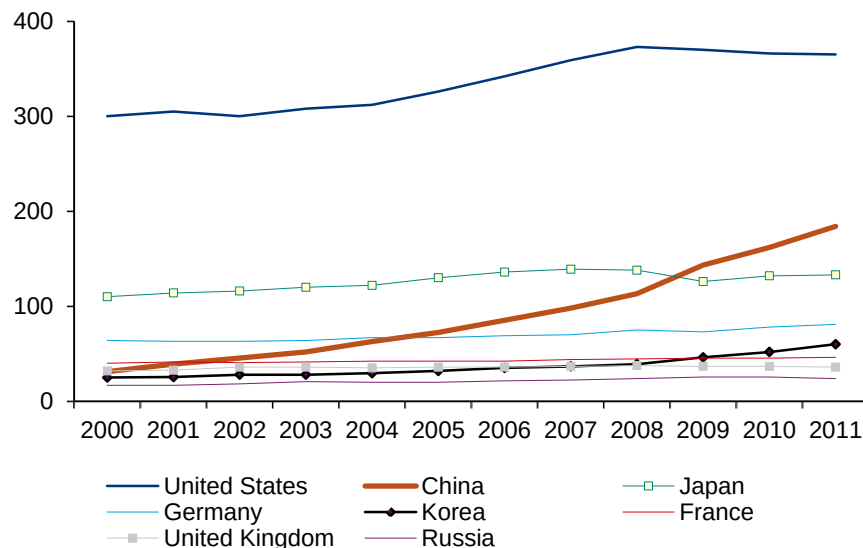
Washington Monthly (Best Bang for the Buck Rankings)	Payscale.com (Colleges Worth Your Investment)	Forbes (Best Value Colleges)
1 Amherst College	Harvey Mudd College	U.S. Military Academy
2 Queens College	California Institute of Technology	U.S. Naval Academy
3 Bernard M. Baruch College	Polytechnic Institute of N.Y.U.	U.S. Air Force Academy
4 Calif. State - Fullerton	M.I.T.	U.S. Coast Guard Academy
5 University of Florida	SUNY - Maritime College (in state)	U.S. Merchant Marine Academy
6 Calif. State - Long Beach	Colorado School of Mines (in state)	Berea College
7 University of Georgia	SUNY - Maritime College (out of state)	College of Charleston
8 University of N.C. - Chapel Hill	Colorado School of Mines (out of state)	The Citadel
9 Appalachian State University	Stevens Institute of Technology	Univ. of Massachusetts - Amherst
10 N.C. State University - Raleigh	Stanford University	Univ. of Massachusetts - Lowell
The Alumni Factor (Value for the Money)	Princeton Review (Best Value Colleges, Public)	Princeton Review (Best Value Colleges, Private)
1 U.S. Military Academy	University of Virginia	Swarthmore College
2 U.S. Air Force Academy	University of N.C. - Chapel Hill	Harvard College
3 U.S. Naval Academy	New College of Florida	Williams College
4 U.S. Coast Guard Academy	College of William and Mary	Princeton University
5 Georgia Inst. of Tech - Main Campus	Univ. of California - Los Angeles	Pomona College
6 Rice University	North Carolina State University	Yale University
7 Citadel Military College of S. Carolina	Univ. of Wisconsin - Madison	Rice University
8 Brigham Young University - Provo	SUNY at Binghamton	Hamilton College
9 University of Virginia - Main Campus	Univ. of Michigan - Ann Arbor	Claremont McKenna College
10 University of N.C. - Chapel Hill	Univ. of Georgia	Grinnell College

Source: New York Times based on Washington Monthly, Payscale.com, Forbes, The Alumni Factor, Princeton Review,

Increasing R&D spending

Spending on research & development (R&D) is also on the rise globally, more significantly in EMs than the G8. China is looking to increase R&D spending to 2.5% of GDP by 2020 (vs. <2% today). South Korea and Brazil have targets of 5% and 2.5%, respectively, by 2022. Many nations with longer-established traditions of scientific R&D also maintain targets for spending, such as the US's new aim of more than 3% of GDP, and the EU's similar Lisbon goal of 3% of member countries' GDP (source: Royal Society).

Chart 48: R&D spending in selected countries 2000-2011



Source: OECD

Searching for innovative financing solutions

It is important to note that governments, stakeholders and for-profits are increasingly looking to collaborate on innovative finance arrangements in the field of education.

Social impact bonds, linking payment to specific outcomes

One potential development in this regard is social impact bonds (SIBs) which are designed to help reform public service delivery. SIBs improve the social outcomes of publicly funded services by making funding conditional on achieving results. Investors pay for the project at the start, and then receive payments based on the results achieved by the project. Rather than focusing on inputs or outputs, SIBs are based on achieving social 'outcomes'. For instance, the UK Department for Work and Pensions' Innovation Fund was launched in 2012 to support payment-by-results programmes that work with young people aged 14 to 19 who were at significant risk of becoming NEET (not in employment, education and training).

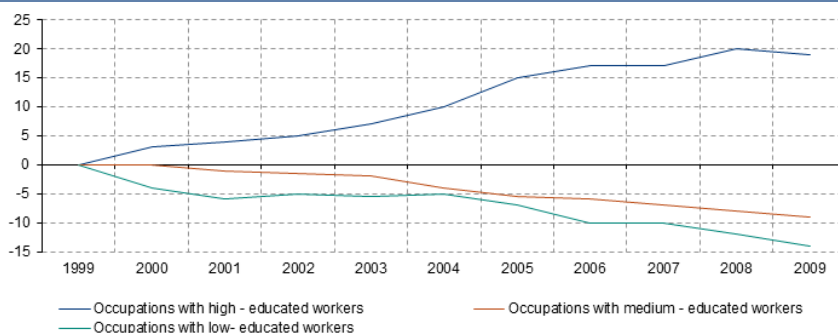
The UK's ThinkForward is a programme that provides super-coaches to 950 disengaged pupils in 14 schools in East London to improve attendance, behaviour and academic attainment

3Es: education = employment, earnings & economic development

Every dollar invested in education generates US\$ 10-15 in returns (Source: UN)

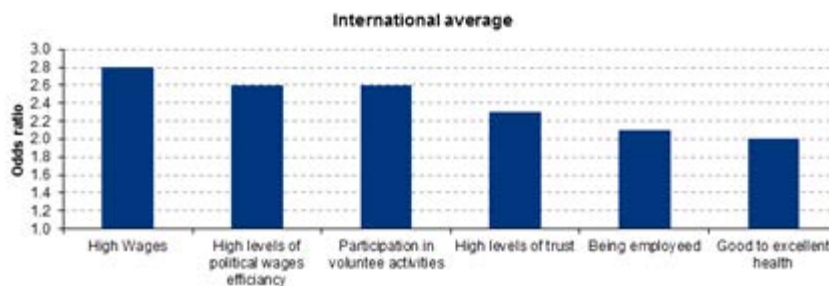
Benjamin Franklin's 1758 "The Way to Wealth" argued that "an investment in knowledge always pays the best interest" – and the same seems to hold true today, with every dollar invested in education estimated to generate US\$10-15 in returns. Educational attainment has a significant impact on employability: unemployment is 3x greater in the OECD for those lacking secondary education than for graduates (source: OECD). Earnings are also affected; developed market graduates will earn US\$1mn more over their careers than high school dropouts (source: Pearson). And, ultimately, education will impact economic development; c.60% of GDP growth is generated by those with tertiary education (source: OECD). The relationship between education and the 3Es will only increase going forward as the global economy depends more on lifelong skills and becomes more learning based.

Chart 49: Evolution of employment in occupations defined by level of education



Source: OECD

Chart 50: Likelihood of positive social economic outcomes among highly literate adults



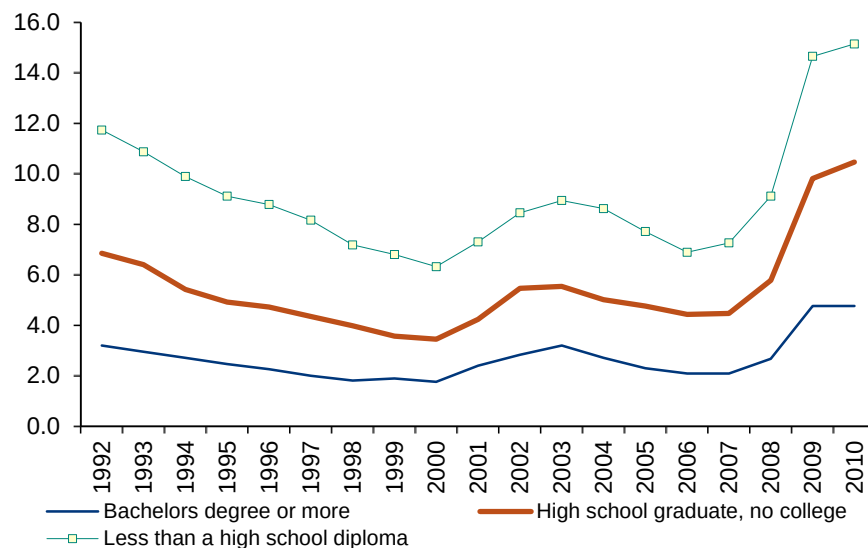
Source: OECD

Unemployment rates in OECD countries are 3x higher than those who left school before obtaining an upper secondary education vs. those having a tertiary education (Source: OECD)

Higher employability

Educational attainment has a huge impact on employability – more so during the economic crisis. According to the US Department of Education, 90% of the fastest-growing jobs in the US economy require a college degree.

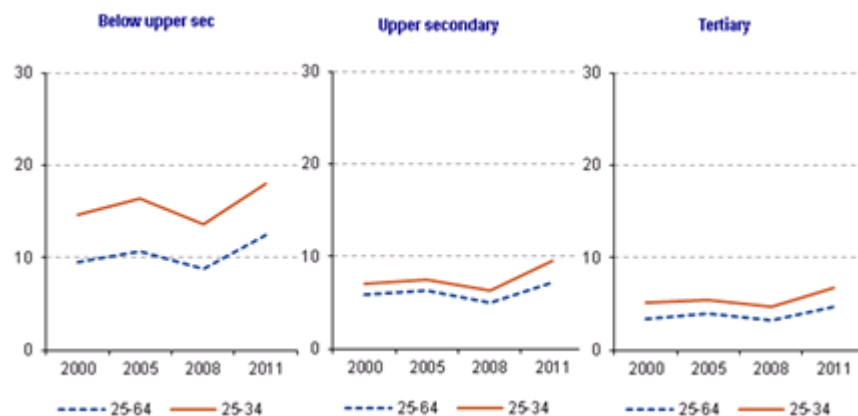
Chart 51: US unemployment rates by level of education



Source: Pearson based on Bureau of Labour Statistics, US population survey

A June 2013 report by the OECD shows that, on average, across OECD countries, 4.8% of individuals with a tertiary degree were unemployed in 2011 vs. 12.6% of those lacking a secondary education. Between 2008 and 2011, the unemployment gap between those with lower and higher levels of education widened across all age groups (source: OECD)

Chart 52: OECD unemployment rates by level of education



Source: OECD

65% of global companies and more than 80% of companies in fast-growth economies are having problems finding employees with the skills they need (Source: Towers Watson)

28% of adults in Italy and 29% in the U.S. perform at or below the most basic level of reading and numeracy skills respectively (Source: OECD)

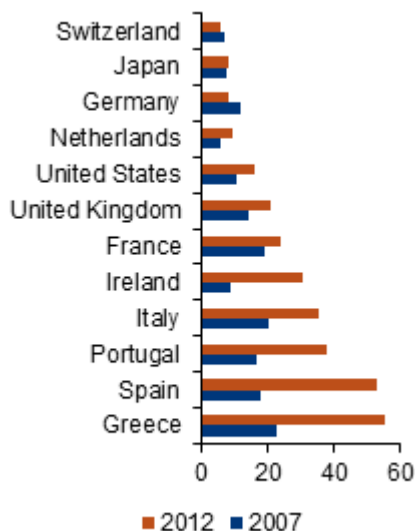
A long way to go in boosting lifelong learning & skills

From an employability perspective, beyond improving enrolment, significant progress needs to be made on boosting life-long, flexible, skills-oriented learning for working-age adults (age 15-65) – key to tackling joblessness, particularly

among the young, and improving well-being. The OCED's October 2013 inaugural *Survey of Adult Skills* found that:

- **Some major economies face challenges in boosting their skills levels.** In reading, 27.7% of adults in Italy, 27.5% in Spain and 21.6% in France perform at or below the most basic level (vs. 4.9% in Japan and 10.6% in Finland. For numeracy, 31.7% of adults in Italy, 30.6% in Spain and 28.7% in the US perform at or below the most basic level (vs. 8.2% in Japan, 12.8% in Finland, and 12.8% in the Czech Republic).
- **There is a huge 'digital divide', with millions failing to master simple computer skills,** such as using a computer mouse. This ranges from nearly one-quarter of adults in Italy, Korea, Poland, the Slovak Republic and Spain (vs. one-fourteenth of adults in the Netherlands, Norway and Sweden).
- **Progress is not always being made across generations** with the literacy and numeracy skills of young people entering the labour market in the UK and US no better than those leaving at retirement.
- **Gaps between skills and educational qualifications** with at least one-quarter of OECD university graduates falling into the bottom two levels out of five on the literacy test (source: OECD).

Chart 53: Youth Unemployment Rates (15-24Y)



Source: OECD

A 25- to 34-year-old with a tertiary education earns 40% more, on average, than an adult of the same age who has only a secondary education, while a 55- to 64-year-old earns 73% more (Source: OECD)

Youth unemployment, a multi-billion dollar risk

In the current recessionary environment, where youth unemployment and poverty are becoming an increasing issue, it is increasingly important to make sure that the next generation has the skills and education needed to engage in 21st century jobs.

Reaching epidemic proportions

Currently youth unemployment around the globe is at epidemic proportions, and many young people are both out of school and out of work. A huge skills gap is growing to fill the current job opportunities that exist. Youth unemployment not only slows economic growth today, it can also impact our global economic future. Studies estimate that the U.S. is poised to lose US\$18bn in wages over the next decade due to high youth unemployment (source: The Center for American Progress). In 2011, the economic loss from disengaged young people in Europe amounted to \$153bn, or more than 1% of GDP (source: European Foundation for the Improvement of Living and Working Conditions).

This has led to collective efforts to tackle the issue by governments and stakeholders including the White House's Jobs Plus Programs, the Year Up one million model, the Aspen Institute's Community Youth Incentive Fund, and investments in colleges geared to employers' needs, among other initiatives.

Higher incomes

Educational attainment also has an impact on income from employment across all strata:

- **Each additional year of schooling for men and women increases wages by between 10% and 20%, and farm output by up to 5%** (source: UN);

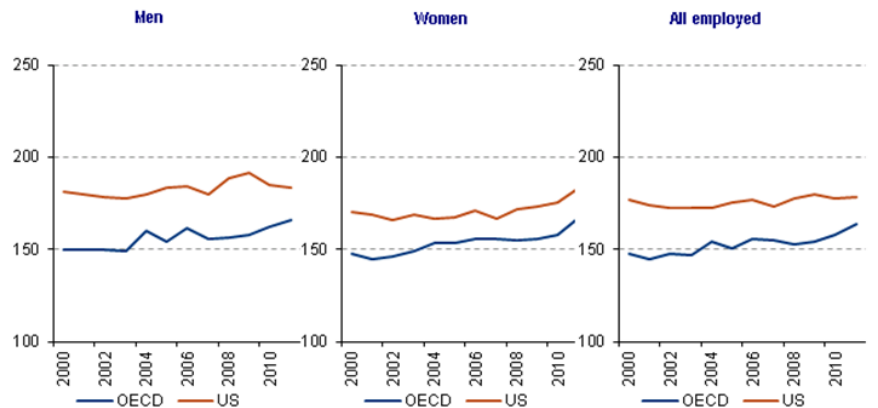
Chart 54: Lack of a wage premium for those with below upper secondary education: OECD & US



Source: OECD

- **Relative earnings of tertiary-educated adults is over 1.5x that of adults with an upper-secondary education.** Individuals without an upper-secondary education earn 25% less, on average globally, than their peers who have attained that level of education. The wage gap between those with lower and higher levels of education also tends to increase with age (source: OECD).

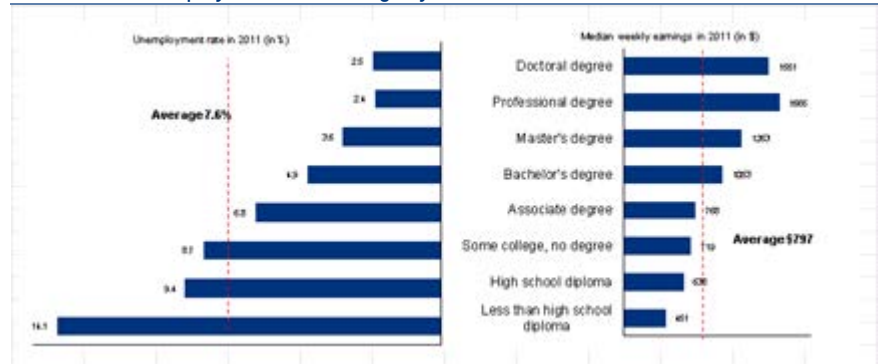
Chart 55: Wage premium for tertiary education: OECD & US



Source: OECD

- **Developed market graduates will earn on average US\$1mn more than a high school dropout over their career lifetime** (source: Pearson).

Chart 56: US unemployment and earnings by level of education

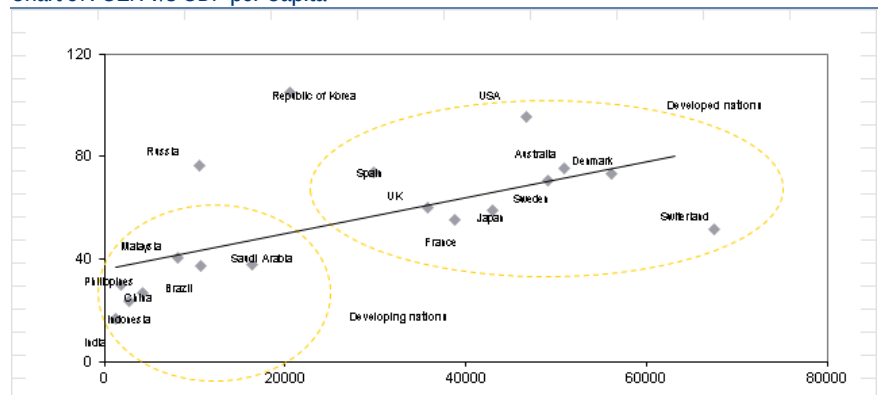


Source: Pearson based on Bureau of Labour Statistics, US population survey

Greater economic opportunities for EMs

Globally, greater educational attainment would be a huge boost for economic development in EMs. Getting all children into basic education while raising learning standards could boost GDP growth by 2% annually in low-income countries. The global poverty rate could also be reduced by 12% if students in low-income countries learned basic reading skills (source: UNESCO).

Chart 57: GER v/s GDP per Capita



Source: Ernst & Young

Key to LT economic development & growth

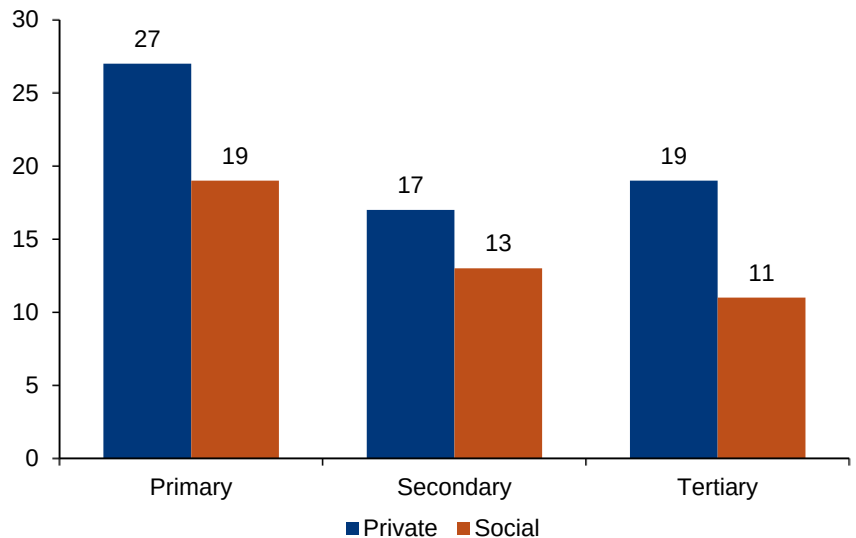
It is estimated that on average c.50% of economic growth is related to labour income growth at the tertiary level of education. In France, Norway, Switzerland and the UK, 60%+ of growth in GDP is generated by those with a tertiary education. In Denmark and Ireland, the labour income growth of those with a tertiary education exceeds GDP growth, largely as a consequence of a strong shift towards higher skills and the impact of the global economic crisis on overall economic activity in these countries (source: OECD). More broadly, education provides returns on investment in the form of the following:

- **Social internal rate of return:** costs and benefits to society of investment in education, which includes the opportunity cost of having people not participating in the production of output and the full cost of the provision of education rather than only the cost borne by the individual.
- **Social benefits:** increased productivity associated with the investment in education and a host of possible non-economic benefits, such as lower

crime, better health, more social cohesion and more informed and effective citizens.

- **Private rate of return:** equal to the discount rate that equalises the real costs of education during the period of study to the real gains from education thereafter (source: OECD)

Chart 58: Rate of return to completion of different levels of education



Source: IFC

"There are few sectors of the UK economy with the capacity to grow and generate export earnings as impressive as education." - David Willetts, UK Universities and Science Minister

Increasing export dollar focus for governments

Governments are increasingly realising that education exports are key to economic growth. The UK has plans to expand education exports (worth £17.5bn to the economy today) by securing £3bn worth of contracts for its education providers overseas and attracting 90,000 extra overseas university students by 2018 (source: UK Department for Business, Innovation & Skills).

Table 12: Estimated value of UK education exports in 2011

£m (2011 prices, to nearest £10m)

Higher Education (including EU students)	
Tuition fees (net of scholarships)	3,660
Living expenditure	5,540
Other	1,000
(Cost to Govt of tuition fee loans to EU undergraduates - RAB charge)	-70
English Language Teaching	
Tuition and living expenses	2,000
Schools	
Tuition and living expenses	620
Education Products and Services	1,590
Further Education	
Tuition fees	320
Living expenditure	810
Other	40
Transnational education income - indicative figures only	
Higher Education *	300
English Language Teaching **	90
Schools ***	960
Further Education ****	30

Table 12: Estimated value of UK education exports in 2011

	£m (2011 prices, to nearest £10m)
TOTAL	17,490

Notes:

* Based on value from London Economics report and assuming average value per student is maintained in real terms

** Assuming 10% of income for UK ELT providers abroad is repatriated

*** Assuming 10% of income for British Schools Overseas is repatriated

**** Based on value from London Economics report

Source: Internal BIS estimates based on methodology from the London Economics report

"The business model behind education technology – be it assisted, inclusive or mainstream – is vital. There is a need to look beyond purely educational applications so that any cross-over into the wider business and social world can be exploited." (Source: UK Department of Business, Innovation & Skills)

Global e-learning market estimated at US\$91bn in 2012 and is expected to reach US\$167bn in 2015 and US\$256bn in 2017 – a 23% CAGR from 2012 to 2017 (source: GSV Advisors)

The number of students involved in online learning tripled in US high schools and doubled at middle schools from 2008 to 2011; 27% of students in middle school and 35% in high school use digital textbooks (source: Project Tomorrow)

Some 40 US states have virtual schools or state-led online learning initiatives (Source: Keeping Pace With K12)

The Florida Virtual School offers a full K-12 academic curriculum online and has more than 220,000 course enrollments per year

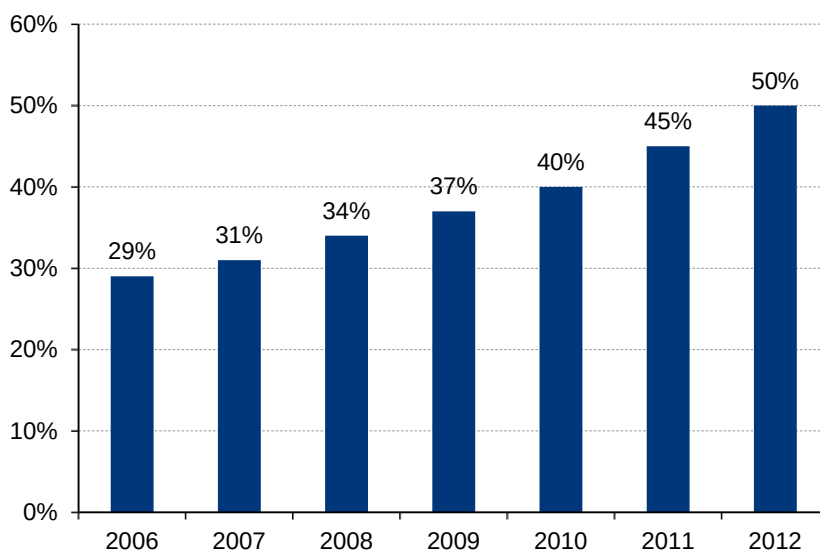
The EdTech revolution

The growing use of information and communication technologies (ICT) is a long-term structural game changer for education – with the two biggest shifts being from print to digital and from classroom to online learning. This Edtech shift encompasses numerous types of media and technology applications, processes, and internet-enabled devices, as well as intranet/extranet and web-based learning and delivery. It can also occur in or out of the classroom, be self-paced or instructor-led – and can be used for distance learning, flexible learning, adaptive learning, and/or in tandem with face-to-face learning (blended learning).

EdTech is one of the fastest-growing segments in the education market – with the global e-learning market estimated at US\$91bn in 2012 and is expected to reach US\$167bn in 2015 and US\$256bn in 2017 – a 23% CAGR from 2012 to 2017 (source: GSV Advisors). Beyond the emerging business opportunity for actors enabling this shift, Edtech also has the potential to enable realisation of education for all (EFA) goals, including by reducing costs for governments and students, allowing easier to access materials, widening participation in education, motivating students, making subjects easier to learn, improving writing, and allowing for differentiated and tailored instruction.

But technological change can be both an opportunity and a threat – posing competitive and disruptive threats for actors such as textbook publishers which are not going digital and schools which are reluctant to go online. Threats include the emergence of a new generation of EdTech. In this vein, a number of analogies can be drawn with the traditional music industry and the challenges posed over the last decade by issues such as the internet, digital, intellectual property, piracy, and changes in consumer purchasing habits. It is also important to stress that there are important distinctions in terms of take-up between K-12 and HE in the ed-tech section - decision making varies significantly for the 2.

Chart 59: Pearson's digital & services revenues (% of sales)



Source: Pearson, * 56% with Penguin classified as an associate

US\$250bn+ e-learning market by 2017

The global e-learning market was estimated at US\$91bn in 2012 and is expected to reach US\$167bn in 2015 and US\$256bn in 2017 – a 23% CAGR from 2012 to 2017 (source: GSV Advisors). This makes it one of the fastest-growing segments in the education market.

- **Market breakdown:** services accounts for the largest proportion of market revenues followed by content, software and hardware.
- **Buying segments:** the major global buyer segment includes educational institutions (universities, colleges, schools, corporates and training providers), governments (national, regional, local), education agencies and learners
- **Key markets:** the US is the largest consumer of e-learning followed by Japan, South Korea, the UK and Taiwan, which currently account for 70% of the market. China, India, Indonesia and Brazil have the fastest growth rates, with China set to emerge as the number-two market by 2015 (source: Ambient Research)

Table 13: Global education market to 2017

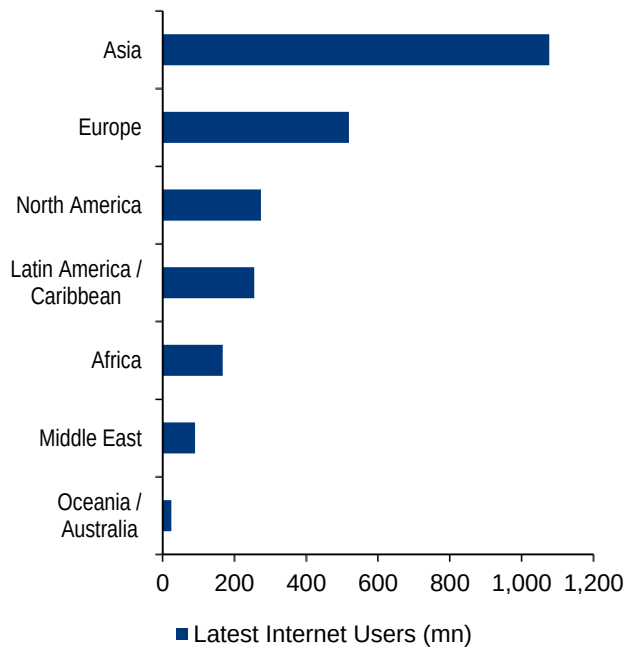
Global Market Size(US\$ bn)	2012 Market Size	2015 Market Size	Growth (CAGR 2012-17)	2017 Market Size
Global Education Expenditure	4,450.9	5,508.7	7%	6,372.5
K-12	2,227.0	2,625.6	6%	2,930.3
Postsecondary	1,495.2	1,883.5	8%	2,196.9
Corporate & Govt. Learning	356.6	449.3	8%	524.0
eLearning	90.9	166.5	23%	255.5
K-12 eLearning	16.6	39.0	33%	69.0
Higher Ed eLearning	48.8	95.4	25%	149.0
Corporate eLearning	25.5	32.1	8%	37.5
For-Profit Postsecondary	96.1	146.1	15%	193.2
Social Learning/Communities	1.0	2.9	40%	5.6
Child Care	200.0	266.2	10%	322.1
Edu Gaming	2.0	4.4	30%	7.4
Global Language Learning	115.0	198.7	20%	286.2
Global English Language Learning	63.3	123.6	25%	193.2
Test Preparation/Tutoring				
Market/Counselling	54.0	78.2	13%	100.0
For-Profit	590.9	952.2	17%	1,311.0

Source: GSV Advisors

Internet & mobile are game-changers Internet penetration is skyrocketing

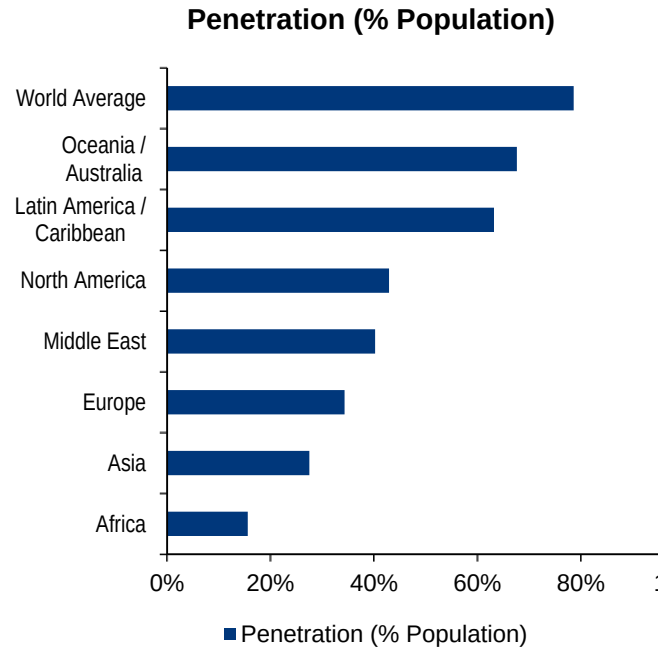
World internet use skyrocketed by 566% from 2000 to 2012, with an estimated 2.4bn people using the internet at June 2012 (vs. 360m at end-2000). Asia and Europe have the most users at 1.1bn and 519m, respectively. The global penetration rate stands at 34% – the highest is in North America at 78.6% and Australia at 67.6%, while the lowest is in Africa at 15.6% and Asia at 27.5% (source: Internet World Stats).

Chart 60: Latest internet users (m)



Source: internetworldstats

Chart 61: Penetration (% of population)



Source: internetworldstats

Table 14: World internet usage and population statistics (June 30, 2012)

World Regions	Population 2012 est. (mn)	Internet Users (mn) in 2000	Latest Internet Users (mn)	Penetration (% Population)	Growth 2000-2012	Users % of Table
Africa	1,073	5	167	15.6%	3606.7%	7.0%
Asia	3,922	114	1,077	27.5%	841.9%	44.8%
Europe	821	105	519	63.2%	393.4%	21.5%
Middle East	224	3	90	40.2%	2639.9%	3.7%
North America	348	108	274	78.6%	153.3%	11.4%
Latin America / Caribbean	594	18	255	42.9%	1310.8%	10.6%
Oceania / Australia	36	8	24	67.6%	218.7%	1.0%
World Total	7,018	361	2,406	34.3%	566.4%	100.0%

Source: internetworldstats

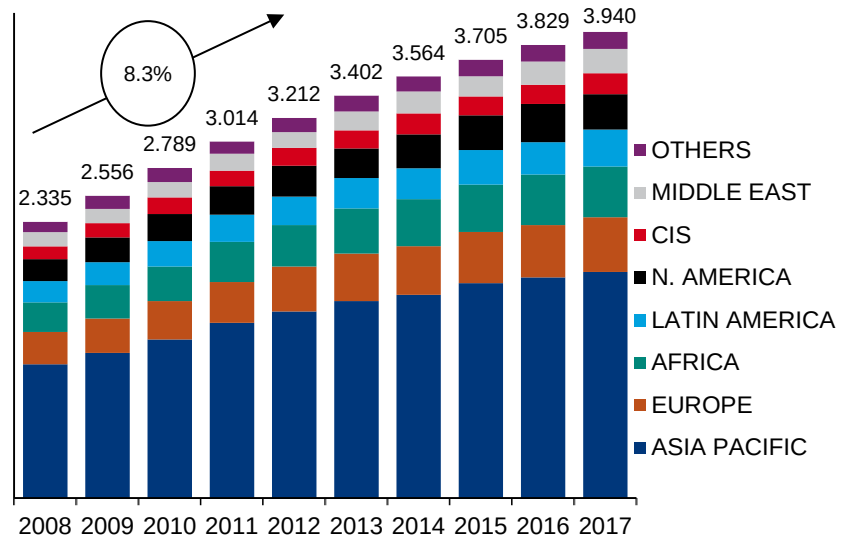
Mobile subscribers are growing 4x faster than population growth & mobile broadband is expected to grow at 26% CAGR 2012-17 (Source: GSMA-AT Kearney)

"the use of mobile phones in education is at the very early stages of what is poised to become a potentially massive area of investment by ministries of education, civil society and especially the private sector in the decade to come" – World Bank

Mobile, mobile broadband & internet revolution

There were around 3.2bn mobile subscribers in 2012 – this figure is expected to rise to 3.9bn in 2017, representing a CAGR of 4.2%. The number of subscribers is growing 4x faster than the global population. There were 6.8bn mobile connections in 2012 – forecast to reach 9.7bn in 2017 at a CAGR of 7.6%. There were 1.6bn connections to mobile broadband in 2012 – a 26% CAGR is expected resulting in 5.1bn connections in 2017. The mobile industry generated US\$1tn in annual revenues in 2012, which is expected to rise to US\$1.12tn in 2017 at a 2.3% CAGR to reach (source: GSMA-AT Kearney).

Chart 62: Total mobile subscribers (bn)



Source: GSMA Wireless Intelligence

“Mobile connectivity in learning offers the opportunity to tailor content to a student’s ability and deliver it in a more ‘digestible’ format than traditional educational approaches.” - (Source: GSMA-AT Kearney)

Emergence of m-education

M-education is defined as technology-enabled learning solutions available to learners anytime and anywhere. Any portable device, such as a tablet, laptop or mobile phone, that provides access to educational content through mobile connectivity (2G, 3G, or 4G complemented by mobile-based Wi-Fi) can be a tool for m-education (source: GSMA and McKinsey). It offers three key advantages in terms of education:

- **Simplifies access to content and experts**, overcoming traditional constraints of time, location and collaboration.
- **Personalises education solutions for individual learners**, helping educators customise the teaching process, using software and interactive media that adapt levels of difficulty to individual students’ understanding and pace.
- **Addresses specific challenges that lower the efficiency of educational systems worldwide** (source: GSMA and McKinsey).

US\$70bn m-education market by 2020E

Device manufacturers, mobile network operators, content and software providers and distributors including publishers are all working across the value chain to help to extend the reach of high-quality education and/or improve learning outcomes (source: GSMA and AT Kearney). This will also present business opportunities with the mobile education market projected to grow from US\$3.4bn in 2011 to US\$70bn by 2020, according to the GSMA’s ‘Transforming Learning Through mEducation’ report:

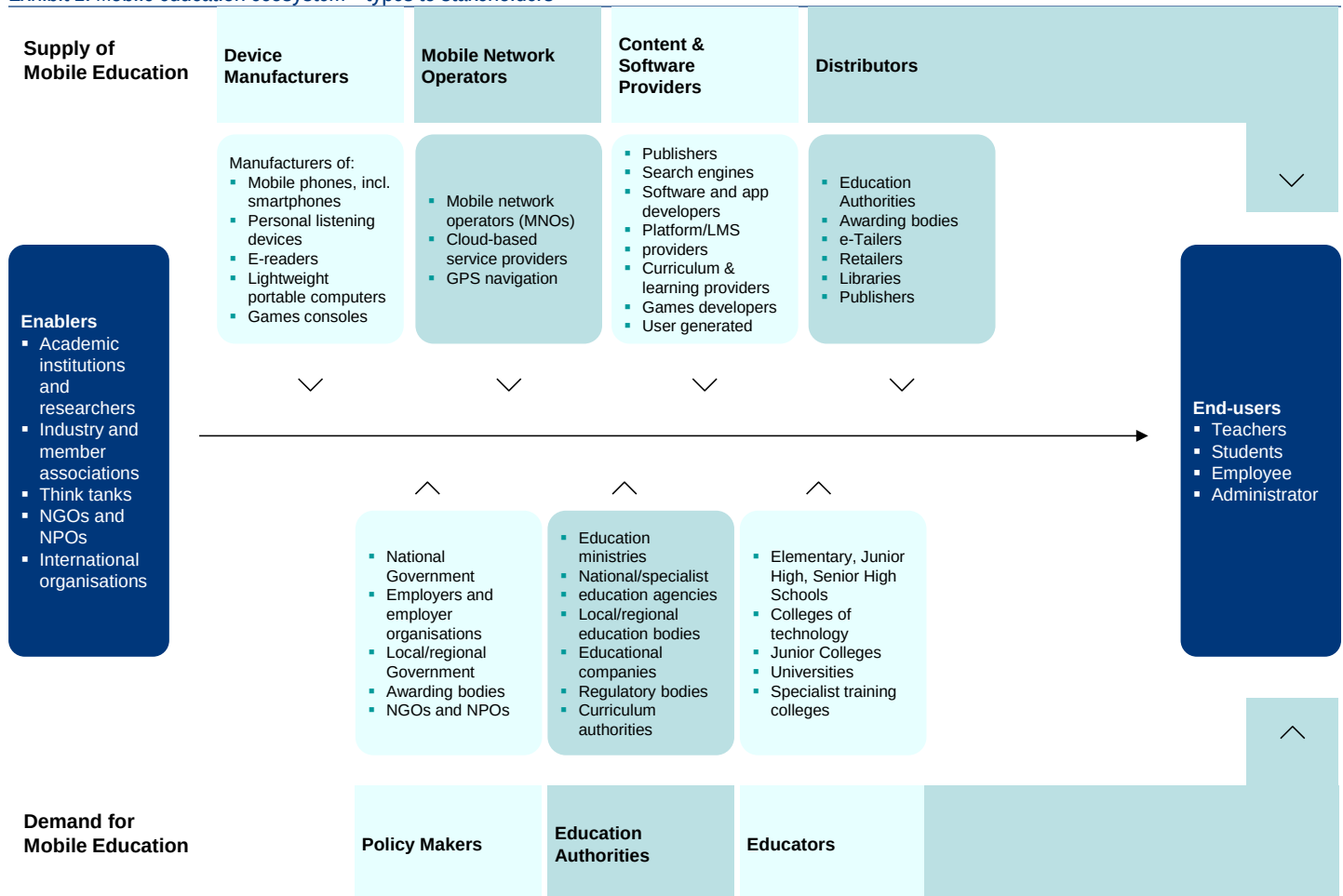
- **Education spend will accelerate the fastest in developing Asia-Pac** at a CAGR of 54% in 2011-20E, while North America should remain the biggest market in absolute terms with a total annual spend of US\$15bn for m-education products and solutions by 2020.

Mobile education market is projected to grow to US\$70bn by 2017E

180m children in EMs will have the opportunity to stay in school because of m-education (Source: GSMA and AT Kearney)

- **75-80% of spending will be in higher education and K-12**, while corporate learning will account for 10-20%, varying by market.
- **Around 90% of m-education services will rely on content**, enabling platforms and software.
- **Device opportunity will be worth US\$32bn by 2020** (source: GSMA and McKinsey).

Exhibit 2: Mobile education ecosystem – types to stakeholders



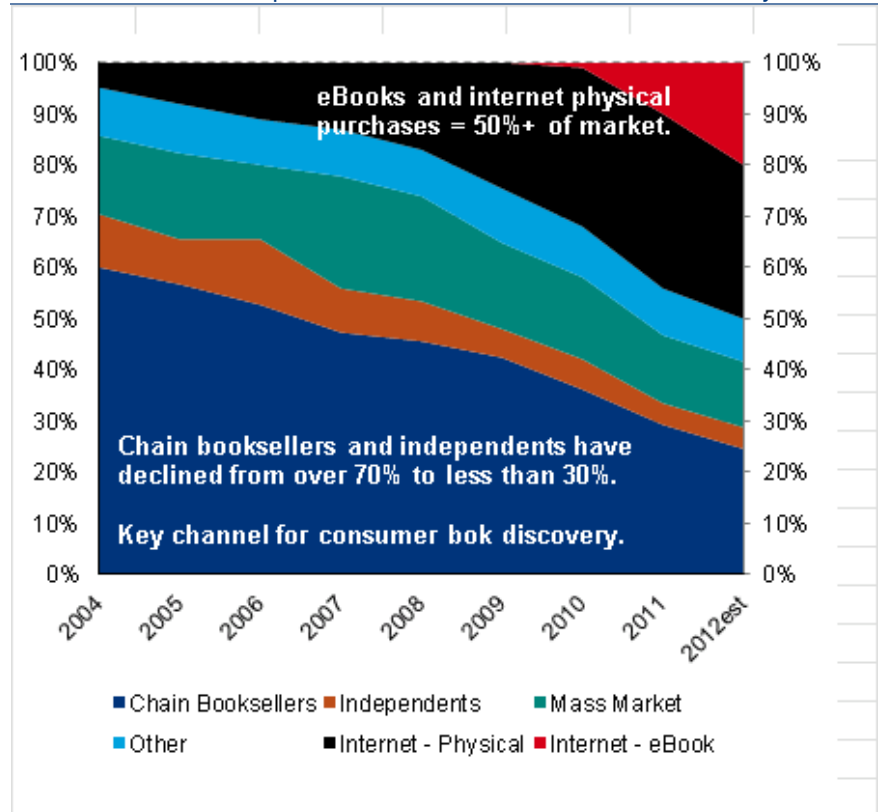
Source: GSMA

In 2013, the Financial Times confirmed that the number of digital subscriptions to the FT had overtaken the number buying the print edition for the 1st time – and that mobile accounts for 30% of all traffic

Print to e-print, e-books & internet = 50% purchases

The knock-on effects of internet penetration are being felt across the board including in the books and publishing industry where e-books are now a major force in the US trade book (consumer) publishing industry, making up 20% of trade in 2012. Consumer e-books netted publishers US\$3.0bn in revenues in 2012, up 44% over 2011 (source: Association of American publishers and Book Industry Study Group). Together e-books and internet account for more than 50% of US consumer book purchases (source: Pearson). The transition to e-readers, iPads and e-texts marks the most widely established m-education trend to date – with mainstream textbook publishers also making the 'e-leap' (e.g., Pearson and McGraw Hill's investment in Inkling).

Chart 63: eBooks & internet purchases are 50% of US consumer book volumes by channel



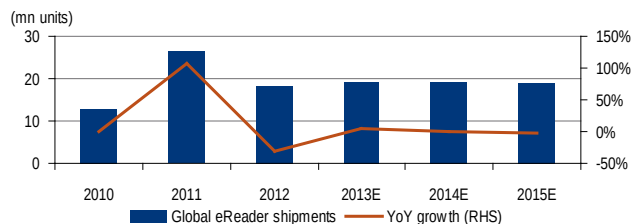
Source: Pearson

E Ink Holdings: Getting better seasonally, not structurally; retain U/P 16 August 2013

Structural issues in e-reader market

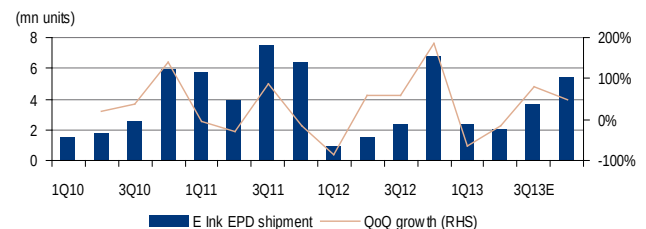
While there is potential near-term upside from new model launches and orders from new Asia and EU customers in 2H13, our Asia Technology Research team remain cautious on the e-reader market due to saturation in the US and cannibalisation from low-priced tablets. Growth from new applications like electronic labels and watches will not be material in the next 2-3 years, in our view.

Chart 64: IDC projects that global e-reader shipment growth will level off from 2013



Source: IDC

Chart 65: Seasonal uptick in 2H13E no longer a meaningful catalyst



Source: BofA Merrill Lynch Global Research

"[R]ipe for destruction" – Steve Jobs on textbooks, Walter Issacson in "Steve Jobs"

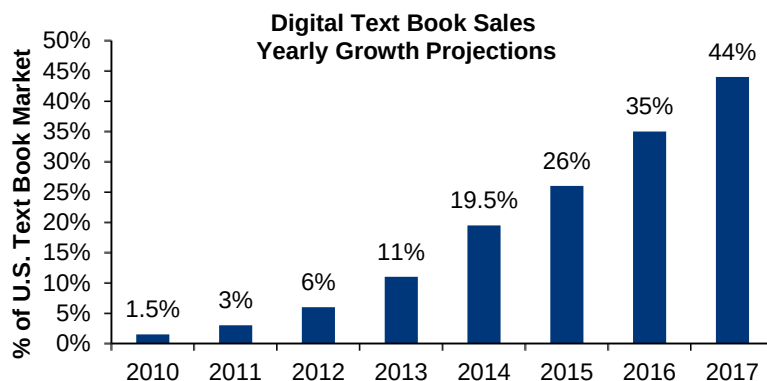
Apple's App Store features 40,000 education apps designed especially for the iPad (Source: Apple)

Digital revolutionising textbooks

Textbooks is a segment where digital content is having significant impacts. The last few years have seen a significant uptake in digital content via internet-enabled devices, the number of students involved in online learning in both K-12 and post-secondary, and governmental efforts to facilitate the funding and use of digital content and associated hardware and software.

Digital is an enabling technology that is transforming the output/product of the textbook publishing industry but is also disruptive in that it threatens the business model because it is cheap and easy to distribute. Given the rapid-take, this poses a key challenge for traditional publishers in terms of moving from wholesale pricing to an agency model and from content subscriptions, while competing against a new and growing generation of EdTech actors.

Chart 66: US digital textbook sales & yearly growth

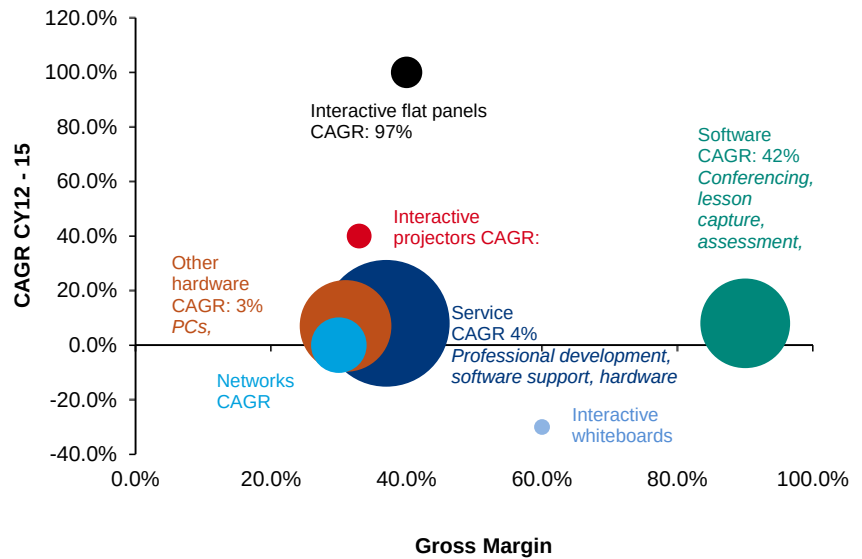


Source: Xiplana

US students spent US\$662 annually for course materials in 2012 (Source: NACS)

- **High cost of print textbooks & learning materials:** US students spent on average US\$662 for course materials in 2012 (source: National Association of College Stores), with some estimates up to US\$1,200 (source: College Board). High costs are increasingly pertinent for heavily financially burdened students in a recessionary environment. Moreover, textbooks, which are traditionally republished every 3-4 years, fall out of date rapidly.

Chart 67: US K12 Ed Tech 2015 Market Forecast (SMART's Areas of Focus)

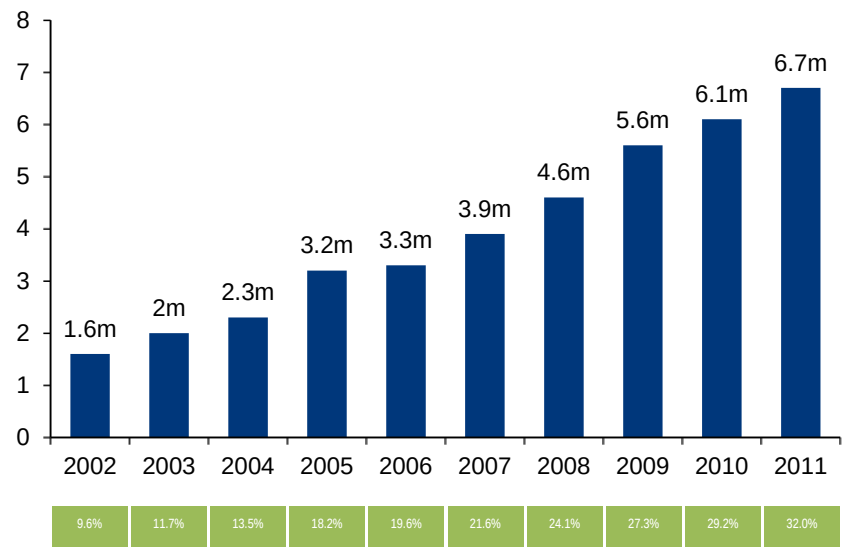


Source: Futuresource Consulting Ltd., Gartner, Wainhouse, company data

59% of students say they are more likely to bring a laptop or tablet to class vs. 41% that prefer to bring a textbook (Source: CourseSmart)

- **Students are becoming digitally dependent:** 99% of US students surveyed reported having at least one digital device in 2012 and, while laptops were the most common (93%), many students now own smartphones (78% vs. 47% in 2011) and tablets (35% vs. 7% in 2011). The increased usage is partly due to professors/teachers using digital course materials. Also, 79% of students feel that technology, such as mobile devices, digital textbooks, e-readers and tablets save them time when studying and learning (source: CourseSmart).

Chart 68: US college students taking at least one online course



Source: Pearson based on Babson annual online learning Survey

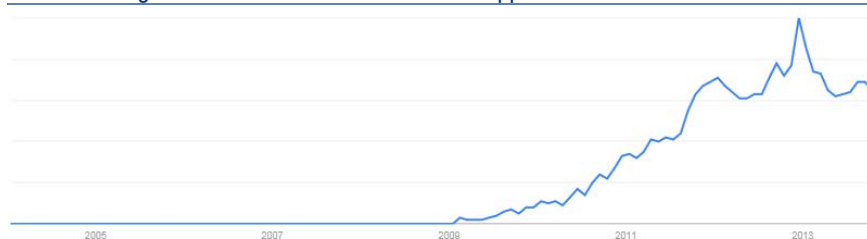
The higher education textbook industry has voiced stiff opposition to creation and adoption of open textbooks

- **Increasing availability of affordable digital content:** Publishers are increasingly making their titles available in digital form with online companies like CourseSmart offering access to over 90% of core higher-education titles

used today as eTextbooks, and Kno offering 200,000 titles via 80 publishers – at discounts of up to 60% vs. printed texts (source: companies). In addition, companies like Amazon offer tens of thousands of academic titles.

- **Open textbooks/courses:** Open textbooks are licensed under an open copyright licence, and made available online via print, e-book, or audio formats – either for free or at a very low cost. They fit within the broader open educational resources movement, and are increasingly seen by many stakeholders as a solution to concerns about the access and affordability of traditional textbooks.

Chart 69: Google Trends on interest in educational apps over time



Source: Google Trends

69% of high school seniors and 63% of college students believe tablets will replace textbooks within the next five years.

Students believe tablets to replace texts in five years

Tablet ownership has tripled among US college students (25% in 2012 vs. 7% in 2011) and quadrupled among high-school seniors (17% vs. 4%) (Source: Pearson Foundation). In addition:

- **More students are reading digital books** (70% of college students and 58% of high-school seniors). Among students who had previously read a digital textbook, 81% of college students and 66% of high-school seniors have read a digital textbook this school year.
- **57% of college students prefer a digital format** when reading for pleasure and 58% prefer digital textbooks for class, while only one-third prefer print.
- **A majority believe tablets will replace textbooks within five years** – 63% of college students and 69% of high-school seniors (source: Pearson Foundation).

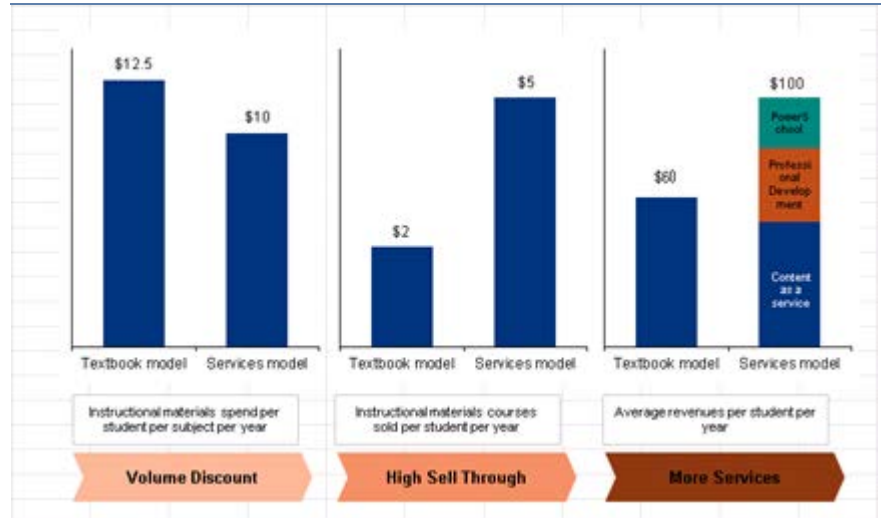
In HE, the publishing market declined by 6% net in 2012 (Source: Association of American Publishers)

"Textbooks are going to remain a key part of learning. They just need to go digital, become more interactive and they need more analytics," said Osman Rashid, co-founder and CEO of Kno

Traditional publishers at risk

Digital is an enabling technology that is transforming the output/product of the textbook publishing industry but is also disruptive in that it threatens the business model because it is cheap and easy to distribute (source: GSMA). e-book providers such as CourseSmart and Kno offer digital content at a fraction of the price of traditional textbooks.

Chart 70: K12 services model evolution



Source: Pearson

CourseSmart is a provider of eTextbooks and digital course materials founded in 2007 by publishers in higher education including Pearson, Cengage Learning, McGraw-Hill Education, Bedford, Freeman & Worth Publishing Group (Macmillan) and John Wiley & Sons

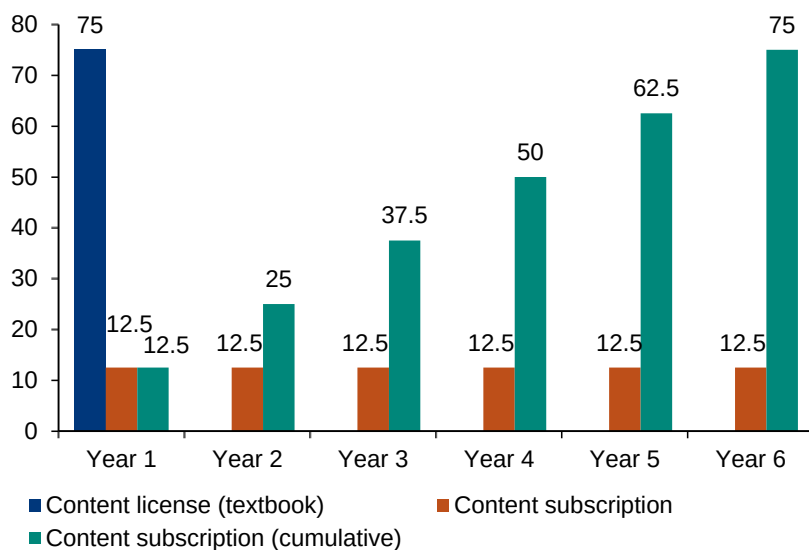
From wholesale pricing to an agency model

Publishers moving from their traditional “wholesale” model (i.e., selling printed books to retailers for a RRP less a discount, and then letting the retailers decide the in-store price) to an “agency” model (i.e., the publisher decides the retail price and then pays the retailer or agent an agreed commission on every sale) is having a significant impact on pricing. However, the latter gives publishers an element of control over online retailers (source: GSMA), including via publisher-owned and managed distribution channels, such as CourseSmart.

From content licences to content subscriptions

Publishing companies are increasingly looking to content subscription models, which allow them to control the content of digital textbooks, while being able to sell their content across mobile devices and digital platforms. Medium term, one-off sales will diminish, while subscription sales, most bundled with services, will grow. That same shift to digital causes considerable change and consolidation in the retail channel, with a dramatic shift to online sales and different sales patterns for physical and digital formats (source: Pearson).

Chart 71: Licence to subscription sale



Source: Pearson. Note: Illustrative example based on Pearson data showing impact of move from one off sale every six years to annual subscription

Competitive practices & antitrust issues

The move to digital poses challenges both for publishers and retailers, among others, in terms of competitive practices – e.g. uniform prices for e-books under the agency model – which may restrict competitors from offering cheaper digital versions and deprive consumers of competitive prices. This is coming under increasing scrutiny both in the U.S. and Europe.

Common core standards also challenging delivery methods

In addition to the Obama administration's increasing focus on competency based learning, the adoption of Common Core standards in math and English language arts (ELA) over the next two years in 45 U.S. states (replacing patchwork standards) is a potential catalyst which could change the way educational content is delivered in the future.

Overview of common core standards

The Common Core standards are new assessment systems aimed at measuring whether students are learning the material specified by the new standards, which are designed to ensure student readiness for success in college and the labour force. They are designed to allow states to adopt better tests at a lower price through collaboration on common tests. The leading options for Common Core assessments are the tests being developed by two consortia of states that are funded by federal grants: the Partnership for Assessment of Readiness for College and Careers (PARCC) and the SMARTER Balanced Assessment Consortium (SBAC). PARCC and SBAC have estimated that their computer-based end-of year assessments will cost US\$29.50 and \$22.50 per student, respectively (Source: Brookings Institution).

Another threat for incumbents

It poses a particular threat for many publishing incumbents as EdTech companies step up their efforts on digital content, elearning Apps, and even full curricula – and exacerbates the move away from printed textbooks and materials. New York, for instance, in 2012 became the first state to insist that curriculum matching the new standards be offered free online.

An October 2013 poll of over 20,000 teachers found that about three-fourths of teachers think the standards will improve students' abilities to reason and think critically (source: Scholastic Inc.)

Online or e-learning

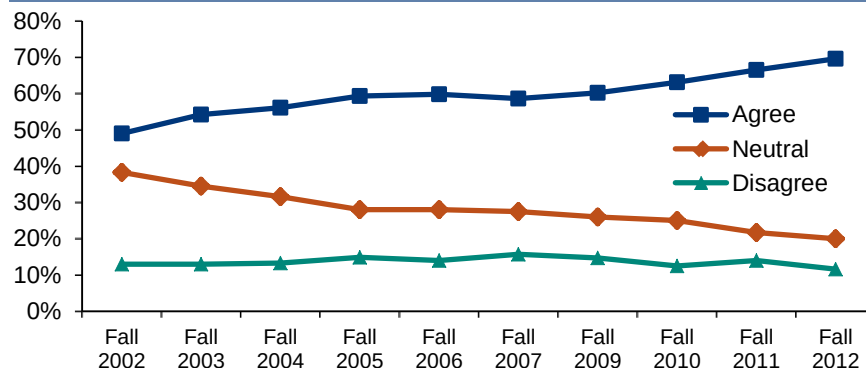
Online or e-learning refers to the use of information and communication technologies (ICT) in education. It encompasses numerous types of media and technology applications and processes, as well as intranet/extranet and web-based learning. It can occur in or out of the classroom, be self-paced (asynchronous) or instructor-led (synchronous) and can be used for distance learning, flexible learning, adaptive learning, and/or in tandem with face-to-face learning (blended learning).

Increasingly critical to education strategy

On-line or e-learning is becoming increasingly critical to long-term education strategy as is being witnessed via the views of U.S. academic decision-makers:

- **In 2012, 69% of US academic leaders said online learning is a critical component of their long-term strategy** vs. less than half in 2002. The proportion of institutions reporting that online education is not critical to their long-term strategy has dropped to a new low of 11.2%. However, faculty acceptance of the value and legitimacy of online stands at only 30% of CAOs or Chief Academic Officers (source: Babson Survey research Group and Quahog Research).

Chart 72: CAOs reporting online education is critical to the long-term strategy of my institution



Source: Babson Survey Research Group and Quahog Research

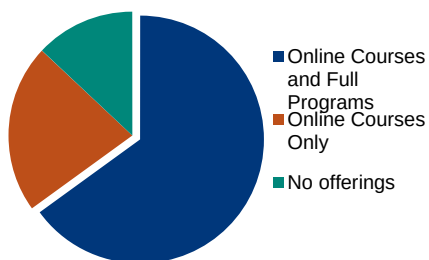
- **Around 7m US students took at least one online course in 2012** (+570,000 YoY) – and this figure has been increasing at a faster pace than the overall numbers in higher education every year since 2002. The proportion of all students taking at least one online course reached a record high of 32% in 2012. However, the online enrolment growth rate of 9.3% is the lowest since 2002 (source: Babson Survey Research Group and Quahog Research).

Table 15: Total & online enrolment in degree-granting postsecondary institutions

	Annual Growth Rate Online Enrolment	Online Enrolment as a Percent of Total Enrolment
Fall 2002	NA	9.6%
Fall 2003	23	11.7%
Fall 2004	18.2	13.5%
Fall 2005	36.5	18.2%
Fall 2006	9.7	19.6%
Fall 2007	12.9	21.6%
Fall 2008	16.9	24.1%
Fall 2009	21.1	27.3%
Fall 2010	10.1	29.2%
Fall 2011	9.3	32.0%

Source: Babson Survey Research Group and Quahog Research

Chart 73: Type of online offerings (2012)



Source: Babson Survey research Group and Quahog Research

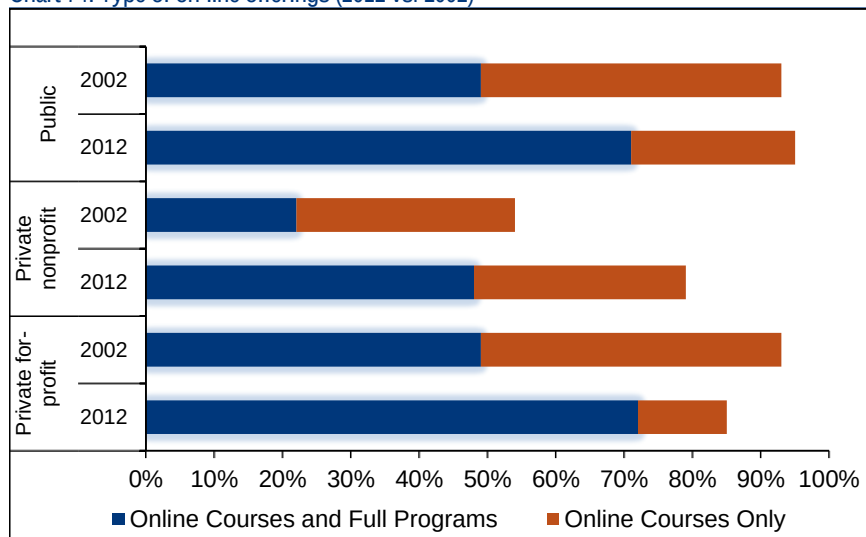
Table 16: Total & online enrolment in degree-granting postsecondary institutions

	Total Enrolment	Annual Growth Rate Total Enrolment	Students Taking at Least One Online Course	Online Enrolment Increase over Previous Year	Annual Growth Rate Online Enrolment	Online Enrolment as a Percent of Total Enrolment
Fall 2002	16,611,710	NA	1,602,970	NA	NA	9.6%
Fall 2003	16,911,481	1.8%	1,971,397	368,427	23	11.7%
Fall 2004	17,272,043	2.1%	2,329,783	358,386	18.2	13.5%
Fall 2005	17,487,481	1.2%	3,180,050	850,267	36.5	18.2%
Fall 2006	17,758,872	1.6%	3,488,381	308,331	9.7	19.6%
Fall 2007	18,248,133	2.8%	3,938,111	449,730	12.9	21.6%
Fall 2008	19,102,811	4.7%	4,606,353	668,242	16.9	24.1%
Fall 2009	20,427,711	6.9%	5,579,022	972,669	21.1	27.3%
Fall 2010	21,016,126	2.9%	6,142,280	563,258	10.1	29.2%
Fall 2011	20,994,113	-0.1%	6,714,792	572,512	9.3	32.0%

Source: Babson Survey Research Group and Quahog Research

- **86.5% of US HE institutions offered online courses** in 2012 vs. 71.7% in 2002. Additionally, 62.4% of HE institutions now offer complete online programmes rather than just online courses (vs. 34.5% in 2002) (source: Babson Survey research Group and Quahog Research).

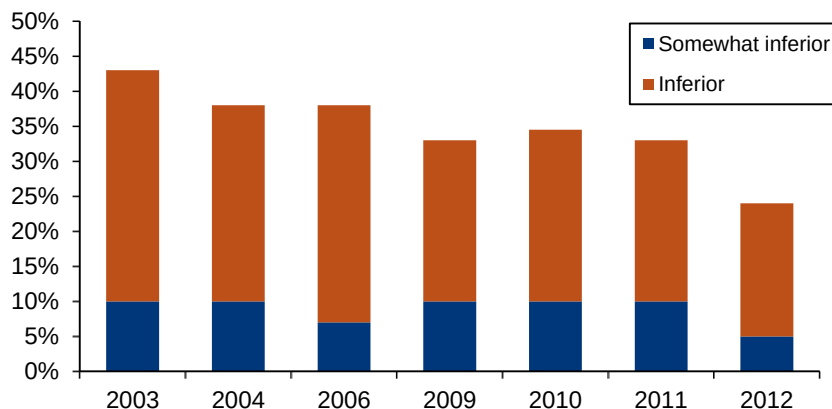
Chart 74: Type of on-line offerings (2012 vs. 2002)



Source: Babson Survey research Group and Quahog Research

- **77% of CAOs considered the learning outcomes comparable to face-to-face instruction** in 2012 vs. 57.2% in 2003 (source: Babson Survey research Group and Quahog Research).

Chart 75: Proportion reporting online learning outcomes inferior to face-to-face

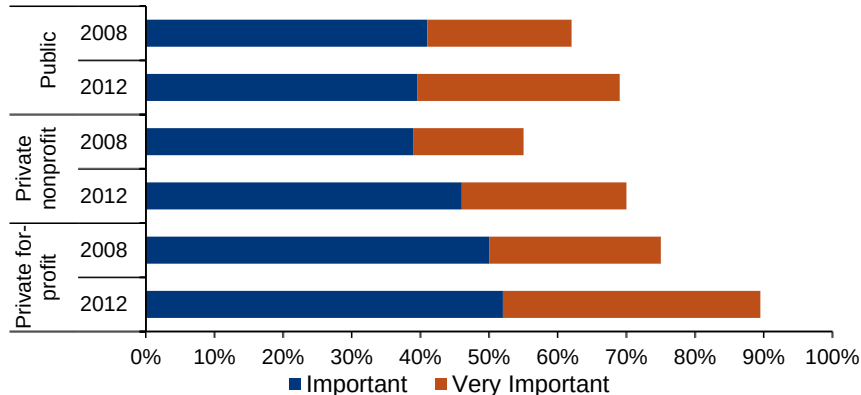


Source: Babson Survey research Group and Quahog Research

Barriers to widespread adoption of online

While a majority of academic leaders consider online to be critical to their long-term strategy, they continue to express concerns that could limit growth including the need for more discipline on the part of online students, lower retention rates, and a lack of acceptance of online degrees by potential employers (source: Babson Survey research Group and Quahog Research).

Chart 76: Lower retention rates are considered to be the biggest barrier to online growth



Source: Babson Survey research Group and Quahog Research

Opposition from teaching unions

It is also worth highlighting that some teaching unions oppose greater take-up of online learning, arguing that they do not want their value to be undermined by technology / adaptive learning techniques which potentially displace the teacher as the most important driver of learning outcomes. The increasing move to EdTech poses long-term threats in terms of fewer teachers (and union members) per student, and makes it more difficult for unions to organise (as IT means teachers will be able to work anywhere).

Weak prospects for for-profits in US

Eduventures forecasts wholly online headcount (students enrolled in at least 80% of accredited classes online) to grow by 7% YoY in 2013, 4% in 2014 and only 2% pa through 2017, before starting to rebound (greater innovation, improving

demographic trends in the 25-44 year old category). This compares to 9% growth in 2012 and 11% in 2011. Eduventures expects for-profits to regain share in the long run through innovation, implying minimal to negative for-profit growth in the online market over the next several years.

Table 17: Eduventures' estimates and forecasts for online market share

	Public	For-profit	Private
2008E	49%	39%	12%
2009E	46%	42%	12%
2010E	45%	43%	12%
2011E	48%	39%	13%
2012E	54%	31%	15%
2013F	55%	28%	16%
2014F	56%	26%	17%
2015F	57%	26%	17%
2016F	57%	27%	16%
2017F	55%	29%	16%
2018F	54%	31%	15%
2019F	52%	34%	14%
2020F	51%	35%	14%

Source: Eduventures, BofA Merrill Lynch Global Research

Non-profits schools are catching up on online by partnering with EdTech enablers

Edtech enablers aiding non-profit take-up

It is also worth noting that traditional schools (i.e. public/private non-profit) in the U.S. are adopting more online programs, and they are in part being helped by the development of third party EdTech enablers or BSPs (Bundled Services Providers) such as Embanet (acquired by Pearson), Deltak (acquired by J Wiley), Academic Partnerships, Bisk, Learning House, and 2U among others. These enablers are helping schools with a blueprint and support to move for-credit courses from the classroom to the web, in exchange for a share of tuition revenues. This is enabling faster online expansion than we might have seen otherwise.

Table 18: Non-profits are catching up on online by partnering with EdTech enablers

For-Profit	# of Partners	Non-Profit
Embanet Compass	35	Boston University
Deltak	26	Purdue University
Academic Partnerships	14	Florida International University
Bisk	12	University of Notre Dame
Pearson	10	Arizona State University
Educators Serving Educators	7	American International College
Learninghouse	5	Albany State University
Colloquy	4	George Mason University
2tor	4	University of Southern California
Altius Ed	1	Tiffin University

Source: Partnenon

Adaptive learning supports mastery-based learning, a school of teaching founded on the idea that student progression through a course should be dependent on proficiency as opposed to the amount of time spent on academic work. Though it may not always be referred to by name, mastery-based learning describes any situation in which one is given a set of problems, labs, or activities, and in which progression through that material is dependent on successful completion of various tasks rather than seat time (source: Knewton)

Adaptive learning, increasing take-up

On-line or elearning is acting as an enabler for the take up of adaptive learning in K-12 and post-secondary schools. Adaptive learning is an educational method which uses ICT as interactive teaching devices (i.e. computers, mobile devices, apps (quizzing, flashcard, textbook, simulation, gamification et. al.) and big data analysis to adapt the presentation of educational material according to students' learning needs, as indicated by their responses to questions and tasks). Adaptive learning seeks to transform the learner from passive receptor to collaborator - and is partially driven by a realisation that tailored learning cannot be achieved on a large-scale using traditional, non-adaptive approaches.

A recent poll of college and university presidents showed that respondents see more potential in adaptive learning (66%) to make a "positive impact on higher education" than they do MOOCs (source: Inside Higher Ed and Gallup)

Adaptive learning companies such as Knewton use a big-data analytics approach to detect patterns of student success and failure, plugging into tutoring and assessment applications designed by publishers and educational software companies

Number of potential advantages

Adaptive learning offers the potential to deepen student engagement with learning materials, customize students' pathways through curriculum, and permit instructors to use class time in more focused and productive ways. It can thus make a significant contribution to improving retention, measuring student learning, aiding the achievement of better outcomes, and improving pedagogy (Source: Education Growth Advisors).

40+ companies active in the space

There is growing interest in the adaptive space and a recent poll of college and university presidents showed that respondents see more potential in adaptive learning (66%) to make a "positive impact on higher education" than they do MOOCs (source: Inside Higher Ed and Gallup). Education Growth Advisors has identified 40+ companies active in the space as of January 2013. This includes some of the major incumbents such as learning companies, publishers, content providers and educational institutions. For example, Pearson is offering college students access to online homework and tutorial software powered by Knewton's adaptive learning data service.

Chart 77: Sample overview of adaptive learning suppliers

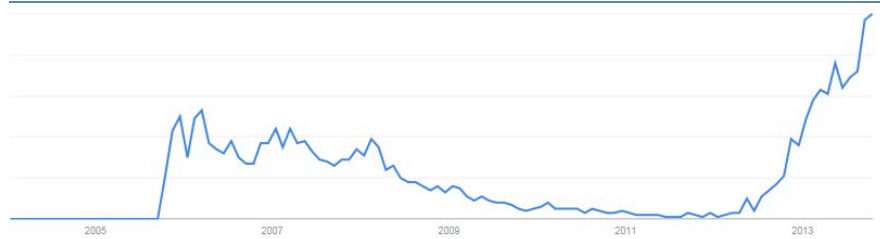
SUPPLIER	PRIMARY CUSTOMER SEGMENT TO DATE	TARGET USER	PRIMARY INSTRUCTIONAL APPLICATION	INSTALLED STUDENT BASE OF PRIMARY USE-CARE
ADAPT COURSEWARE	• Postsecondary	• Professors • Students	• Whole course delivery	• Small
CEREGO GLOBAL	• Corporate • Consumer	• Executives and employees • Individuals	• Practice aide • Test Prep	PRIMARY CUSTOMER SEGMENT TO DATE
COGBOOKS	• Corporate	• Trainers • Knowledge workers	• Whole course delivery	• Small
JONES & BARTLETT LEARNING	• Postsecondary	• Professors • Students	• Homework tool • Practice aide • Test Prep	• Small
LOUDCLOUD SYSTEMS	• Postsecondary • K-12	• Professors • Teachers • Students	• LMS • eReader platform	• Small
MCGRAW-HILL EDUCATION (LEARNSMART)	• Postsecondary	• Professors • Students	• Homework tool • Interactive labs • Practice aide • Test Prep	• Large
OPEN LEARNING INITIATIVE	• Postsecondary	• Professors • Students	• Wholes course delivery	• Moderate
SMART SPARROW	• Postsecondary	• Professors • Students	• Homework tool • Interactive labs • Simulations	• Small

Source: Education Growth Advisors

MOOCs - online 2.0?

Traditional schools and new companies are launching free, massive, open online courses (MOOCs). These include prestigious universities such as MIT, Harvard, and Stanford. MOOCs are free lecture-based courses that are distributed without limit online and are available to any person across the world. Currently, students generally do not receive degree credits for these courses. While MOOCs have been around for a while, the new level of attention they are receiving could ultimately alter HE leaders' perceptions and plans for MOOCs and other online offerings.

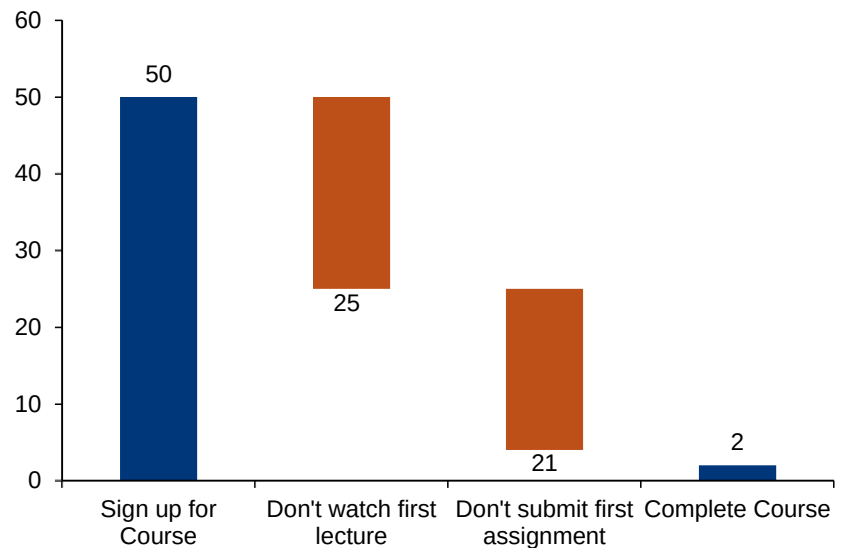
Chart 78: Google Trends on interest in MOOCs over time



Source: Google Trends

However, key challenges exist around the frequent lack of college credit or certificates of completion, their role as a complement rather than a substitute, exceptionally high dropout / low completion rates (as low as 10% according to academic research), and the fact that the vast majority of users are post-graduate, rather than under-graduate.

Chart 79: Coursera Student Dropout Rate, by Course Stage, 2012 (based on 50k students)

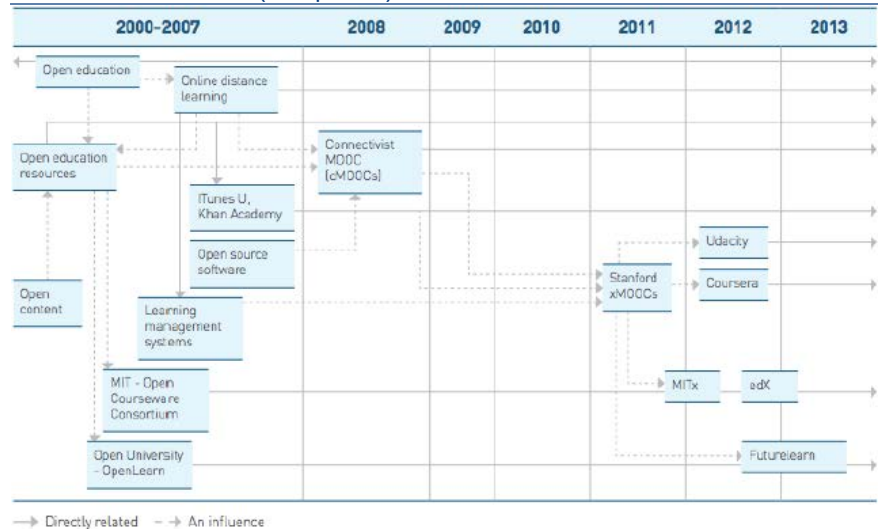


Source: Inside Higher Ed and Open University, EduCause Review

How a MOOC works in practice

A typical MOOC course might take place over four to 10 weeks – most of the course is given to learning and a final week or fortnight to the production of a piece of work, sometimes a video. Students dedicate on average two to six hours a week to the course. Materials are consumed in diminishing volumes throughout the MOOC as many learners' commitment wanes. The resources posted in the MOOC remain accessible after it has closed. Course applicants can number in the tens of thousands, while those who complete and obtain certificates are usually in the hundreds, or a few thousand at most (source: UK Department of Business, Innovation & Skills).

Chart 80: MOOCs timeline (2000-present)



Source: UK Department for Business, Innovation & Skills acknowledging Universities UK

55.4% of US institutions report they are still undecided about MOOCs, while 32.7% say they have no plans for a MOOC

Most HE education institutions are on the side-lines

US higher education institutions' take-up of MOOCs remains low. The 2012 Survey of Online Learning conducted by the Babson Survey Research Group reveals that only 2.6% have a MOOC with 9.4% reporting that MOOCs are in the planning stages. Some 55.4% of institutions report that they are still undecided about MOOCs, while 32.7% say they have no plans to launch one.

Table 19: Quoted student numbers on MOOCs

MOOC platform, country	Quoted student numbers (date of announcement)	Number of courses (as of 28/5/13)	Number of institutions
Coursera, US	3,670,803 (on 28/5/13)	374	70
EdX, US	900,000 (approx. May 2013)	53	27
Udacity, US	400,000 (approx. May 2013)	25	1
FutureLearn, UK	N/A	N/A	21
UK institutions MOOCs		Students	Courses
University of London International Programmes		165,000	4
University of Edinburgh		308,000	6

Source: UK Department for Business, Innovation & Skills

Pearson: Obama published plan for Higher Ed ratings 23 August 2013

Obama announces plans to promote innovation & technology

In August 2013, President Obama announced plans to remove barriers to innovation and technology to allow practices for providing higher value at lower cost. These include MOOCs and "hybrid" classrooms whereby students can watch lectures at home/online and then solve problems in class. Better information on how colleges are performing will be published to help demonstrate that new approaches can improve efficacy, while encouraging colleges to adapt one or more of these practices (i.e., integrate MOOCs or blend in-person and online experiences). Successful examples of this approach include Arizona State University, where interactive algebra classes have improved performance by 10%, and the University of Maryland.

No consensus view on the value of MOOCs

In September 2013, the UK government's Department for Business, Innovation & Skills published one of the most comprehensive surveys to date on the state of knowledge and opinion about MOOCs:

"The burning issues for MOOCs are the exploration of a viable business model and the accreditation of MOOC learning" – UK Department for Business, Innovation & Skills

- **Conflicting perspectives on MOOCs divide education communities:** Elite US institutions are engaging enthusiastically in MOOCs by lending brand, content, funds, staff, badging and policy support. They see opportunities for brand enhancement, pedagogic experimentation, recruitment and business model innovation. A minority have actively disengaged (Duke, Amherst), while smaller players have not engaged strongly, with some seeing MOOCs as a threat.
- **Learning practitioners disagree about the value of MOOCs:** Enthusiasts, including the press, report positively on learning experiences and innovative formats of pedagogy, while sceptics say that MOOCs simply repackage existing innovations in open and distance learning (ODL) and/or suffer from weaknesses around access, content, quality of learning, accreditation, pedagogy, poor engagement of weaker learners, exclusion of learners without specific networking skills.
- **MOOCs could be disruptive/possibly threatening current HE models:** MOOCs bring an impetus of reform, research and innovation which could mean dramatic change as a result. Some suggest they may be overhyped and/or suggest failings around sustainability, quality, equality, equity, financial viability, learning quality and accreditation.
- **Reporting of MOOC learner experiences is positive:** Learners emerge as relatively enthusiastic about the MOOC format, although passive consumption or lurking in a MOOC is a common pattern. Benefits to learners include access to high-quality material, and new kinds of collaborative learning experiences. That said, the lack of skill and aptitude in online social networking is not widely shared enough to impact many learners.
- **MOOC are engaging with business and accreditation issues:** MOOCs are maturing and heading to become a significant and possibly a standard element of credentialed university education, exploiting new pedagogical models, discovering revenue and lowering costs (source: UK Department for Business, Innovation & Skills).

MOOCs' high demands for connectivity, online literacy and English language skills, may be excluding EM students

Take-up is not a given in EMs

Many stakeholders take it as given that MOOCs will see widespread take-up in EMs, hailing their cost-free access to resources and learning experiences for students in India, China and Africa. However, MOOCs, with their high demands for connectivity (computing infrastructure and bandwidth), online literacy and English language skills, may be excluding EM students and privileging learners from the most highly developed educational environments. Efforts are being made to tweak courses to allow EL learners to download rather than stream content (source: UK Department for Business, Innovation & Skills).

A distraction but not a disruption in their current form

While MOOCs challenge several conventions of higher education – cost, length, and credentials – our Business, Education & Professional Services' teams April 2013 call with Richard Garrett of Eduventures showed that he thinks MOOCs are unlikely to be disruptive, at least in the current form. Most people who take MOOCs are more educated than the average person. Garrett was also sceptical that the business model for MOOCs is sustainable. He expects some interesting solutions to emerge from the recent innovation, but that this is likely to take time.

Business, Education & Professional Services: Online education expert bearish near to mid term 12 April 2013

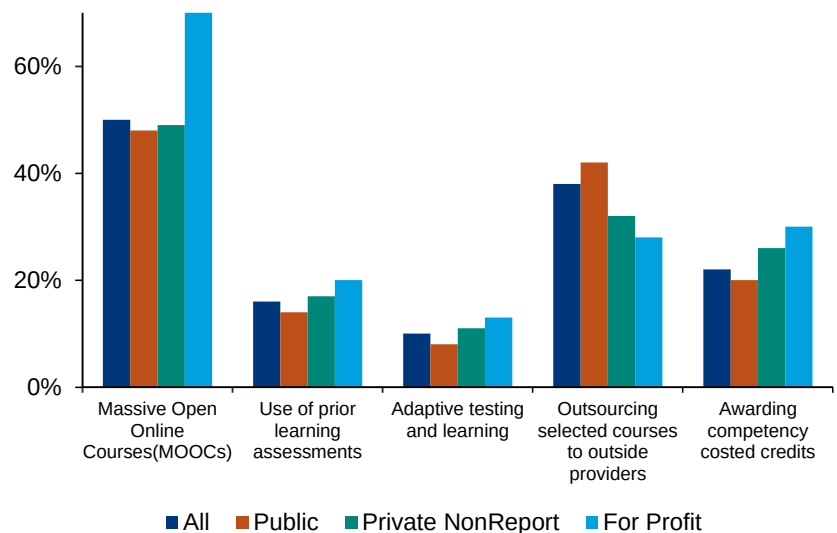
Not a convincing driver for for-profit companies

If traditional schools begin to accept MOOC credit (or use MOOC content), this will likely expand traditional school capacity and lower the total cost of education. This could be a positive if it drives more students back to school. However, our Business, Education & Professional Services' team' is not convinced that MOOCs would push students towards for-profit education.

A long-term threat?

Longer term, half of US provosts believed that MOOCs could threaten "the business model of my institution." The highest level of concern is in for-profit higher education, where 65% of provosts believe that to be the case (source: Inside Higher Ed Survey of College and University Chief Academic Officers).

Chart 81: Percentage of provosts seeing trends as threat to HE business models

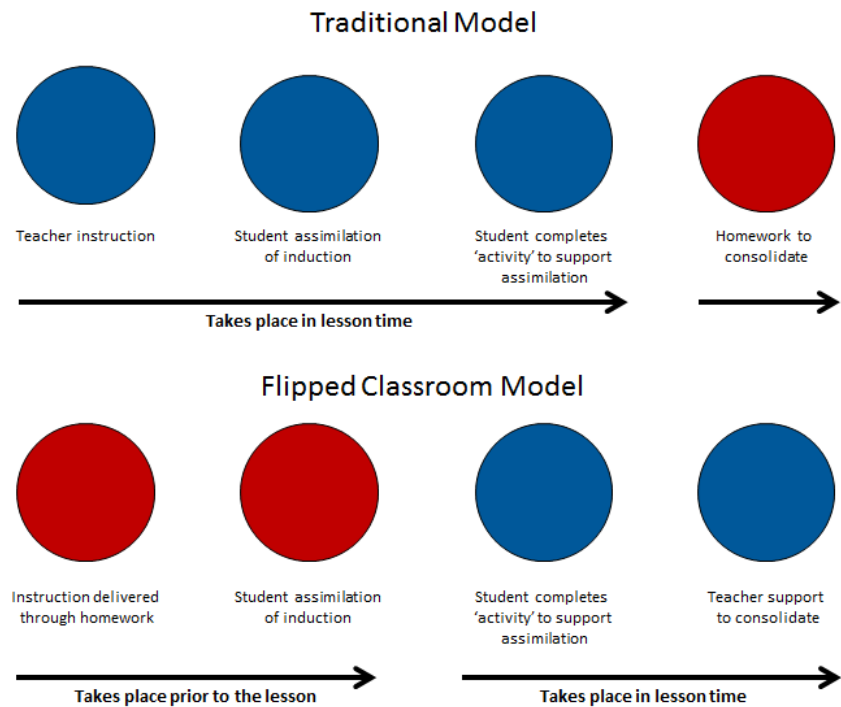


Source: UK department of Business, Innovation & Skills based on Inside Higher Ed Survey of College and University Chief Academic Officers

Textbook & content publishers, "flipping the classroom"

MOOCs potentially pose a threat to textbooks and/or content providers – in that they create content and then "flip the classroom" (i.e. students watch licenced lectures at home, communicating via online discussions and concept engagement takes place in the classroom with the instructor). While flipping is still in its early stages, it has the potential to turn education upside down given that an increasing number of schools are flipping completely (e.g. Clintondale High School, north of Detroit, became the first flipped school in the U.S. in 2010, with all of its classes taught this way).

Chart 82: Traditional vs. flipped classroom models



Source: steedie

"We must ensure that what our kids do in school is aligned and relevant for their futures. That means using 21st century tools, and understanding how to collaborate and build projects together."

"The whole community is more engaged. Students see the connection of what they're doing in school to their future... We're just on the cusp of discovering how powerful this can be." - Mark Edwards, Mooresville, N.C
School Superintendent

Mooresville NC - an EdTech success story

A potential sign of things to come in the EdTech space is the example of Mooresville, North Carolina, a town of 32,711 people (48km north of Charlotte) where 27% of students are minorities and 40% receive free or reduced-price lunches.

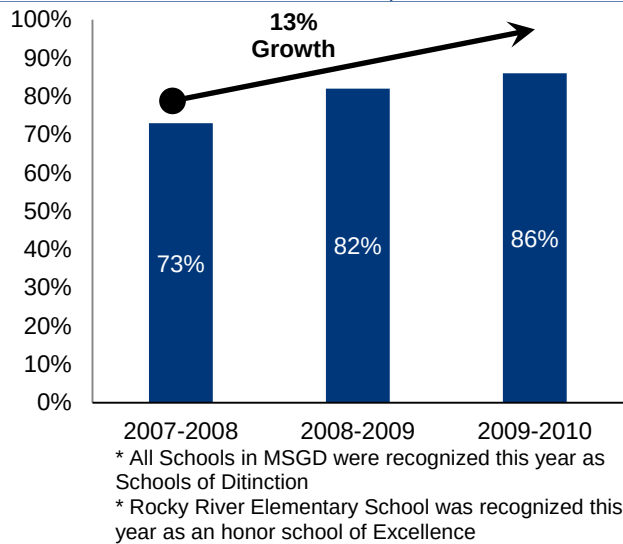
Digital rollout

In 2007, the school district started leasing MacBook laptops from Apple (US\$215 pa including warranty – the US\$50 subsidy from families for repairs is waived for those who cannot afford it) and issuing them to its 4,400 grade 4-12 students in five schools. Technology expenditure per child is US\$1 (ex-infrastructure) for hardware, software, maintenance and training. The move has meant the near elimination of textbook expenditure. Since 2007, Mooresville has also adopted digital textbooks and software from Pearson and digital resources and free maths tutorials via the Khan Academy (a MOOCs pioneer), among other corporate and non-profit partners. It also subsidises broadband Internet access for those without it (US\$9.99/month).

Improvements in graduations, test scores & attendance

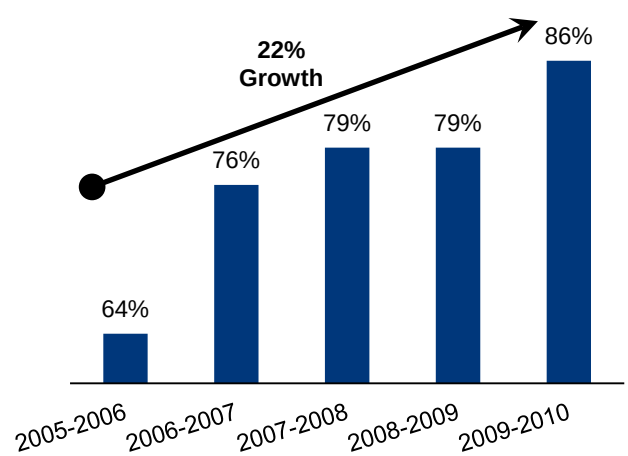
After the move to digital, the graduation rate increased to 91% in 2011 (vs. 80% in 2008), with 88% of students meeting reading/maths/science proficiency standards (vs. 70% in 2008), while attendance increased dramatically.

Chart 83: Mooresville Graded School District
NC State Performance and Academic Composite Data



Source: Mooresville

Chart 84: Mooresville High School 4 year Cohort Graduation Rate



Source: Mooresville

Medium- and long-term technologies to watch

The 2013 "NMC Horizon Report" sees MOOCs and tablets as the education technologies that will be adopted widely in higher education on a 1Ytime horizon. Over the medium (2-3 years) and long term (4-5 years), it sees games and gamification and learning analytics, 3D printing and wearable technology as emerging technologies likely to have an impact on higher education:

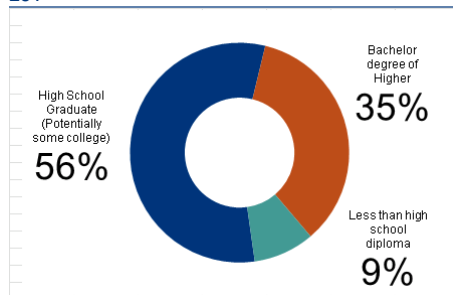
The game-based learning market is forecast to grow from US\$1.5bn in 2012 to US\$2.3bn in 2017^E. the simulation-based learning market (incl. corporate training) is forecast to grow from US\$2.3bn to US\$6.6bn (Source: Ambient Insight)

- **Games and gamification – a US\$8.9bn market by 2017E:** (source: Ambient Research). Educational games immerse students in a game, where content and curricula are delivered or juxtaposed. Gamification aims to incorporate elements of games, such as levels and badges (but also via quests and other strategies) into non-game activities. Badging or ranking systems serve to recognise student achievements, and the transparency of student progress inspires competition that can drive more interest in the material among students (source: NMC). The educational games market is expected to grow from US\$3.9bn to US\$8.9bn in 2017 (source: Ambient Insight).
- **Learning analytics** involves deciphering trends and patterns from educational big data, or huge sets of student-related data, to further the advancement of a personalized, supportive system of higher education (e.g., targeting at-risk learners, looking at students more precisely, customising online course platforms and suggest resources to students, coaching students) (source: NMC).
- **3D printing** is becoming much more affordable and accessible. In an educational context, it is already implemented in a number of research and lab settings. Over the next four to five years, 3D printers will be increasingly used in the arts, design, manufacturing, and the sciences (source: NMC). Schools and colleges are also likely to be major buyers of 3D printers.

Technology Supply Chain: Primer: 3D printing, Early days for a disruptive space
23 September 2013

- **Wearable technology** will have an increasing impact as enabling technologies, such as augmented reality, that illustrate complex concepts or illuminate novel ideas, designs, and thin film displays, gain traction in the consumer market. Although wearable technology is not yet pervasive in higher education, the current highly functional clothing and accessories in the consumer space show great promise (source: NMC).

Chart 85: Education level of US workforce, 25Y+



Source: US Bureau of Labour Statistics

See further our Business, Educational & Professional Service team's (Sara Gubins & David Chu) work including:

Business, Education & Professional Services: 3Q13 preview: expect slightly less bad start trends 21 October 2013

Business, Education & Professional Services: Gainful employment take two 03 September 2013

Business, Education & Professional Services: Neg-reg update: negative for-profit bias, as expected 11 September 2013

Developed markets - overview

US remains most lucrative for-profit market

Despite the challenges posed by the recession and strains on government and household spending, the U.S. remains the most attractive education market worldwide from a for-profit perspective – and is leading the way on the structural shifts towards both great participation by the private sector and adoption of EdTech, digital, and online learning,

Number-one global education market, US\$1.8tn by 2017E

At end-2010, the US had 98,817 public schools, 33,366 private schools, and 6,742 higher education institutions, with over 82m students enrolled (source: National Center for Educational Statistics). US education expenditure was estimated at US\$1.4tn in 2012 and is expected to reach US\$1.65tn in 2015 and US\$1.8tn by 2017, increasing at a 5% CAGR (source: GSV Advisors).

Table 20: US education market (US\$bn, 2012-2017E)

Segment	2012 (US\$bn)	2015 (US\$bn)	Growth (CAGR)	2017 (US\$bn)
US Education Expenditure	1,432.10	1,651.30	5%	1,805.50
Government Spending on Education	941	1,085.40	5%	1,184.50
K-12	687.6	788.7	4%	853.1
Postsecondary	535.2	622.1	5%	688.5
International Students	18.2	20.5	6%	24.1
Executive MBA	18.9	19.8	2%	20.4
Corporate & Govt. Learning	133.3	149.9	4%	162.2
eLearning	32.5	49.1	15%	65.6
K-12 eLearning	5.4	9.3	20%	13.4
Higher Ed eLearning	17.4	28.6	18%	39.8
Corporate eLearning	9.6	11.2	5%	12.3
For-Profit Postsecondary	30.8	40.9	10%	49.5
Child Care	65	77.4	6%	87
Test Preparation/Tutoring Market/Counselling	11	13.1	6%	14.7
Instructional Materials Market (K-12)	20.1	23.9	6%	26.9
Higher Education Instruction Materials	4.8	5.7	6%	6.3

Source: GSV Advisors

High levels of education spending, 7.3% of GDP

Taking into account spending from public and private sources, the US spends 7.3% of GDP on all levels of education. This is well above the OECD average (6.2%), and more than all other OECD countries except Denmark (7.9%), Iceland (8.1%), Korea (8.0%) and New Zealand (7.4%). The big difference is higher education, where the US spends 2.6% of GDP (vs. THE OECD average of 1.6%). Across all levels of education, annual per-student spending by educational institutions in the US is higher than in any other country, at US\$15,812. (Source: OECD).

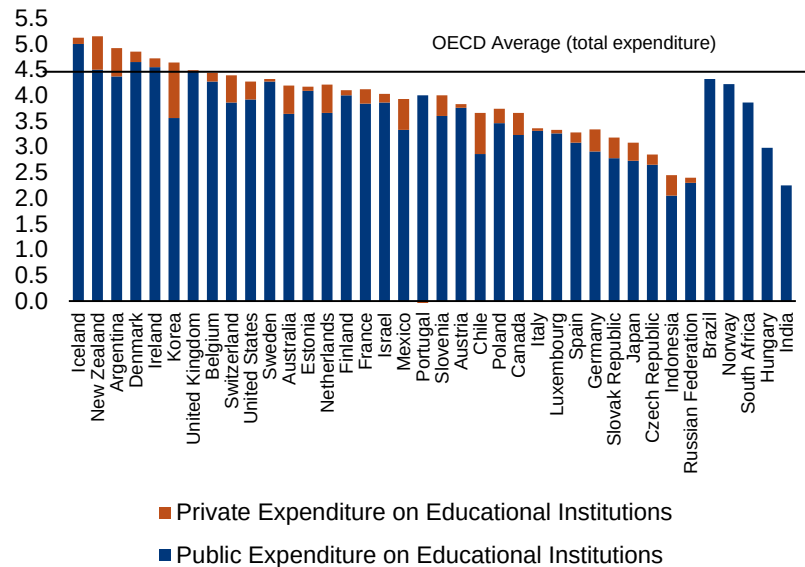
Private spending, 62% of higher education funding

A higher-than-average proportion of US education spending comes from private sources. For all levels of education, public sources account for 72% of educational expenditure in the US (vs. 82% across the OECD). For higher education, 62% of funding comes from private sources in the US (vs. 30% across the OECD). Additionally, 45% of expenditure on HE comes from households. As the OECD states, "the heavy reliance on private spending for higher education in these countries [U.S., Chile, Japan, Korea, UK] raises salient questions about the

extent to which this may limit access to higher education, as well as the robustness of their student aid systems" (source: OECD).

Chart 86: Expenditure on educational institutions as a percentage of GDP

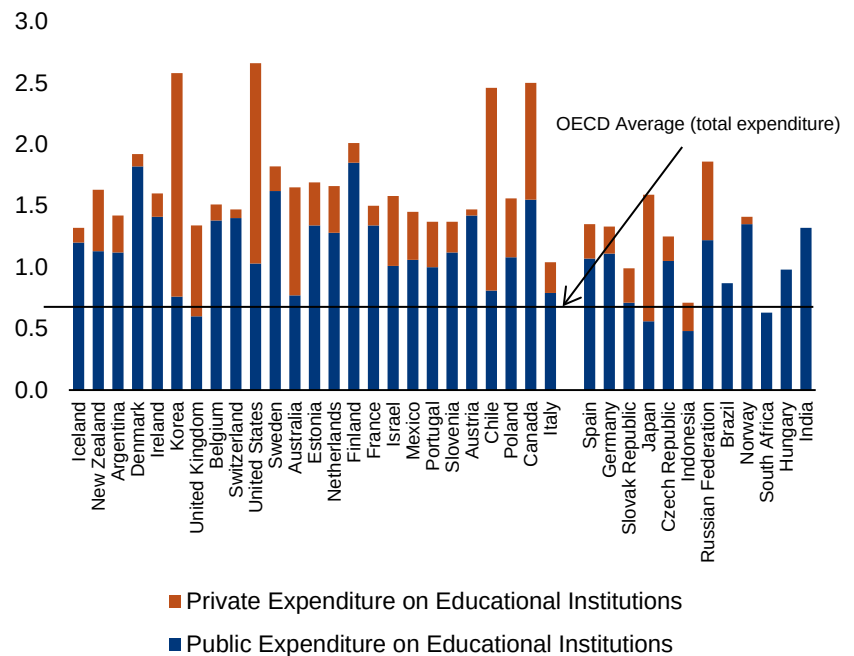
Primary, secondary and post-secondary non-tertiary education



Source: OECD, UNESCO

Chart 87: Expenditure on educational institutions as a percentage of GDP

Tertiary education



Source: OECD, UNESCO

Government spend - 5.6% of GDP in 2010

The federal government allocated approximately US\$138bn to education in fiscal year 2013 or just under 4% of the entire federal budget. Public spending on education accounted for 5.6% of GDP in 2010, which has been fairly consistent over the last two decades (source: World Bank).

Table 21: US Federal Education Spending, FY 2013 (\$ billions)

Dept. of Education: Appropriation	65.7
Dept. of Education: Mandatory (excludes student loans)	15.9
School Nutrition Programs	14.9
Head Start Programs	8
Education Tax Expenditures for Individuals	21
American Opportunity Tax Credit (Refundable)	6.5
Student Loan Subsidies (Newly Disbursed Loans)**	-5.5
Servicemembers Education Benefits*	0.5
Veterans Education Benefits*	11.1
Total	137.8

*Post-sequester figures are not available, uses pre-sequester FY2013 allocations

**Reflects fair-value accounting method

Source: New America Foundation, U.S. Department of Education, Health & Human Services, Agriculture, Defense, and Veterans Affairs, White House Office of Management and Budget, Congressional Budget Office

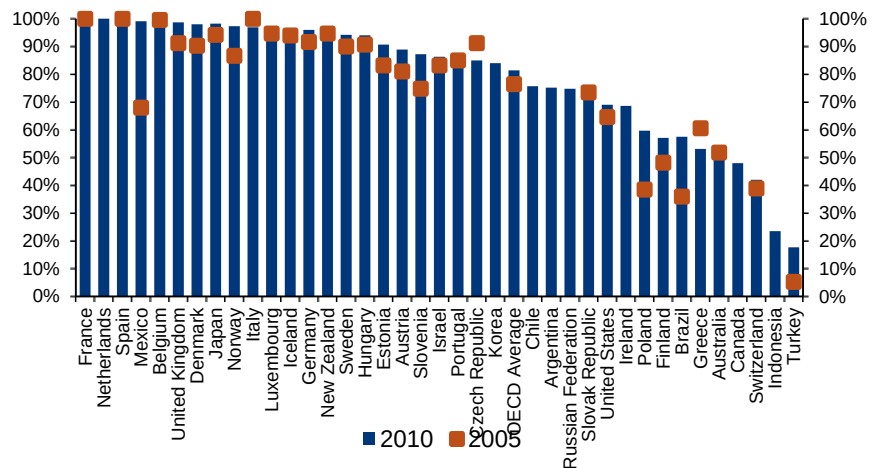
High educational attainment, but others are catching up

In the US, 42% of 25-64 year olds have a tertiary attainment, making it the fifth-most well-educated country in the world after Canada, Israel, Japan and Russia. However, the US is falling behind other countries in the 25-34 year old bracket where it ranks 14th among the OECD-37 and well behind OECD leader South Korea. Tertiary attainment levels are growing (1.3% pa) but are well below other OECD countries (3.7%). The US is also falling behind in terms of HE education graduation rates – falling from second place in 1995 to 13th in 2010 among OECD peers (source: OECD).

A number of areas for improvement on attainment

- **Early education:** Increasing access to early-childhood education is key to long-term academic progress, with pre-primary education linked to higher PISA scores (even after accounting for socioeconomic backgrounds). Across the OECD, 84% of pupils in early-childhood education attend publicly subsidised programmes vs. 55% in the US. The US also ranks 28th in the OECD in terms of the percentage of four year olds in early-childhood education, with its 69% enrolment rate (source: OECD).

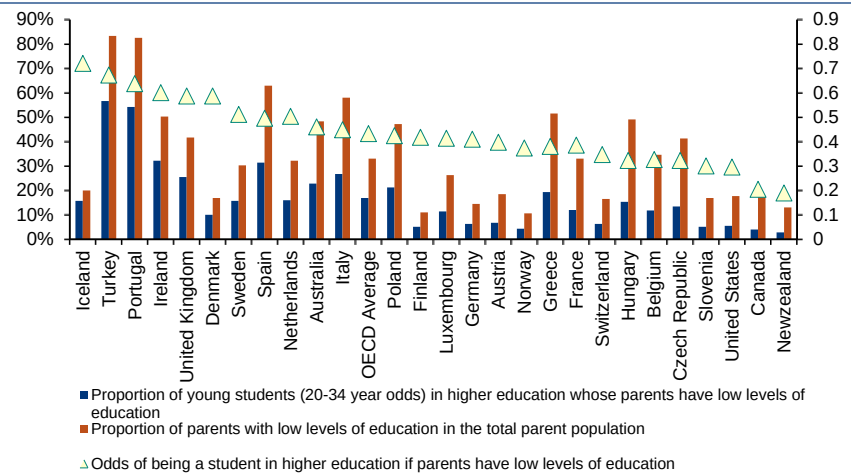
Chart 88: Enrolment rates in early childhood & primary education at age 4



Source: OECD, UNESCO

- **Level playing field issues for educationally disadvantaged:** The long-term aim of any education system is to ensure a level playing field, notably for those with economically disadvantaged backgrounds. This is an area in which the US has been falling short vs. OECD peers – the odds that a young person in the US will be in higher education if his or her parents do not have an upper-secondary education are just 29% - one of the lowest levels among OECD countries (33% average) (source: OECD).

Chart 89: Participation in higher education of students whose parents have lower level of education



Source: OECD

The net present value of obtaining a higher education in the US – that is, the long-term economic benefits, minus the associated costs – is almost US\$330 000 for a man and >US\$168,000 for a woman

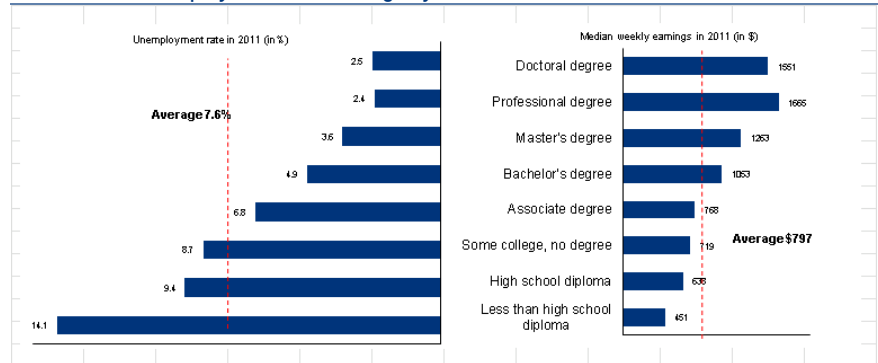
The net public purse return of HE in the US amounts to US\$232, 779 for each tertiary-educated man, and US\$84,313 for each tertiary-educated woman

High costs but high returns

In the US, the total cost for an individual to obtain a higher education is large – fourth highest among OECD countries at US\$116,000 in direct costs and foregone earnings. US direct costs are, however, highest in the OECD. At the same time, the payoff is significant – over the course of his working life, a tertiary-educated man in the US can expect to earn almost US\$675,000 more than a man with no more than an upper-secondary or post-secondary non-tertiary education – far more than in any other OECD country. Meanwhile, a woman with tertiary education in the US can expect to earn almost US\$390,000 more on average.

This also has important public purse implications in terms of greater income taxes, higher savings, and lower social welfare (source: OECD).

Exhibit 3: US unemployment and earnings by level of education



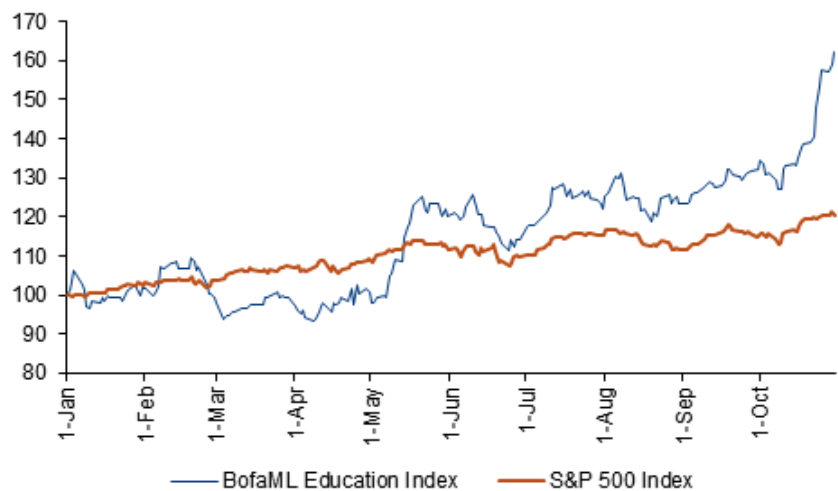
Source: Pearson based on Bureau of Labour Statistics, US population survey

For-profit education stocks (MLDIEDU Index on Bloomberg) have performed well in 2013 with 62% returns YTD, outperforming the S&P500's 20.6% return during the same period.

Post-secondary, 2013 has been a good year

For-profit education stocks have performed well in 2013, with 62% returns YTD (MLDIEDU Index on Bloomberg), outperforming the S&P500 which has delivered 20.6% during the same period. Our Business, Educational & Professional Service team believes this is due to investors seeking underperforming sectors and as they expect improving student start trends. Sustained start improvements would suggest significant operating leverage as the industry operates a high fixed cost business model. Recent start trends could imply that some companies are turning the corner.

Exhibit 4: Bloomberg MLDIEDU Index vs. S&P 500 Index YTD (at 31/10/13)



Source: Bloomberg

But on-going challenges remain

However, the sector continues to face weak student interest/enrolment, increased competition from traditional schools, and an improving job market, which has typically been a headwind. In the past 45 years, enrolment at 2-year schools grew 5.1% during recessions and 1.9% during expansions.

Increasing government & stakeholder pressure on affordability

Rising student debt and concerns about the affordability of higher education are generating greater stakeholder and political pressure and demands for regulation – putting pressure on revenues. At the federal level, President Obama has put the focus on affordability and educational outcomes (e.g., threats to reduce funding if tuition increases do not slow – net price calculator and small college affordability plan. These have been introduced to alleviate debt issues/improve affordability. State governments are also looking at affordability. See further the section on the “high cost of US education.”

See further our Business, Educational & Professional Service team's (Sara Gubins & David Chu) work including:

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Increasing focus on gainful employment (GE)

The US Department of Education has been placing an increasing focus on gainful employment (i.e. employment outcomes of academic programmes at over 11,000 for-profit and non-profit post-secondary institutions). Their most recent proposal is similar to the previously published rule (overturned in court). Programs will be measured quantitatively using debt-to-income tests and disclosures will be required. Our U.S. Business, Education & Professional Services team views the proposed rule as tougher than the original rule. Key changes include: tougher eligibility requirements, no repayment rate metric, amortizing all loans over 10 years, inclusion of more than double the programs, assessing only Title IV students.

Draft GE in a nutshell

Programs would have to meet one of two criteria to maintain full eligibility: 1.) debt-to-income ratio $\leq 8\%$ OR 2.) debt-to-discretionary income ratio $\leq 20\%$. Programs would be in the zone if: 1) $8\% < \text{debt-to-income ratio} \leq 20\%$ OR 2.) $20\% < \text{debt-to-discretionary income ratio} \leq 30\%$. Programs would fail if: 1.) debt-to-income ratio $> 12\%$ AND 2.) debt-to-discretionary income ratio $> 30\%$. Programs that fail 2 times in 3 years or don't pass in 1 out of 4 years (time limit to be in zone) would lose access to federal financial aid.

Schools would have to issue student debt warnings: 1.) in year 1 & year 2 for failing programs or 2.) for zone programs that could be ineligible at year-end. Program assessment would start in the 2014-15 award year.

Table 22: Revised draft gainful employment matrix

Graduate debt-to-income metrics		
$\leq 8\%$ of total income	$8\% < \text{of total income} \leq 12\%$	$> 12\%$ of total income
or	or	and
$\leq 20\%$ of discretionary income	$20\% < \text{of discretionary income} \leq 30\%$	$> 30\%$ of discretionary income
Fully eligible	Zone	Failing

Source: Department of Education, BofA Merrill Lynch Global Research

Table 23: Original gainful employment matrix

	Graduate debt-to-income metrics	
	$> 12\%$ of total income & $> 30\%$ of discretionary income	$\leq 12\%$ of total income or $\leq 30\%$ of discretionary income
Student repayment rate $\geq 35\%$	Fully eligible	Fully eligible
Student repayment rate $< 35\%$	Failing	Fully eligible

Source: Department of Education, BofA Merrill Lynch Global Research

Gainful employment calendar

Table 24: Proposed timeline for draft gainful employment regulation – BofAML interpretation

Award Year	Effect of regulation
2015	School must report information (no later than 7/31/15) for the 2011-12 through 2013-14 award year
2015	Failing programs must provide student debt warnings
2016	Failing programs must provide student debt warnings
2016	First eligibility losses for programs failing two times in three years
2018	Zone programs that remain in the zone for 3 straight years must provide student debt warnings
2018	First eligibility losses for zone programs

Source: Department of Education, BofA Merrill Lynch Global Research

Higher Education Act reauthorization unlikely in 2013

The Higher Education Act of 1965 (HEA), as amended, is the piece of federal legislation that authorizes most federal student loan programs. It is typically reauthorized every four to six years and was last reauthorized in 2008. The majority of important higher education legislative changes occur during reauthorization.

The next reauthorization is scheduled for 2013. If Congress does not pass a reauthorization bill as scheduled, an automatic one-year extension will take place. If not reauthorized during this period, Congress must pass legislation to extend the act until a reauthorization occurs. During the 2003 reauthorization process, Congress passed 13 additional extensions and eventually passed reauthorization in 2008. The act was previously reauthorized in 1968, 1972, 1976, 1980, 1986, 1992, and 1998.

As in the past, sections of the Higher Education Act could be reauthorized separately. For example, the 2008 reauthorization did not address federal student loan programs as they were modified by the 2007 College Cost Reduction and Access Act.

Our U.S. Business, Education & Professional Services team view is that it is clear that HEA will not be reauthorized in 2013. In our view, it is unlikely to be reauthorized in 2014 as well given the split Congress and as the process is just beginning. In addition, the Senate remains more focused on K-12 legislation, which is further along the legislative process.

New legislation unlikely near term

On 7/10, House members introduced a bipartisan bill favourable to for-profits to eliminate "burdensome" higher education regulations. Subcommittee on Higher Education and Workforce Training Chairwoman Foxx (R-NC), House Education and the Workforce Chairman Kline (R-MN), and Rep. Alcee L. Hastings (D-FL) introduced the *Supporting Academic Freedom Through Regulatory Relief Act*. If passed, the bill would permanently repeal regulations on GE, state authorization, and credit hour. It would also amend the incentive compensation rule to allow third party service providers to enter into tuition sharing agreements with non-profits to develop distance education platforms. In addition, it would prohibit the Department of Education from issuing regulations in these areas until after the reauthorization of HEA.

However, the vast majority of legislative proposals have been aimed at for-profits. Additional bills could be introduced to set precedent for discussions around HEA reauthorization. Several introduced to date attempt to change the 90/10 rule (for-

profits cannot receive more than 90% of revenue from federal financial aid). Other key proposals negative to for-profits are listed below.

Our U.S. Business, Education & Professional Services team view is that **they** do not expect the *Supporting Academic Freedom Through Regulatory Relief Act* or proposals aimed at for-profits to pass as stand-alone bills given the split Congress. One concern is that proposals could be tied to larger bills (e.g. FY14 budget bill), potentially making passage more likely.

Table 25: Key legislative proposals that could adversely impact for profits

Date	Bill	Summary	Member of Congress	Party & State	Committee
05/09/2013	Proprietary Institution of Higher Education Accountability Act	In calculating the cohort default rate for any for-profit, ED would treat current and former students who have been granted a forbearance or deferment on their loans for any period exceeding 6-months after entering repayment as students who have defaulted on such loans.	Rep. DeLauro, Cosponsors: 3	D-CT	Education and Workforce
03/13/2013	Smarter Borrowing Act	This legislation would require additional disclosures regarding CDRs and requires institutions with higher than average CDRs to disclose their loan repayment rate versus the national average, including the loan repayment rate of each program subject to gainful employment regulations. The legislation requires interim counselling for institutions with higher CDRs and requires institutions to annually inform each student of their loan balance, loan and grant eligibility, repayment options, and requires borrower receipt of notification.	Sen. Harkin, Cosponsors: 10	D-IA	HELP
03/12/2013	Protecting Financial Aid for Students and Taxpayers Act	Reintroduced legislation that would prohibit all colleges from using any federal dollars for advertising, marketing, and recruitment purposes.	Sen. Hagan, Cosponsors: 2	D-NC	HELP
02/28/2013	Students First Act	Would require mandatory review by Dept. of Education of schools that have high student loan default rates or manipulate rates, receive more than 85% of revenue from federal funds, have low graduation rates, spend more than 20% of revenue and recruiting, marketing, and executive compensation, and other criteria.	Sen. Lautenberg, Cosponsors: 3	D-NJ	HELP
09/12/2012	College Student Rebate Act	The act would require for-profits to spend at least 80% of total revenue on educational and related expenses (excludes advertising, recruiting, and excessive administrative costs). Schools failing to do so would have to give rebates to students	Rep. Tierney, Cosponsors: 4	D-MA	Education and Workforce

Source: BofA Merrill Lynch Global Research

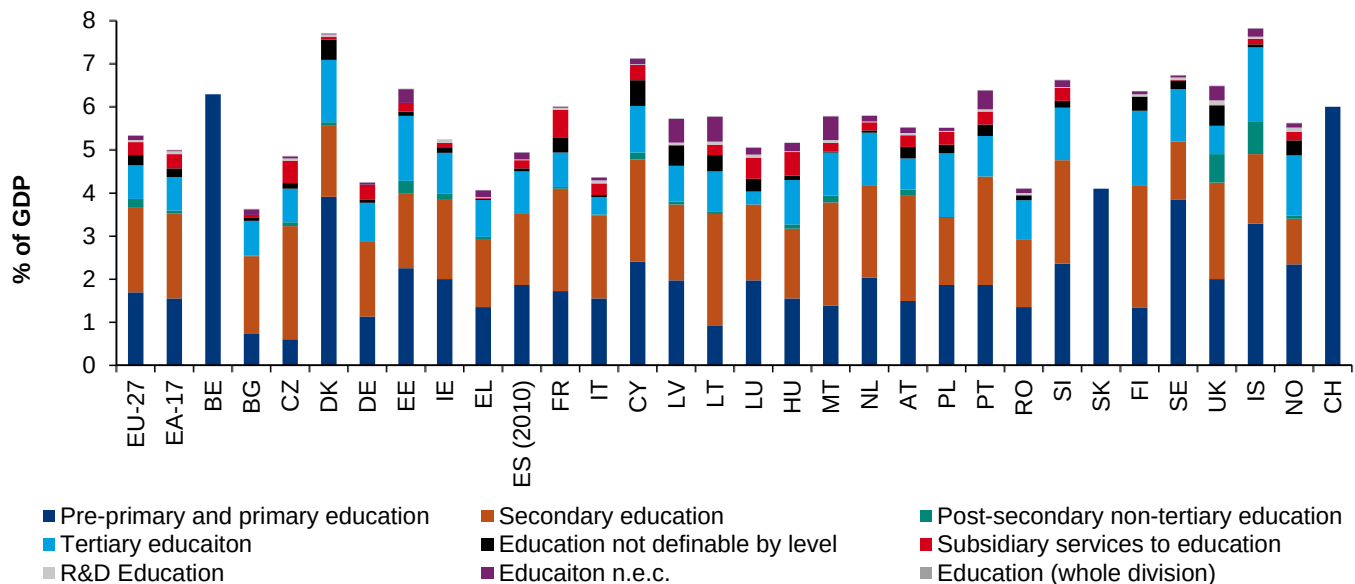
Internet & digital, US is the undisputed EdTech leader

The US is the global market leader in terms of the adoption of internet and digital-enabled forms of learning and the transition to EdTech. The e-learning market was estimated at US\$32.5bn in 2012 – and is expected to reach US\$49bn in 2015 and US\$66bn in 2017, a 15% CAGR (source: GSV Advisors). See further Internet & digital content, the EdTech revolution.

Europe, public sector predominates EU-27 spend on education, €247bn or 5.3% of GDP

Based on the latest available data, in 2011 – 5.3% of EU-27 GDP or €347bn – was devoted to expenditure on education. Of this, the highest shares were dedicated to secondary education at 2.0 % of GDP, and pre-primary and primary education' at 1.7 % of GDP. Iceland and Denmark spent the most at as a proportion of GDP at 7.9% and 7.8%, respectively, while the CEE countries and Greece spent the least. In terms of absolute amounts, Germany is the biggest spender, followed by the UK and France (source: Eurostat).

Chart 90: EU-27 government expenditure on education, % of 2011 GDP

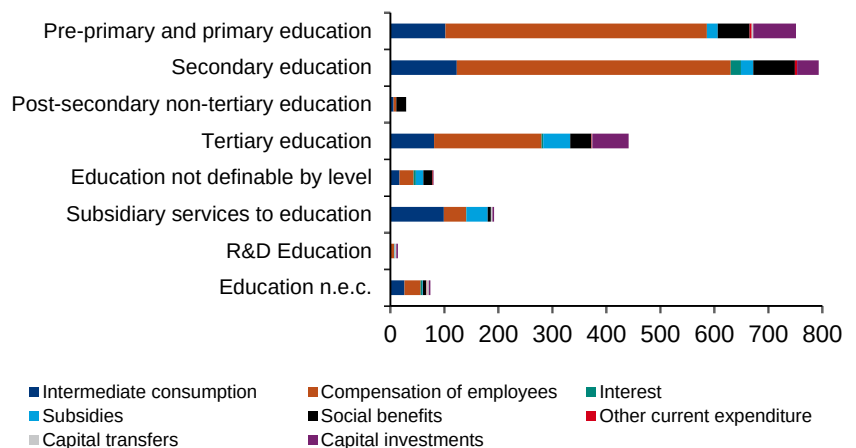


Source: Eurostat

Compensation for employees is the #1 contributor of spend

Compensation for employees accounts for the largest share of EU-27 education expenditure at 55% of spending.

Chart 91: EU-27 government education spend by transaction (2011, €bn)

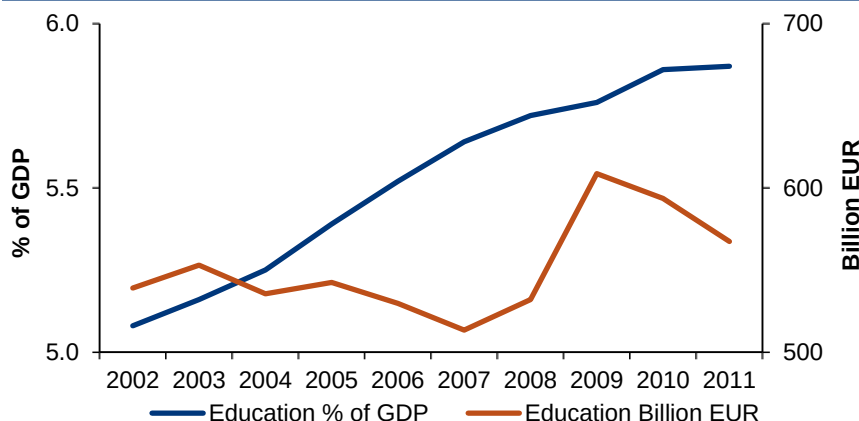


Source: Eurostat

Recession has hit EU government spending

The recession has seen government expenditure on education expressed as % of GDP decrease across the EU-27 by 2%, although absolute spending continues to grow, albeit at a slower pace than in previous years (source: Eurostat)

Chart 92: EU-27 governments spend on education 2002-11



Source: Eurostat

Big three markets: Germany, UK & France

Germany, largest spender in Europe

Germany is the largest market for education in expenditure in Europe with the government allocating €132bn in 2010. The country has 9.3m students in primary/secondary education, 400,000 with a direct entry certificate for higher education, 380,000 with a vocational/lower school certificate, 1.93m in higher education, and 1.7m in vocational education. Germany has one of the highest shares of 25-64 year olds with at least an upper-secondary education (86%), but below the OECD average among 25-34 years olds who have attained a tertiary education (28% vs. 39% OECD average) (source: Eurostat, OECD).

UK, strong private sector role & education as an economic opportunity

Expenditure on education services by central and local government in the UK in 2011-12 was estimated at £90.9bn, with secondary education accounting for 46% and 28%, respectively (source: UK Government). Spending on education has increased at one of the fastest rates among OECD countries from 2000-2010 (source: OECD). The private sector plays a relatively important role with private spending on education estimated at £14bn in 2011 (source: UK Government) – and private funding for all levels of education more than tripling between 2000 and 2010. The UK had the second smallest share of public expenditure on tertiary education (25.2% vs. 67.7% in 2000) after Chile in 2010 (source: OECD). Education is also emerging as an important economic driver with the government estimating that the education exports industry is worth £17.5bn – and it is aiming to add £3bn worth of contracts and 90,000 extra overseas university students by 2018 (source: Department for Business Innovation & Skills)

France - third-highest education expenditure in EU

In 2010, the French State allocated 21% of its budget to education, (6.9% of GDP expenditure). The total education expenditure was €132.1bn – the third highest in the EU – of which €93.7bn was allocated to primary and secondary education (source: Eurostat, OECD). Expenditure increased from 2005-2010, albeit at a slower rate than in other OECD countries, although expenditure per tertiary

student grew at almost double the rate of other OECD countries (source: OECD). State education in France is free and there is little private involvement. France is also an attractive host country with 6% of all foreign students worldwide enrolled in higher education (source: Eurostat, OECD).

Table 26: Financial Investment in Education

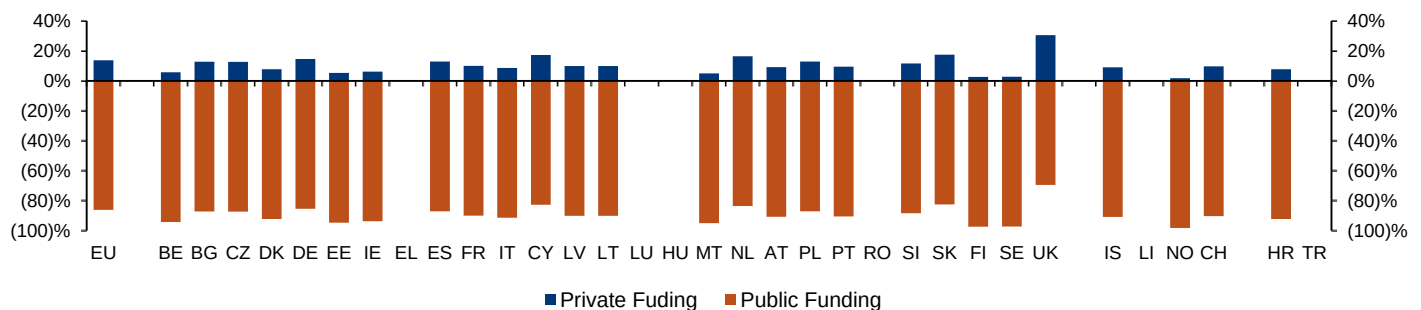
2010	UK	France	Germany	OECD Average
Annual expenditure per student (in equivalent USD, using PPPs)				
Pre-primary education	6 493	6 185	7 862	6 670
Primary education	9 088	6 373	6 619	7 719
Secondary education	10 013	10 696	9 285	9 312
Tertiary education	16 338	14 642	15 711	13 728
Total public and private expenditure on education				
As a percentage of GDP	6%	6.30%	5.30%	6.20%
Total public expenditure on education				
As a percentage of total public expenditure	11.30%	10.40%	10.50%	13.00%
Share of private expenditure on educational institutions				
Primary, secondary and post-secondary non-tertiary education	21.30%	7.80%	12.40%	8.80%
Tertiary education	70.40%	16.90%	15.60%	30%
All levels of education	31.10%	9.80%	15%	16%

Source: Education at a Glance 2012: OECD Indicators

Role of the private sector in EU is marginal

As most EU students attend public schools, the role of the private sector is marginal – with public financing across the EU-27 meeting at least 69% of education expenditure, taking all educational levels together (source: Eurostat, OECD). Private funding, where it exists, is determined by individual member countries' funding policies (i.e. whether students pay fees and the level of such fees).

Chart 93: Proportion of public vs. private expenditure on education (ISCED 0-6, 2008)



Source: Eurostat, UOE

50- 80% of students in the EU never use digital textbooks, exercise software, broadcasts/podcasts, simulations or learning games

Slow in adapting to technology in education

Europe has been slow compared to the US in terms of embedding digital technology in education and training systems. A recent study revealed that 50-80% of students never use digital textbooks, exercise software, broadcasts/simulations or learning games. 63% of nine year olds do not study at a highly digitally-equipped school (with appropriate equipment, fast broadband and high connectivity). While 70% of teachers in the EU recognise the importance of training in digital-supported ways of teaching and learning, only 20-25% of

With each EU Member State responsible for its own education and training systems, Union- level policies are designed to support national actions and help address common challenges such as: ageing societies, skills deficits among the workforce, and global competition

students are taught by digitally confident and supportive teachers. Most teachers use ICT to prepare their teaching, rather than to work with students during lessons (source: Europa).

Ambitious EU 2020 education targets

The EU's Strategic Framework for Education and Training 2020 (ET 2020) sets out ambitious goals around: making lifelong learning and mobility a reality; improving the quality and efficiency of education and training; promoting equity, social cohesion and active citizenship; and enhancing creativity and innovation, including entrepreneurship, at all levels of education and training. It also adopts seven ET benchmarks including that fewer than 10% of young people leave school early and 40% of young people complete higher education (source: Europa).

EMs will account for two-thirds of global growth in the coming years (source: Pearson)

Emerging markets - exciting opportunities

Emerging markets will, in our view, present the highest long-term growth opportunities in education off the back of factors such as increasing government spending, increasing enrolment rates, demographic opportunities (booming population of 5-17 year olds), more women in education, high levels of disposable spending on education, and the growing realisation of the employment, earnings and economic development opportunities.

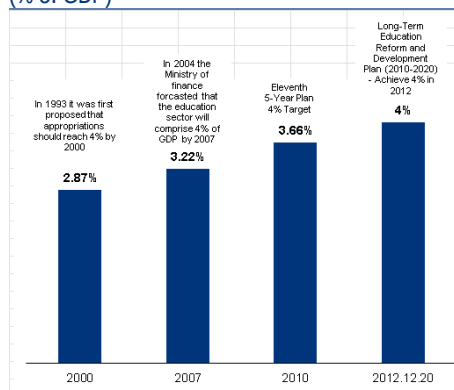
As with many other megatrends, EMs are also skipping many of the interim development stages in terms of structural shifts facing the industry including increasing dependence on private spending and a growing role for for-profit education companies, as well as the integration of ICT and shift to EdTech (from print to digital and from classroom to online learning).

China

World's largest education market

China is the world's largest education market in terms of the number of students and market demand. The education market grew from RMB610bn in 2008 to RMB955.4bn in 2012, with a CAGR of 11.87% (Source: ResearchInChina). There are strong drivers for continued long-term growth in the large but underinvested Chinese market including high education spend by families, primary and secondary school tutoring, increasing government spend and ambitious 2020 targets, growing demand for online and digital education, and a strong role for the private sector.

Chart 94: Chinese Educational Appropriations (% of GDP)



Source: Public data, Deloitte Research

Government spend reaches 4% of GDP

Chinese government spending on education totalled RMB7.79tn (US\$1.25tn) over the past five years, increasing at an average annual rate of 21.6% to reach RMB2.2tn or 4% of GDP in 2012 (source: Chinese government data). Although the 4% goal was realised 19 years after the original target date, government spending on education last year was almost 25x higher than in 1993 and had almost quadrupled since 2006 (source: Chinese government data).

Table 27: Major targets for education development

	2009	2015	2020
Preschool education	27	34	40
Kindergarten enrolment (in millions)	51%	60%	70%
Gross enrolment rate at three years prior to compulsory education (%)	74%	85%	95%
Gross enrolment rate at one year prior to compulsory education (%)			
Nine year compulsory education (i.e., primary and junior secondary education)			
Enrolment (in millions)	158	161	165
Graduation rate (%)	91%	93%	95%
Senior secondary education			
Enrolment (in millions)	46	45	47
Gross enrolment rate (%)	79%	87%	90%
Vocational education			
Junior secondary vocational enrolment (in millions)	22	23	24
Senior secondary vocational enrolment (in millions)	13	14	15
Higher education			
Total no. of people studying in higher education (in millions)	30	34	36
Enrolment (in millions)	28	31	33
Master's degree students within the enrolment (in millions)	1.4	1.7	2
Gross enrolment rate (%)	24%	36%	40%
Continuing education			
Continuing education received by working people (in million times)	17	29	35

Table 27: Major targets for education development

2009 2015 2020

Source: State guidelines for middle and long term educational reforms

A Chinese with postsecondary degree earns 2.3x more than a person without any degree (Source: Xueda)

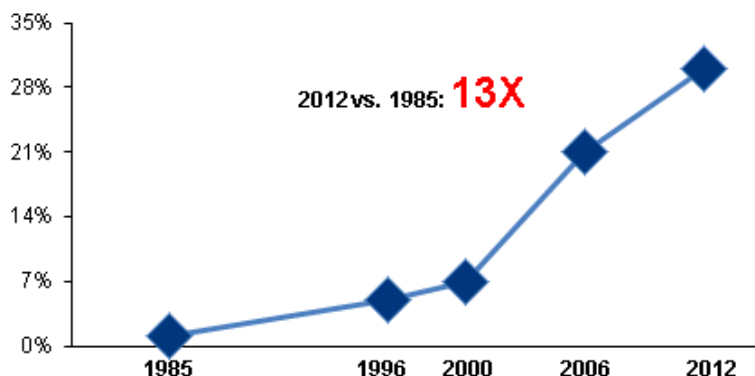
Enrolment on the rise

Net elementary school enrolment has reached 98.9% and the GER in junior high schools 94.1%. The number of students in higher education reached 31m in 2010, 35% higher than in 2005. In 2010, the GER in China's higher education reached 27%, 6% higher than in 2005 and 2% higher than the planned goal (source: National Bureau of Statistics). The increase in enrolment rates illustrates that China has entered the stage of popular education.

Booming education spend by families

The per-capita disposable income of urban households grew to RMB24,565 in 2012 (vs. RMB11,759 in 2006) (source: China Statistical Yearbook 2012). This has had a huge effect on education spend which increased by 13x as a percentage of family income from 1985-2012. Some 30% of Chinese households spend on education (largely for university) – the highest education expenditure ratio in Asia (source: Xueda).

Chart 95: Education spending as a percentage of family income

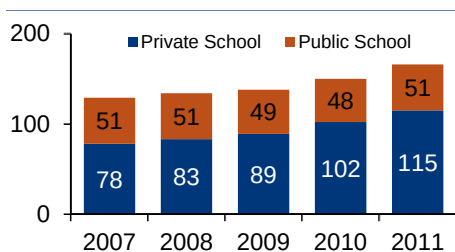


Source: Xueda

Chinese private education accounts for almost half the market

Economic growth, household expenditure on education, an examination-based system, and ambitious government GER targets for 2020 and support for private education have meant steady growth for private education in China. The private education industry accounted for nearly 44% of education market share in 2012, increasing at a 15% CAGR from 2009-2012 (source: JIJ). This does not guarantee easy entry for foreign actors given the rapid emergence of local firms as global players and competitors (often US-listed), and an unpredictable regulatory environment (source: British Council).

Chart 96: Number of kindergartens in China



Source: WindInfo, Deloitte Research

Rapid expansion of private kindergartens

The number of births in China rose from 15.8m in 2006 to 17.1mn in 2010 and is expected to rise until 2015 (source: National Bureau of Statistics). This means a growing market for kindergarten classes with the NBS estimating that the CAGR in China's private kindergartens was 10% from 2007-11, with almost no growth in public kindergartens during the period. Private kindergartens have significant room for expansion over the next five years, particularly in economically developed, densely populated areas (source: Deloitte).

Chart 97: After class tutoring market in China

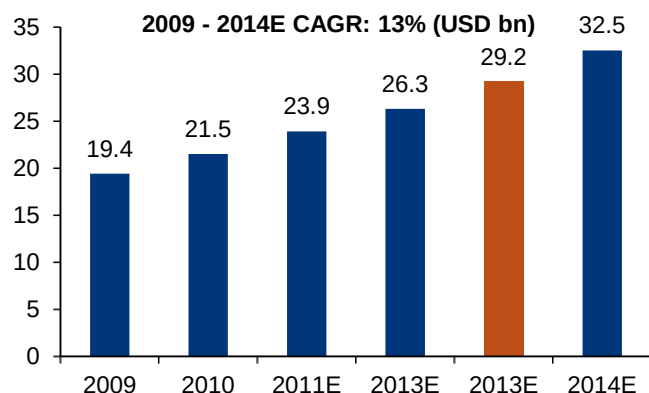


Source: IDC, Deloitte Research

The primary and secondary school tutoring market is growing

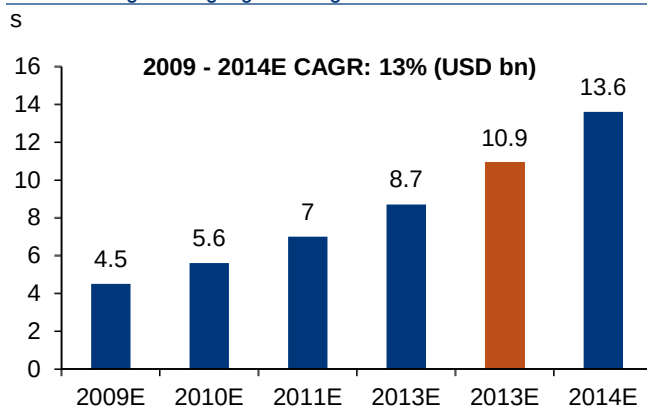
Household spend and the desire for high-quality education means that 71.4% of families have spent money on extracurricular training programmes, of which primary and secondary tutoring have received the most attention (source: Deloitte, Chinese Household Educational Consumption Whitepaper statistics). In 2013, the primary and secondary school tutoring market is expected to reach RMB160bn, an 11% YoY increase (source: Deloitte). A CAGR of 10.8% from 2009-2014 is expected in the primary and secondary tutoring market – with the primary school market reaching RMB76bn and the secondary school market RMB144bn (source: IDC).

Chart 98: Market potential of after-school tutoring in China



Source: New oriental based on IDC

Chart 99: English language training market



Source: New Oriental

Revenues from on-line learning firms grew to 73bn yuan in 2012 – and in 3-5 years, New Oriental estimates that 40% of education will be online

Online and digital relatively slow to catch-on

Despite having the world's largest number of internet and smartphone users, online and digital education has been slow to take off in China. This partly reflects the national curriculum's focus on standardised tests, which means a greater focus on tutoring than interactive learning styles. Other challenges include access to digital education platforms and, notably for foreign companies, issues around internet censorship, intellectual property rights infringement and the unpredictable regulatory environment (source: British Council). That said, revenues from online learning firms grew to RMB73bn in 2012 (Source: Huidian Research) – and New Oriental estimates that 40% of education will be online in 3-5 years.

Xueda Education: Recovering from industry wide weakness 20 November 2012

A Brazilian with postsecondary degree earns 2.6x more than a person without any degree (Source: OECD)

Brazilian post-secondary facts:
 -74% of students are in private schools
 -57% of students are women
 -15% use distance learning
 -73% of private students study at night
 -46% graduate
 (Source: Kroton based on MEC/INEP, UOL)

Increasing stakeholder scrutiny on education

In the past year, state television and local press have reported on some 1-on-1 tutoring vendors and industry practices, focusing on exaggerated tutor credentials, teaching quality and training results. This reiterates growing stakeholder interest and scrutiny on the quality of education – and prompted the Ministry of Education to encourage private education enterprises to voluntarily establish a Self-Discipline Agreement (Code of Conduct) for the private tutoring industry (source: Xueda).

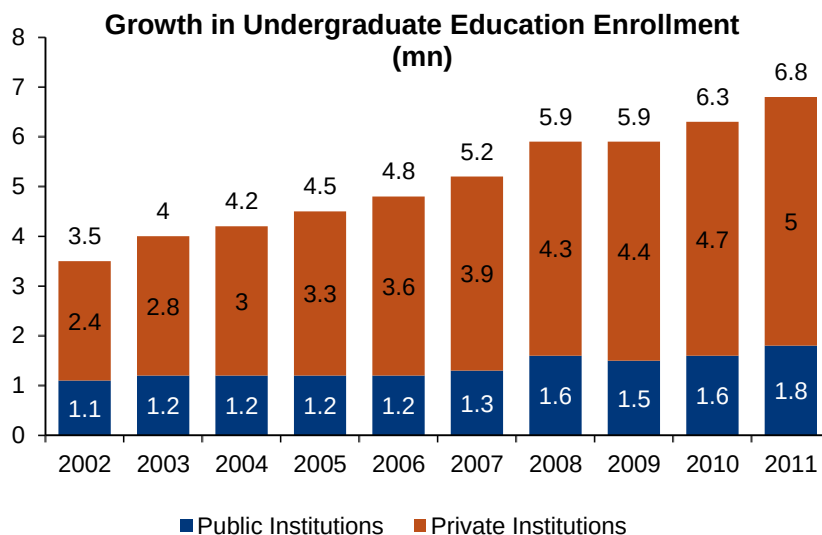
Brazil US\$75bn pa market

Brazil's education industry has grown at a double-digit rate in recent years and generates about US\$75bn per year, including US\$12.5bn from private institutions (source: US Department of Commerce) on the back of it's rising middle class and need for a more skilled workforce. There are strong drivers for continued long-term growth in the number of potential students including under-penetration of post-secondary education vs. regional peers; growth of the distance-learning market; the supply of affordable financing options for students (e.g., FIES student financing); and market fragmentation and opportunities for consolidation. The socioeconomic impacts are huge given that Brazil is the country where a post-secondary degree adds more value than in any other OECD country (source: OECD).

Largest post-secondary education industry in LatAm

Brazil has 51m students in the basic education system (source: US Department of Commerce). It is the world's fifth-largest post-secondary education market and the largest in Latin America, with approximately 7.2m enrolments in 2012 (vs. 3.5m in 2002) (source: Kroton). By 2015, 10m students could be in universities (source: US Department of Commerce).

Chart 100: Higher education enrolment growth in Brazil (mn)



Source: Anhanguran based on UNESCO, MEC

Only 7/100 students that start primary education in Brazil complete a post-secondary programme
(Source : Kroton)

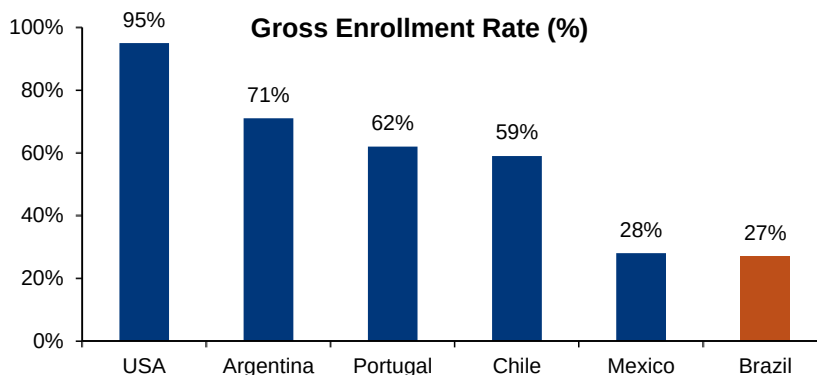
Public investment in education on the rise

The value of total investment in education, in terms of GDP, has increased from 4.7% in 2000 to 6.1% in 2011 (source: MEC/INEP). Over the same period, direct public investment per student in both basic education and higher education has increased by 500% in nominal terms from R\$970 to R\$4,916 – a 2.5x increase in terms of real post-inflation growth (source: MEC/INEP).

Significant room for improvement in enrolment rates

Brazil has seen significant improvements in the proportion of 15-17 year olds studying in secondary school – with penetration rates growing 218% from 1992 to 2009 (source: Kroton based on MEC/INEP, OECD).

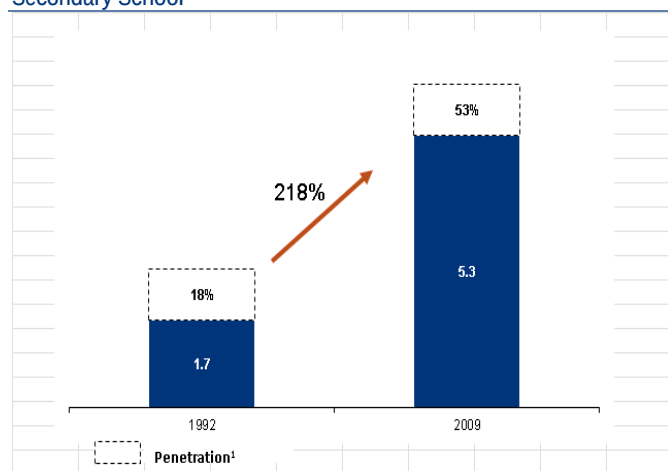
Chart 101: Brazilian gross enrolment rates cs. peers



Source: Anhanguera based on UNESCO & Hoper

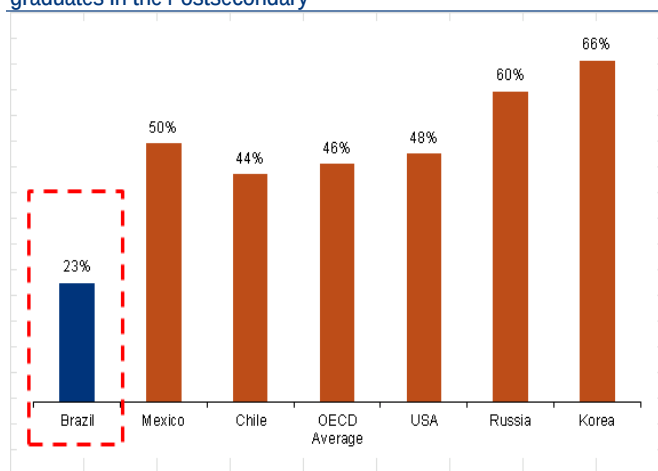
Despite this growth, the GER in Brazilian post-secondary education (27.8%) is much lower than for its LatAm peers (28-71%) and well below the government's target of 50% (source: UNESCO, Hoper Consulting, Kroton). Moreover, the number of post-secondary degree holders is only 12% (source: OECD).

Chart 102: Population between 15-17 years old studying in the Secondary School



Source: Kroton based on MEC / INEP, IBGE, OECD

Chart 103: Level of population holding a Secondary Degree that graduates in the Postsecondary



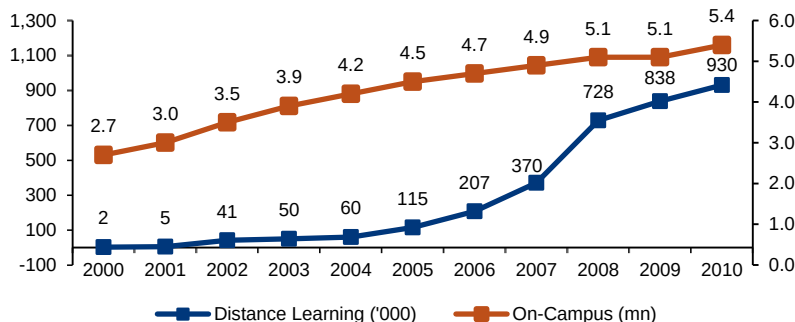
Source: Kroton based on MEC / INEP, IBGE, OECD

Distance learning in Brazil grew by 46% CAGR from 2006-10 vs. 4% for on-campus (Source: Kroton)

Low penetration means strong recurring & pent-up demand

There is strong demand for both on-campus learning (recurring demand in terms of the 2m students every year who are in their last year of secondary education) and distance learning (pent-up demand in terms of 12.5m people aged 25-34 who concluded secondary education but did not enter post-secondary) (source: Kroton).

Chart 104: Distance Learning vs. On-Campus Students in Postsecondary Education

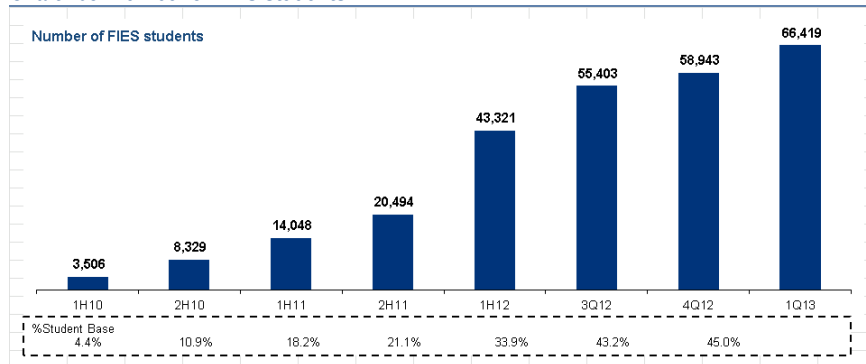


Source: Kroton

Financing possibilities improving

Student financing is key to improving access to post-secondary education in Brazil, given that 84% of households have average per-capita monthly incomes of <R\$1,200, while average monthly tuition fees are R\$500. At present, only 8% of Brazilian students receive financing vs. 40% in the US. The Brazilian government is committed to expanding access both via private institutions offering seats at discount rates in exchange for tax subsidies (1m students using ProUni) and student loans subsidised by the federal government (0.5m students using FIES) (source: Kroton).

Chart 105: Number of FIES students

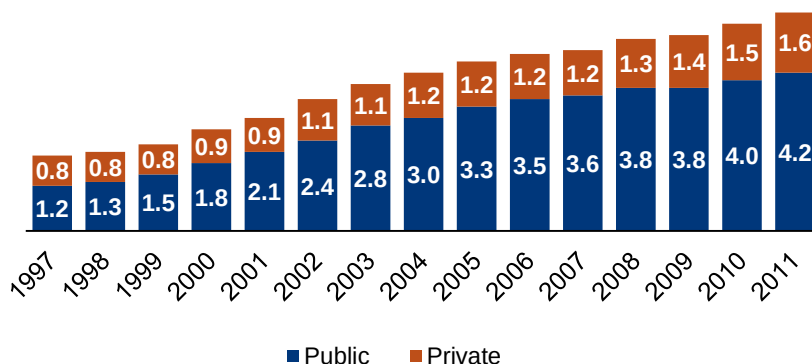


Source: Kroton

Private sector is the main beneficiary of post-secondary growth

The private sector is the main provider of higher education in Brazil with only 10% of universities there offering free tuition for very limited and highly sought-after places (source: The Economist). This has created a significant market opportunity for the private sector, which captured most of the growth in total post-secondary enrolment from 2002-2011 (source: Anhanguera). Also, according to MEC/INEP, the private on-campus segment posted annual compound growth of 9.33% between 1997 and 2011, raising its total market share from 61.0% to 72.2%.

Chart 106: Public and private sector enrolments



Source: MEC/INEP 2011

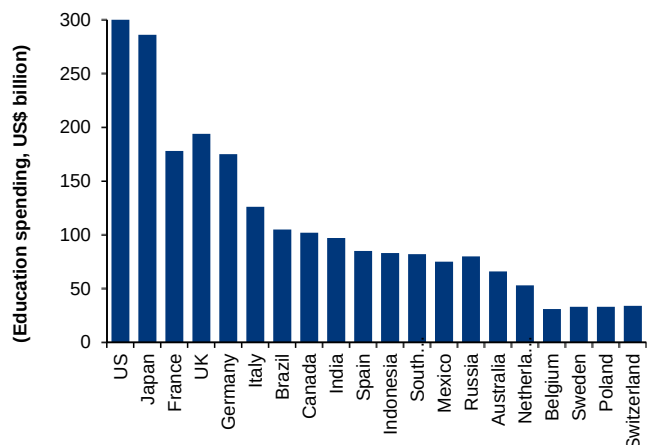
India US\$96bn market by 2015

The Indian education sector is one of the largest in the world and was estimated to be worth INR3,411.8bn (US\$71.2bn) in FY12 (source: Core-edutech), and is expected to grow to US\$95.8bn by FY15 (source: India Ratings). There are strong drivers for continued long-term growth in the number of potential students including under-penetration of post-secondary education vs. global peers; high education spend; increasing government focus; and digitisation and growth of the online learning market.

One of the largest education sectors in the world

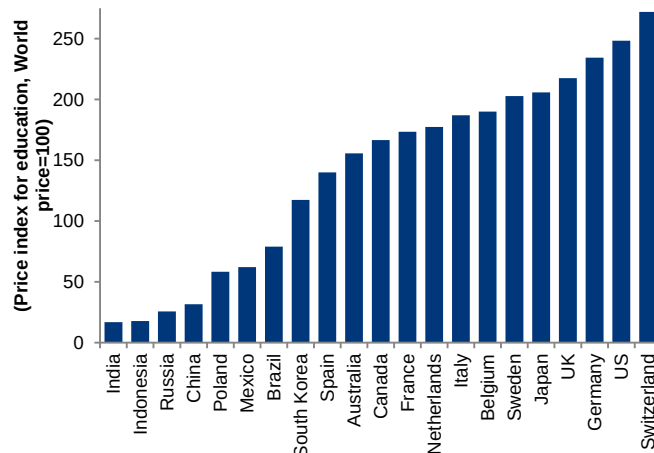
India has one of the largest education systems in the world with a network of more than 1m schools and 18,000 higher education institutions. More than half of the country's 1.2bn population falls in the target market for education and related services (Source: Ministry of Human Resources, ICRIER).

Chart 107: India among the top 10 markets by education spend



Source: World Bank, Anand Rathi

Chart 108: Price of education in India 1/6th of world average

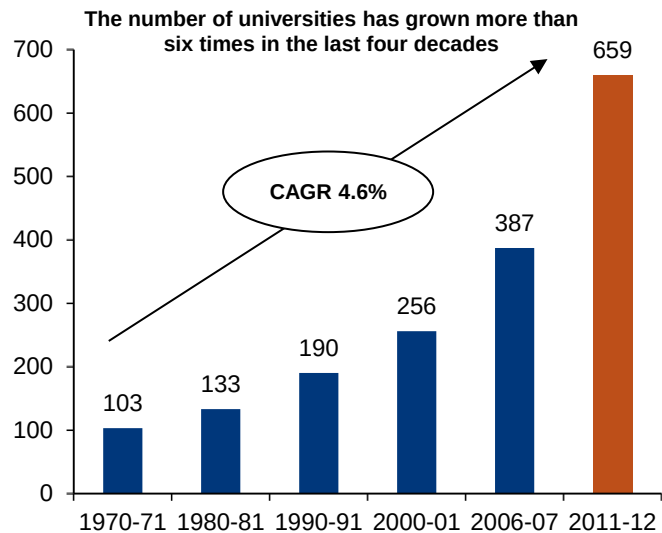


Source: World Bank, Anand Rathi

Huge demand for education upgrades

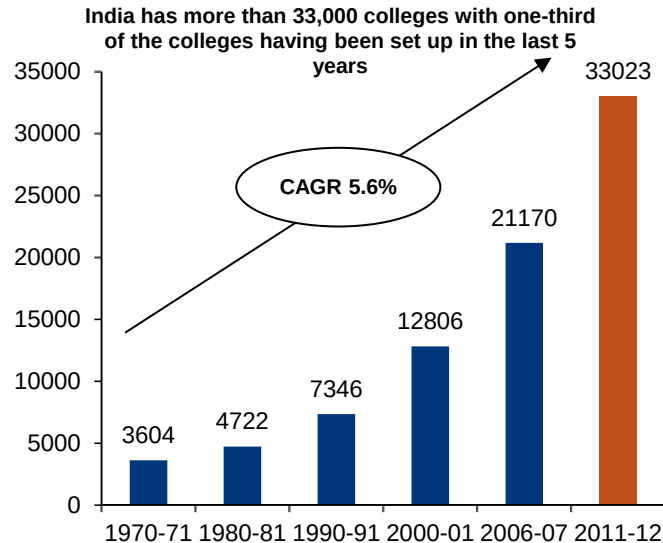
There is a huge demand for upgrading education in India given that it is expected to have a surplus of 47m in the working-age bracket by 2020. As a result, both the formal education sector (including K-12 and higher education) as well as informal sector (including coaching institutions, pre-schools and vocational institutions) are witnessing rapid growth.

Chart 109: Growth in Indian universities and colleges



Source: E&Y

Chart 110: Growth in Indian universities and colleges



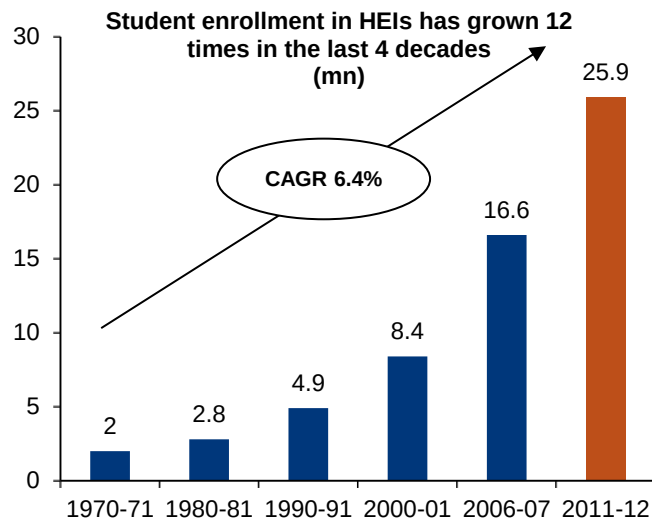
Source: E&Y

Increasing enrolment rates

Student enrolment in higher education has grown 12x in the past four decades to 26m in 2011-2012 – when GER in higher education reached close to 18% (source: Ernst & Young). The government has set an aggressive target of a 30% GER in higher education by 2020; in other words, doubling the GER in the next eight years. Both the private sector and digitisation are expected to play key roles. In tandem with rising affluence and a growing number of young working-age people are continuing in the education system rather than dropping out. The

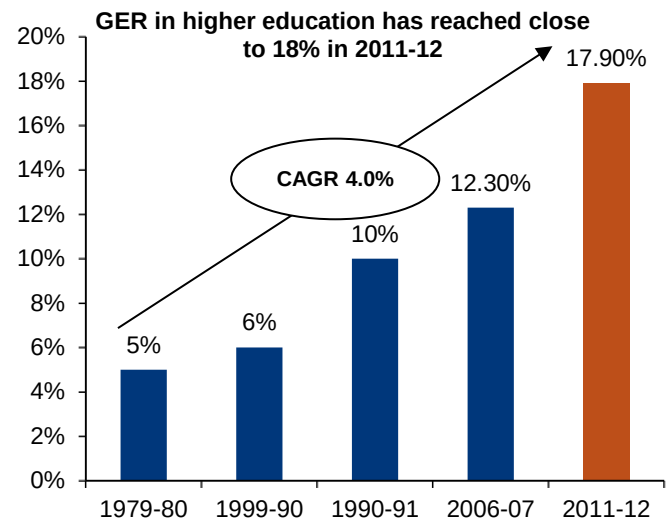
number of 15-24 year olds enrolled in educational institutes grew from approximately 30m in 2005 to over 60m in 2010 (source: UN).

Chart 111: Growth in enrolment



Source: E&Y

Chart 112: Growth in enrolment



Source: E&Y

Increasing government focus

The Indian government has been stepping up investments in education with its Twelfth Five Year Plan (2012-17) providing 1.3x more funding than the 2007-12 plan. Recent areas of focus include: expanding higher education to eliminate regional imbalances, making education accessible to all socio-economic groups; and improving the quality of education, promoting research, quality assurance, and faculty and infrastructure development (source: Tenth Five Year Plan: Chapter on Higher and Technical Education, Eleventh Five Year Plan: report of working group on higher education)

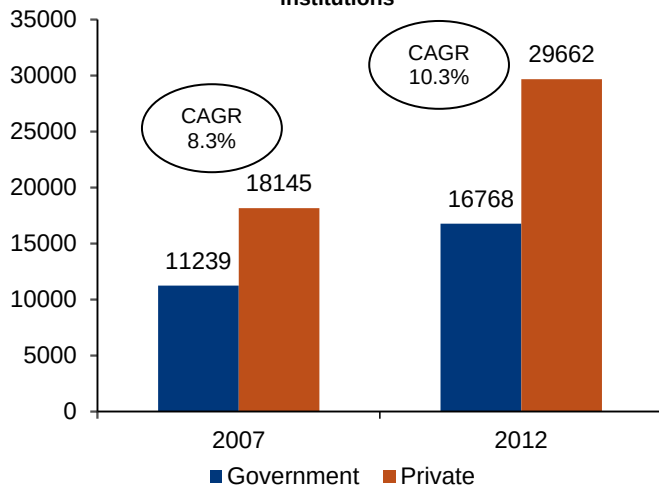
Private sector accounts for 60%+ of the market

The private education sector is making major investments in the areas of pre-schools, private coaching and tutoring, teacher training, the development and provision of multimedia content, educational software development, skill enhancement, IT training and e-learning (source: Technopak). From 2007 to 2012, the number of private institutions rose by a CAGR of 10.3% (vs. 6.3% for government institutions), while enrolment in private institutions increased at a CAGR of 11% (vs. 7% in government institutions). Unsubsidised private institutions now account for 64% of total institutions and for 60% of total enrolment (source: Ernst & Young).

Unsubsidised private institutions account for 64% of total institutions and for 60% of total enrolment (Source: Ernst & Young)

Chart 113: Private institutions role in Indian education system

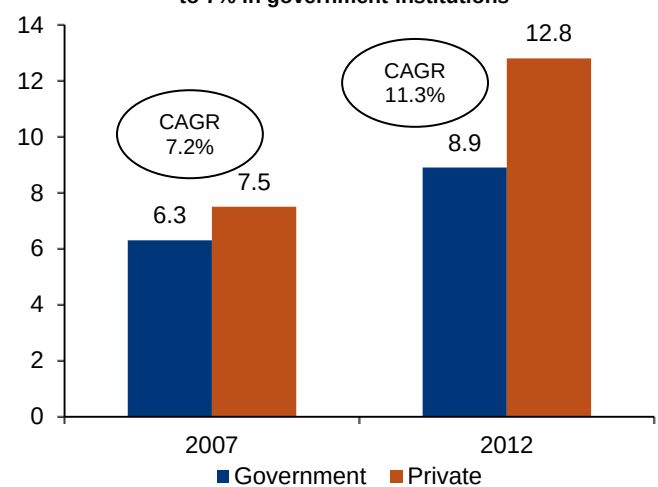
Between 2007 and 2012, the no. of private institutions grew faster than the number of govt. institutions



Source: E&Y

Chart 114: Private institutions role in Indian education system

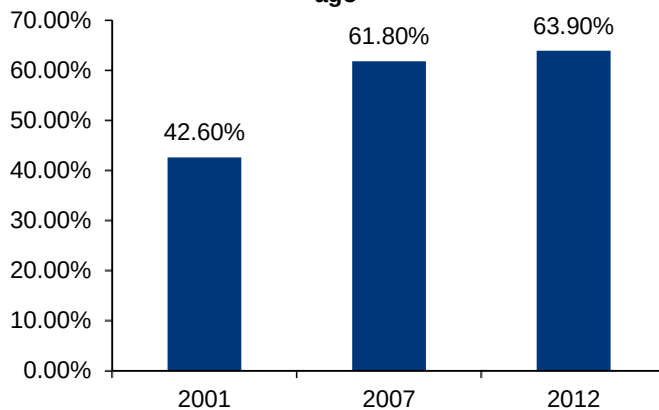
Enrollment in private institutions has increased at a CAGR of 11% over the last 5 years, as compared to 7% in government institutions



Source: E&Y

Chart 115: Private institutions role in Indian education system

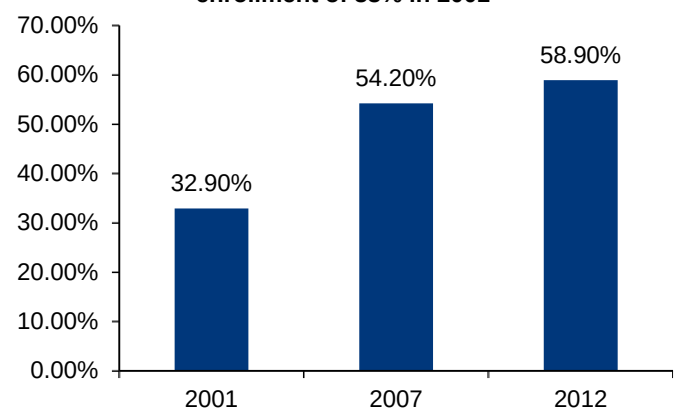
The share of unaided private institutions in the total no. of institutions is now a little less than two-thirds, up from 40% a decade ago



Source: E&Y

Chart 116: Private institutions role in Indian education system

The unaided private sector accounted for around 60% of total enrollment in 2012 - almost double that of the share of total enrollment of 33% in 2001



Source: E&Y

Increasing opportunities for foreign actors

The education sector attracted foreign direct investment (FDI) worth INR4,483.06 core from 2000 to 2013 (Source: Department of Industrial Policy and Promotion). Some of the major investments include University of Northampton tie-up with Madras University; Ecole hôtelière de Lausanne opening a campus near Pune; Warwick University's tie-up with NMIMS; Ecole Centrale's tie-up with Tech Mahindra and JNTU; and the CFA Institute's plans to set up an office in India for its CFA and Claritas programmes.

Booming online education market

India's online education market size is set to grow to US\$40bn by 2017 from the current US\$20bn (source: LoudCloud Systems). The market is gaining traction on the back of the growing number of internet users, with India the third-largest market globally and penetration hitting 12.6% in 2012 (source: World Bank) and demographics, with almost half the population below 25 years of age. The government plans to invest US\$20bn on ICT and vocational training in the current Five Year Plan.

Major need for vocational training and skills development

Given its young population, India could be capable of realising major demographic dividends. However, almost three-quarters of India's population is unskilled with the difficulty of filling jobs standing at 48% vs. a global average of 34% in 2012 (source: Core-edutech).

Need to increase financing opportunities

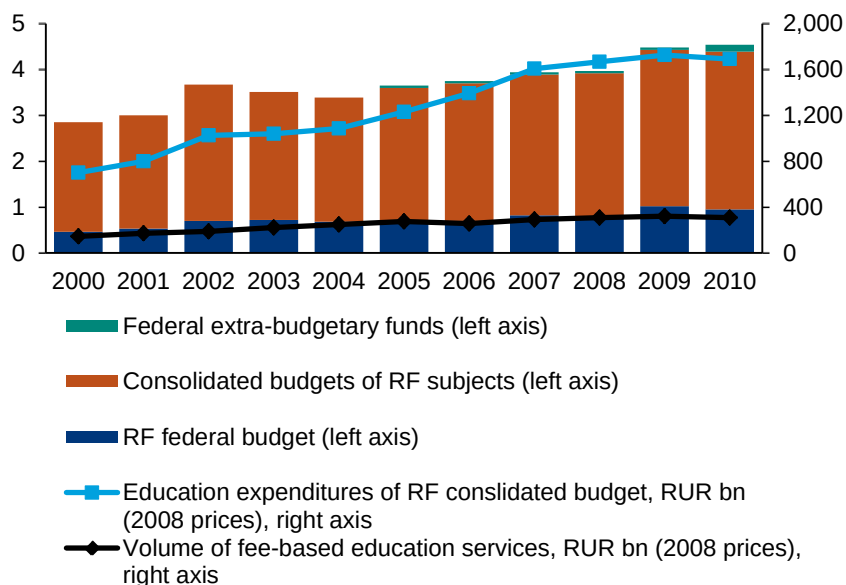
To date, Indian students mainly rely on family funds to pay for education and with tuition accounting for 40-80% of low-income families' household income, the effect is that many low-income students cannot afford higher education. Student loans are used by less than 10% of students, which is a major hole in access to higher education (source: Parthenon Group).

Russia

5.5% of GDP spent on education

Expenditure on education in Russia represents 5.5% of GDP, which is lower than the OECD average of 6.3%. Some 43% is devoted to primary, secondary and post-secondary non-tertiary education (source: OECD). Public expenditure on tertiary, secondary vocational, and preschool education have seen the greatest increases in funding.

Chart 117: Public and private education expenditure, 2000-2010



Source: Rosstat, RF Federal Treasury

Relatively high educational attainment levels

The high educational attainment level of the Russian population continues to increase and 88% of the adult population have at least an upper-secondary education and 54% have a tertiary qualification. Only three countries have a higher tertiary attainment rate among 25-34 year-olds than the Russian Federation (55%) (Source: OECD). However, only 43% of expenditure on education is devoted to primary, secondary and post-secondary non-tertiary education – the lowest proportion among OECD and other G20 countries (source: OECD).

Increasing but limited role for private sector

Russia saw widespread privatisation of education beginning in the 1990s – and the number of non-state universities has now reached 500-650, with nearly two-thirds holding state accreditation. However, the government has engaged in a policy of protectionism, aimed at supporting budget-funded institutions and limiting private sector activities (source: ICEF Monitor).

Efforts to modernise tertiary education

Increased demand for higher quality tertiary level graduates is currently at the top of the government's modernisation agenda.

Online education

Rising internet use and Russia's vast territory mean a growing role for on-line and digital education.

South Africa

7% of GDP spent on education

Spending on education has increased significantly in the post-apartheid era. In 2010, public expenditure on educational institutions and administration represented 5.9% of GDP. About 2.5% of GDP were spent on primary education, 2.0% on secondary, 0.64% on tertiary, and 0.06% on pre-primary. Expenditure as a share of GDP was slightly higher than in Mexico and about the same as in Brazil or an average OECD country (Source: World Bank, OECD).

20%+ of state expenditure

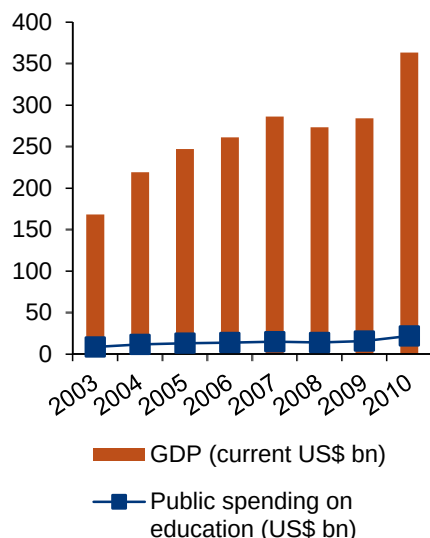
South Africa estimates that it will spend more than R23-billion on beefing up school infrastructure and increasing the number of no-fee schools this year, with education once more receiving the biggest slices - R232.5-billion - of the country's R1.06-trillion 2013 National Budget. The allocation to higher education institutions will increase from just over R20-billion in the previous financial year to R24.6-billion over the next three years (source: South African government).

High attainment vs. other EMs, but progress has slowed

South Africa has achieved high educational attainment levels relative to other EMs and the South African Schools Act (1996)'s goals of full enrolment at primary and lower secondary has been nearly achieved. The percentage of people aged 20 years or older who have higher education has increased from 8.4% in 2001 to 11.8% in 2011. The number of those who matriculated increased from 20.4% to 28.5% and the number with no schooling at all decreased from 17.9% to 8.6% over the same period (Source: 2011 Census).

Today, South African young adults spend more years at school than their counterparts from other emerging economies such as China or India. Mean

Chart 118: Public spending on education



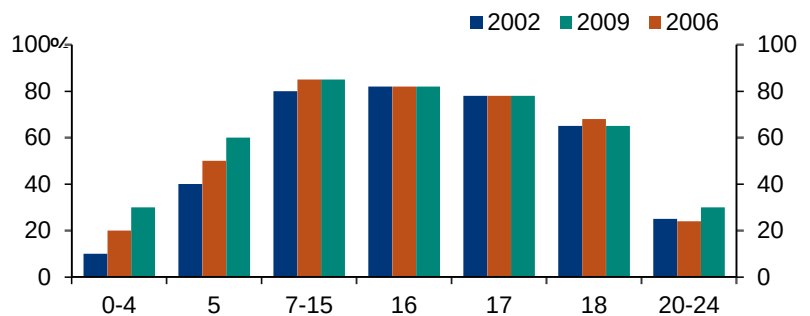
Source: World Bank

educational attainment of the young adults cohort is about the same as in Brazil. (Source: OECD).

Upper secondary enrolments stagnating

The diffusion of education at the upper secondary level has come to a standstill over the last decade. At age 18, 71.5% of youth attended an educational institution in 2009, the same percentage as in 2002. The proportion of students aged 16-18 years attending upper secondary has also stagnated since 2002 at around 83% according to Department of Basic Education. Enrolment in higher education has increased at a rate of 5% annually since 2000 but only reached 840,000 students in 2011 or 18% of the 18-24 years population. When all educational institutions are considered (including vocational schools), the enrolment rate of the 20-24 years age group reaches 30%, a slightly higher percentage than in 2002 (source: OECD).

Chart 119: Attendance rates – share of population attending an educational institution by age group

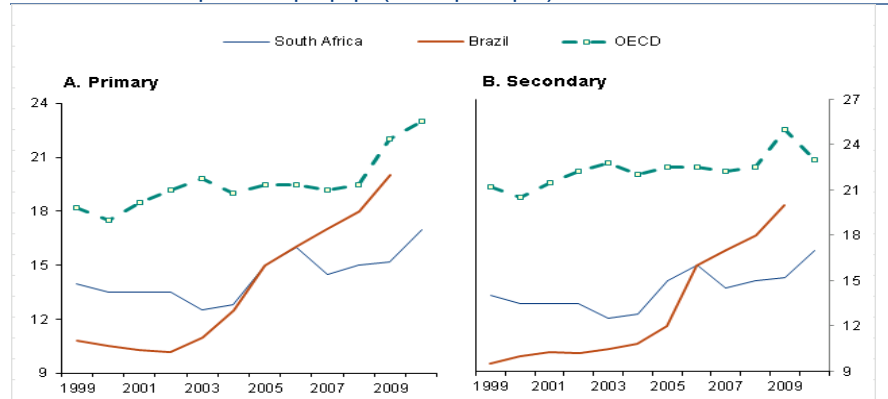


Source: OECD

Demographic challenges vs. underfunding per pupil

Despite relatively high levels of GDP being allocated to education, many stakeholders argue that the system is underfunded given that the proportion of the South African population aged 0-14 years (29.9% in 2011) is much higher than in OECD countries or Brazil. Even more strikingly, half of the South African population is less than 24 years old. Public spending per pupil would need to be increased by 30% at the primary level and by 20% at the secondary level to match the OECD average level of resources per pupil (source: OECD).

Chart 120: Public expenditure per pupil (%GDP per capita)

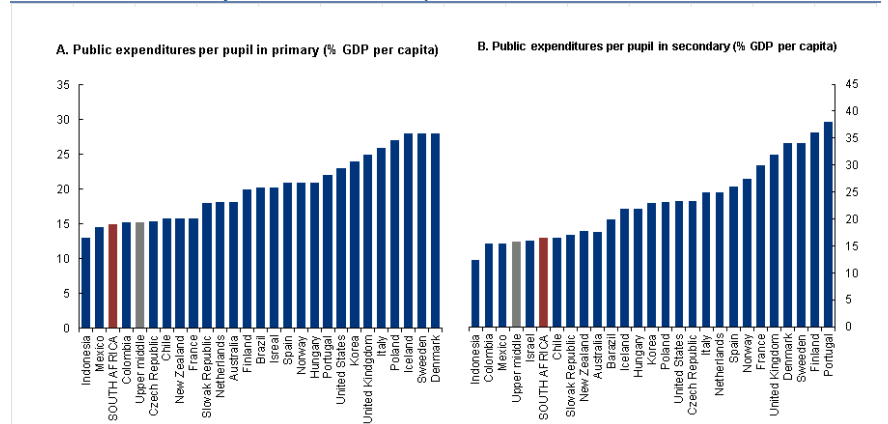


Source: World Bank

A number of areas for improvement

A lack of quality teachers, poor functioning of schools, a backlog in infrastructure, high absenteeism (students and teachers) and poor delivery of the curriculum are all contributing factors to the challenges faced by the South African education system. The government itself has identified a severe skills deficiency in the fields of engineering and sciences (for students and in terms of poorly qualified teachers), which correlates directly to the poor pass rates in maths and science.

Chart 121: Education system needs more capital



Source: OECD 2009

Huge employment & income benefits

Higher education offers very significant employment and income benefits in South Africa according to Solidarity's analysis of 2011 census data (outlined below).

Table 28: Education and Monthly Income (South Africa)

Education and monthly income	% earning over R6,400	% earning over R12,800	% earning over R25,600	% earning over R51,200
No schooling	5	-	-	-
Primary (incomplete or complete)	5	-	-	-
Secondary (incomplete)	10	-	-	-
Matric	30	13	-	-
Certificate or diploma without matric	48	25	8	-
Matric + certificate or diploma	51	30	9	-
Degree or higher diploma	80	52	22	7
Honours or higher	85	68	38	16

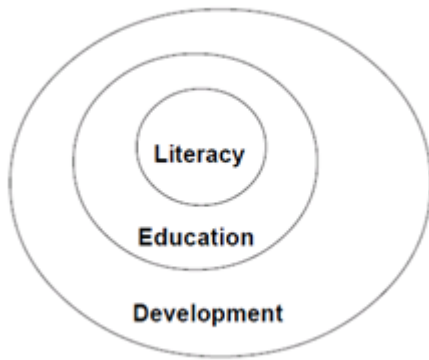
Source: Moneyweb.co.za

Bettering social & environmental outcomes

As we explore throughout this report, we believe that we have a once-in-a-generation opportunity to realise EFA – which could have huge socioeconomic impacts in terms of:

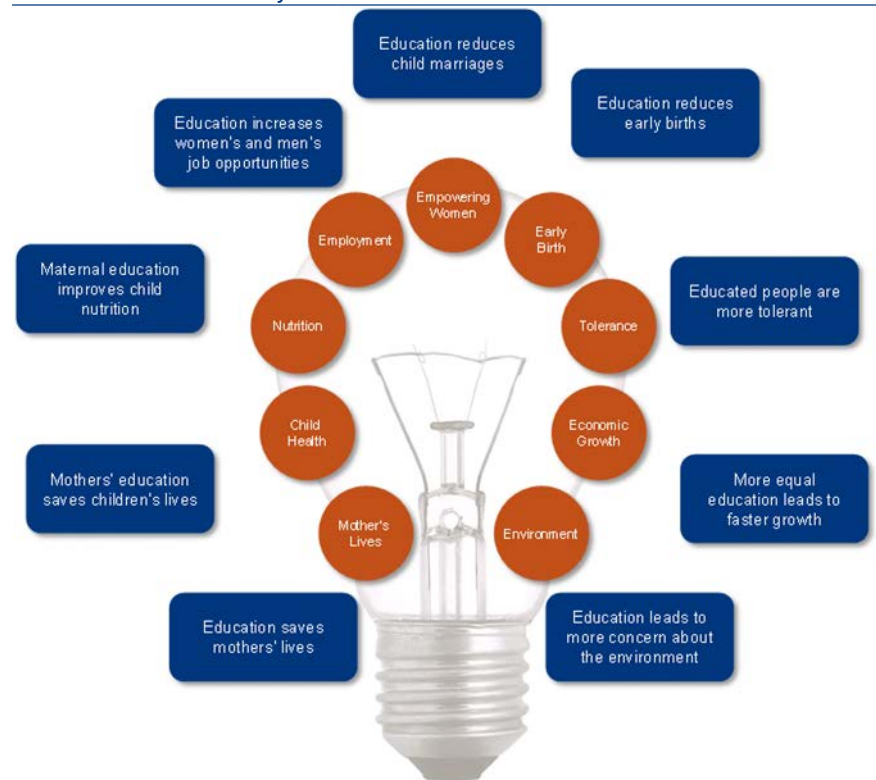
- human capital (employment, equality, and development);
- building prosperous, healthy and equitable societies;
- tackling the disastrous human, social, economic and political consequences which have arisen from neglecting education; and
- avoiding long-term socioeconomic unrest.

Chart 122: Literacy & education key to development



Source: UNESCO

Chart 123: Education's ability to transform lives

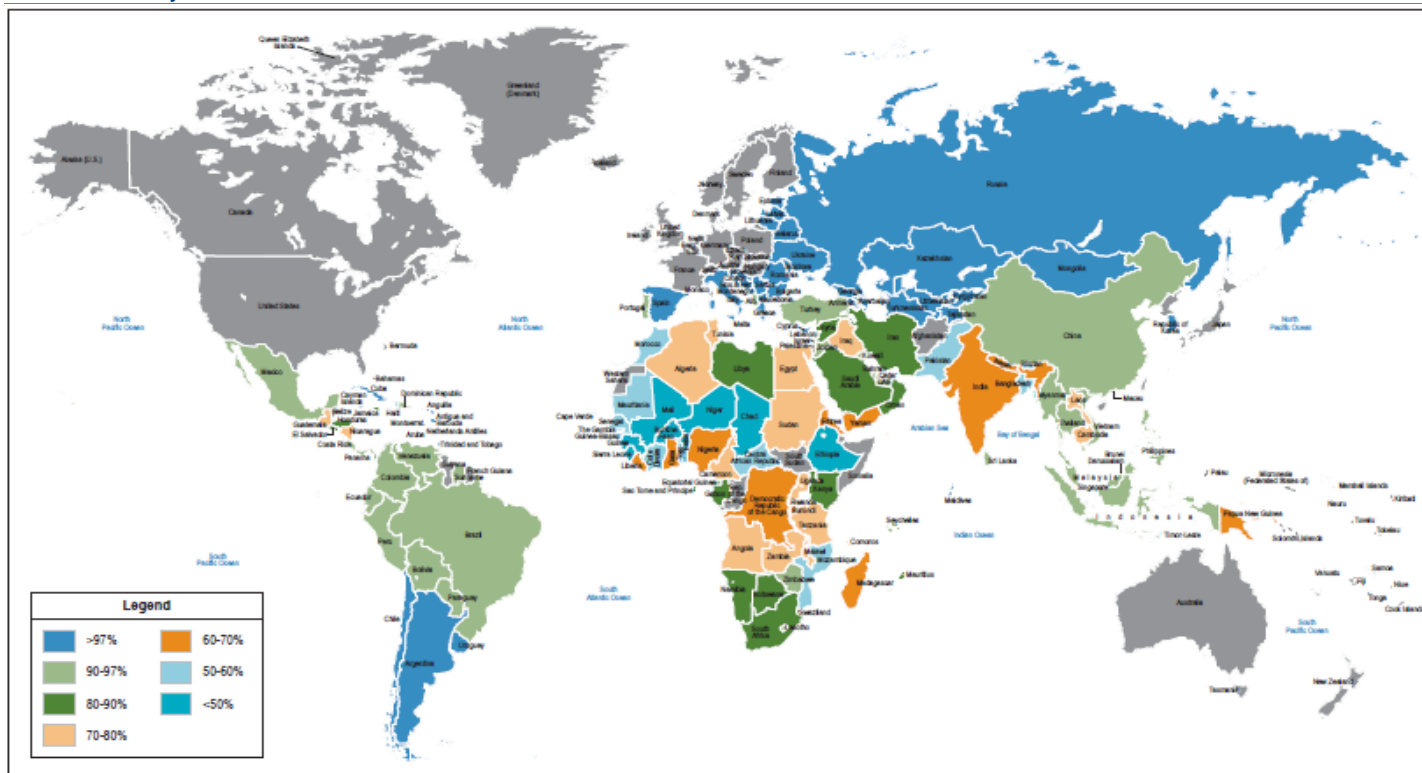


Source: UNESCO, BofA Merrill Lynch Global Research

Tackling illiteracy

Greater educational attainment will be key to tackling the global illiteracy epidemic. There are around 793m illiterate adults in the world, of which more than two-thirds are in just eight countries (India, China, Bangladesh, Pakistan, Nigeria, Ethiopia, Brazil and Egypt). Two-thirds of the world's illiterate adults are also women (source: UN). Improving education is essential given that those families with reasonable literacy and numeracy skills tend to produce more farm crops, have fewer children and enjoy a relatively better quality of life than uneducated families (source: UN).

Chart 124: Literacy rates



Source: UNESCO, World Bank, BofA Merrill Lynch Global Research

Table 29: Regional adult literacy (aged 15 and over) (%)

Region	1985-1994	2005-2010	2015 (Projected)
World	76	84	86
Arab States	55	75	79
Central and eastern Europe	96	98	98
Central Asia	98	99	100
East Asia and the Pacific	82	94	95
Latin America and the Caribbean	86	91	93
South and West Asia	47	63	70
Sub-Saharan Africa	53	63	66

Source: UNESCO

There is a strong correlation with income levels.

In at least 63 countries around the world, female youth from poor households are significantly less educated than other sectors of society (Source: UN)

Thematic Investing: Globesity primer – the global fight against obesity 23 August 2013

Table 30: Income level based adult literacy rate (15 and over) (%)

Income level based adult literacy rate (15 and over) (%)	1985-1994	2005-2010	2015 (Projected)
Countries with low income	51	63	67
Countries with middle income	72	83	86
Lower middle	59	71	76
Upper middle	82	94	95
Countries with high income	-	-	-

Source: UNESCO

Promoting gender equality

One of most significant impacts of improved educational attainment is on gender equality: i) empowering women with one additional school year enables them to increase earnings by 10-20%; ii) reducing economic losses of hundreds billions of dollars globally by failing to educate girls to the same level as boys; and iii) increasing awareness of rights, promoting concerns and new attitudes on decent working conditions, delaying childbearing, resisting violence, denouncing injustice, and participating in political processes (source: UNESCO).

Improving healthcare

Greater educational attainment also helps save children's lives. Over the past 40 years, the rise in women's education has prevented more than 4m child deaths and a further 1.8m lives could have been saved in 2008 if all those mothers had had at least a secondary education. Education also has a key role as a social vaccine against AIDS, tuberculosis and malaria. Women with secondary education are more likely to know how to prevent mother-to-child transmission of HIV, an infection which contributed to 230,000 child deaths in 2011 alone (source: UNESCO).

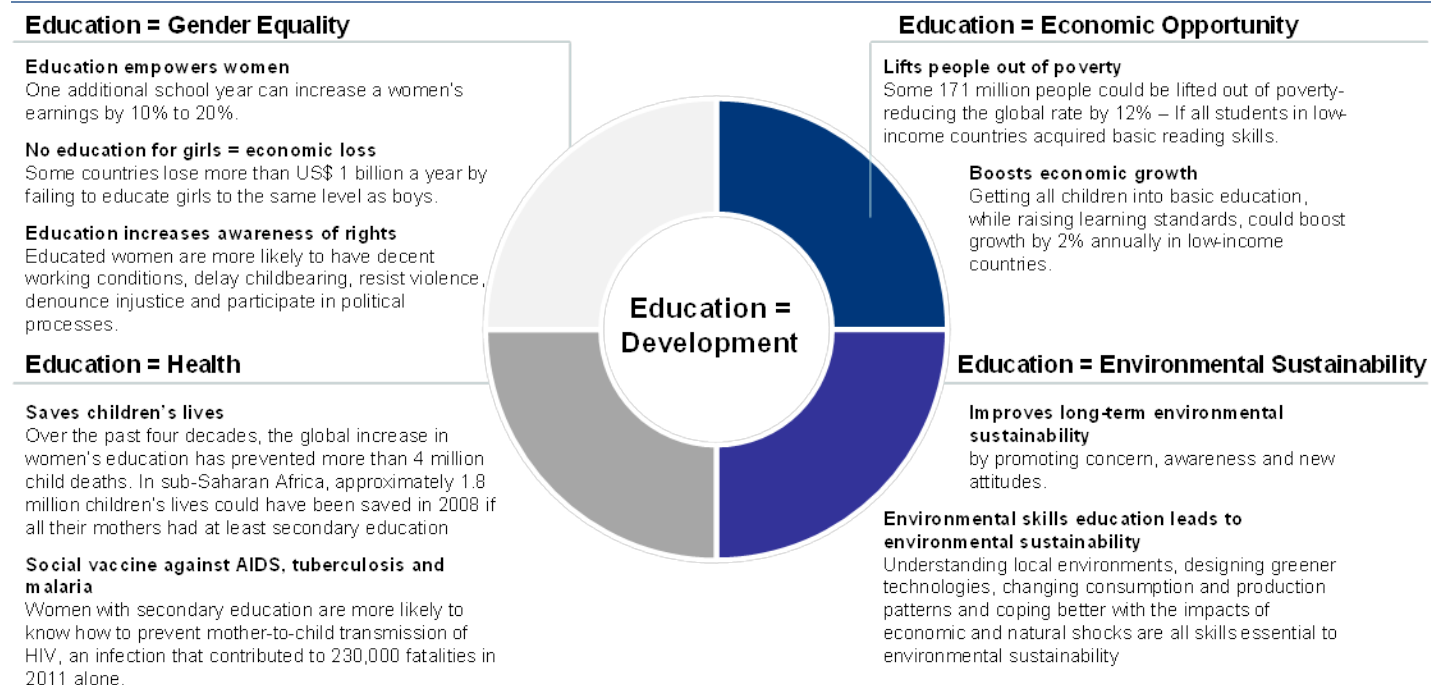
Tackling obesity & smoking

For the first time in 2013, the OECD looked at the obesity and smoking epidemics through an education lens. They found that adults with more education are less likely to be obese or to smoke daily. The reduction in obesity rates linked to educational attainment is much greater among women and in countries with higher-than-average levels of obesity. The reduction in smoking rates according to educational attainment is much greater among men than women and greater in Central Europe and predominantly English-speaking nations than in other OECD countries (source: OECD).

Promoting environmental sustainability

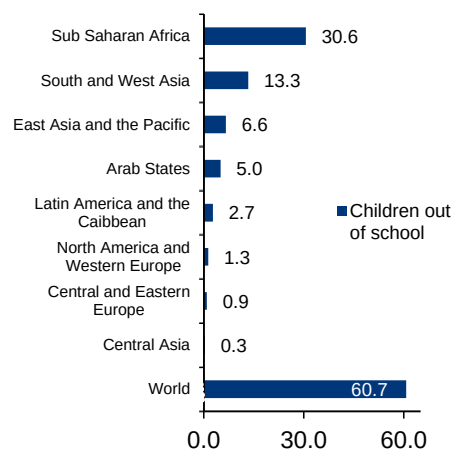
Greater education attainment also promotes concerns, awareness and new attitudes to environmental sustainability issues including risks to local biodiversity, stresses on local resources (food, water, energy), changing consumption patterns, greener solutions, and a better ability to cope with economic and natural shocks (source: UNESCO).

Chart 125: Education is the smart choice when it comes to socio-economic development



Source: UNESCO, BofA Merrill Lynch Global Research

Chart 126: Out of school children by region, 2010



Source: UNESCO

"Education cannot wait for battles to end...or disasters to be averted...or funding to be available. Education cannot wait...because children cannot wait." - Anthony Lake, UNICEF Executive Director

Many barriers & challenges remain

EFA goals stalling & unlikely to be met

Despite the clear international consensus on the need to provide education for all and the business case for action – progress towards the six global 2015 Education for All (EFA) goals is slowing and many are likely to be missed according to UNESCO's 2012 EFA Global Monitoring Report:

- **Improvements in early childhood care and education have been too slow:** 28% of children under five suffer from stunting, and less than half the world's children receive pre-primary education;
- **Progress towards universal primary education is stalling:** the number of children out of school has stagnated at 61m globally – and 47% of children out of school are never expected to enter;
- **Many young people lack foundation skills:** in 123 low- and lower middle-income countries, c200m 15-24 year olds have not completed primary school (c. one-fifth of young people);
- **Adult literacy remains an elusive goal:** the number of illiterate adults dropped just 12% between 1990 and 2010 – 775m adults are illiterate, of which two-thirds are women;
- **Gender disparities take a variety of forms:** there are still 17 countries with <9 girls for every 10 boys in primary school – and there are 96 countries that have not achieved gender parity in secondary school;
- **Global inequality in learning outcomes remains stark:** as many as 250m children could be failing to read or write by the time they should reach grade 4.

Unaffordable costs

Poverty remains the greatest barrier to education. While primary school is free generally around the world, charges for uniforms, textbooks, teachers' salaries and school maintenance create financial barriers for many families and prevent them sending their children to school. While some governments have withdrawn formal fees for basic education, few have dropped fees for secondary education. In sub-Saharan Africa, children from the richest 20% of households reach ninth grade at 11 times the rate of those from the poorest 40% of households (source: UN).

Armed conflict, 28.5mn children denied education

Over 50% of the world's 57m primary school-age children who are out of school live in countries impacted by war and conflict and are denied the right to an education (vs. 42% in 2008) (source : UNICEF). Conflicts, fighting and displacement in countries such as Syria, the Central African Republic, Mali, and the Democratic Republic of Congo have largely contributed to this increase (source : Save the Children). In addition to attacks against schools, students and teachers, education in emergency situations is severely underfunded, accounting for only 1.4% of humanitarian aid (source : Global Partnership for Education) – posing significant challenges in post-conflict reconstruction.

Not enough classrooms, 4m in the poorest EMs alone

The lowest-income EMs need almost 4m new classrooms by 2015, largely in rural and marginalised areas, to accommodate those who are not in school. More classrooms would alleviate overcrowding, cut class sizes and reduce the long travel distances. Children in rural areas sometimes walk two to three hours to attend school. Dilapidated classrooms also need refurbishing or upgrading to acceptable minimum standards for learning (source: UN).

Gender discrimination

Girls face a unique set of barriers to education, including child marriage, early pregnancy, and expectations related to domestic labour, not to mention unsafe travel and a lack of sanitary facilities. Additionally, many countries undervalue girls' education, with the result that fewer girls enrol and those who do are more likely to drop out. Some 34m adolescent girls are out of school around the world, and women make up nearly two-thirds (c.500m) of the world's illiterate adults. The gender gap has significantly narrowed in primary education but there has been limited progress at the secondary level (source: UN).

Child labour

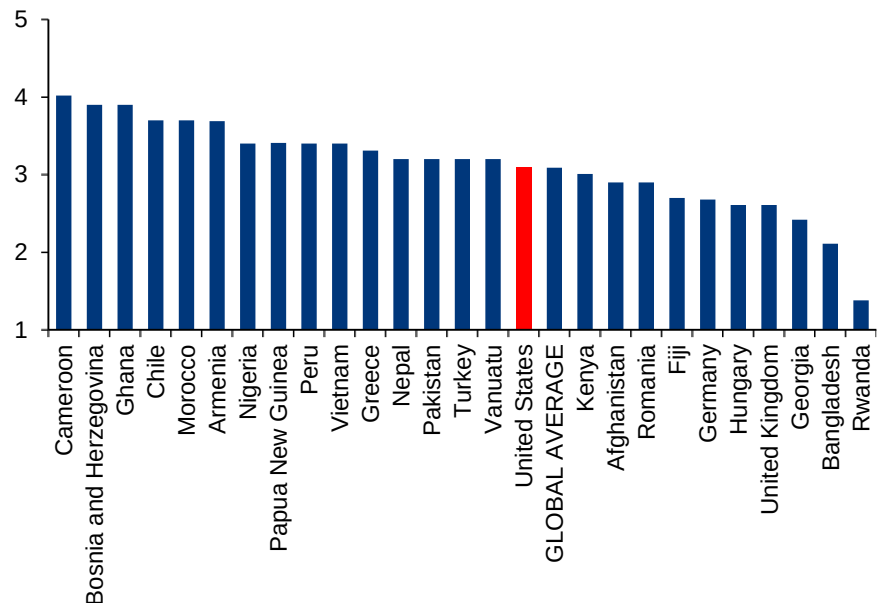
Poverty and economic vulnerability are pushing many young children out of school and into work. Some children remain in school, but are disadvantaged, doubling up studies with work. For households living in poverty, children may be pulled out of school and pushed into work in the face of external shocks, such as natural disasters, rising costs, or a parent's sickness or unemployment. By leaving school to enter the labour market prematurely, children miss the opportunity to lift themselves, their families, and their communities out of a cycle of poverty. Sometimes children are exposed to the worst forms of labour that is damaging to their physical, mental and emotional well-being (source: UN).

Corruption

With education comprising up to 20-30% of national budgets, corruption can become an issue – from national education ministries to local schools and universities. Corruption can include stolen resources from education budgets, books and supplies being sold instead of being given out freely, schools and universities “selling” school places or charging unauthorised fees, grades being “bought”, and the skewing of research agendas in higher education. Transparency International argues that the “end result is limited access to – and poor quality of – education, and a social acceptance of corruption through a corrupted education system.” As is often the case with corruption, the poorest are disproportionately burdened.

A survey of 8,500 parents and teachers in seven African countries showed that 40% of parents pay illegal fees for education (Source: Transparency International)

Chart 127: Perceptions of corruption in education



Source: Transparency International's Global Corruption Barometer 2013

Im/migration policy debate

Experts are warning that debates on immigration and migration policy risk damaging the economically valuable recruitment of overseas students. For instance, according to research by Regent's University, more than half of overseas students in the UK say they have felt "less welcome" because of changing policies on migration. Given the growing importance of foreign fees, this has led to growing pressure to ensure that developed-market student visa rules do not get caught up in the larger immigration debate. A number of issues also arise with regard to the possibility of obtaining post-study work experience – which is a key factor when foreign students choose which country to study in. On the flipside, stakeholder critics argue that developed market universities face few barriers in opening campuses abroad to cash in on the demand for international, high-quality education.

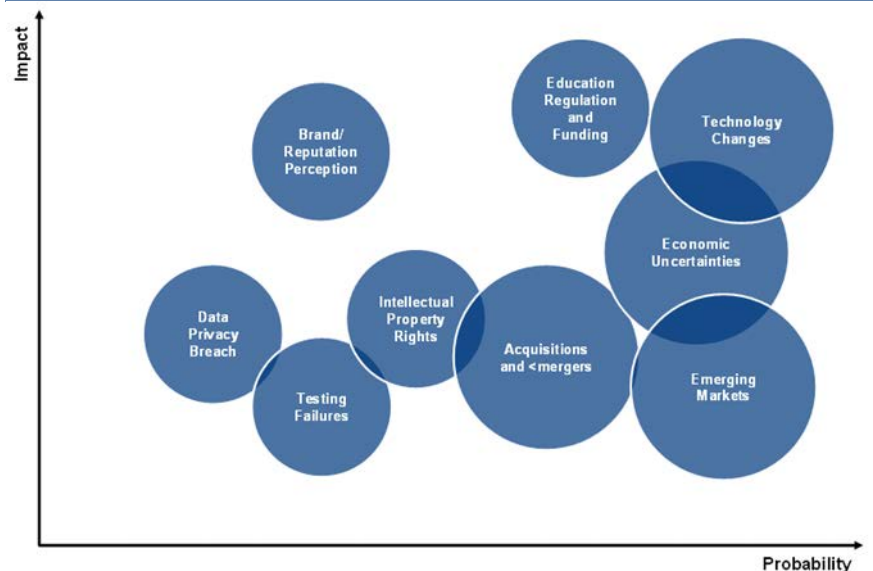
Many challenges for the private sector

Companies in the private sector – which is playing a growing role in global education provision – are also facing significant challenges including:

- **Technological changes:** the rate and state of technological change, including the digital revolution and other disruptive technologies.
- **Education and regulation and funding:** changes in government funding resulting from either general economic conditions, changes in government educational funding, programmes, policy decisions, legislation and/or changes in the procurement processes.
- **Economic uncertainties:** global economic conditions may adversely impact financial performance.
- **Emerging markets:** higher risks and potentially lower returns than anticipated.

- **Acquisitions and mergers.**
- **Brand reputation/perception:** businesses depend on having a strong brand
- **Intellectual property rights**
- **Testing failures:** school and professional assessment services involve complex contractual relationships with both government agencies and commercial customers.
- **Data privacy breaches:** Increasing data privacy regulations and standards or weakness in cyber security (source: Pearson).

Chart 128: Impact and probability of principal risks for education companies



Source: Pearson

Link to Definitions

Industrials

Click [here](#) for definitions of commonly used terms.

Macro

Click [here](#) for definitions of commonly used terms.

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