

# Learn More, Earn More: Getting Ahead in America



## Getting ahead in America, and the world

Education affects lifetime earnings power, health, productivity, competitiveness and social mobility. Investments in education today can strengthen the international competitiveness of the US economy for the future.

## Women are driving gains in access to education

Educational attainment in the United States has improved remarkably in recent decades. Much of this is due to women, who are now the majority in both college and graduate school, and who have driven 80% of the growth in master's degrees and a remarkable 99% of growth in professional and doctoral degrees since 1970. Women's gains have not come directly at men's expense: the decline in men's education began well before women made significant inroads into universities.

## It pays to go to school

At the individual level, education is associated with higher wages, better jobs, lower unemployment and greater social mobility. On average, high-school graduates earn one-third more than high-school dropouts each year; college graduates earn two-thirds more than high-school graduates; and those with professional degrees earn nearly twice as much as college graduates. Better-educated people are more likely to work and to hold higher-skilled jobs. Education also helps to reduce income inequality and is a critical driver of social mobility, by improving the likelihood of rising to a higher income category.

## Preparing the workforce of the future

Two-thirds of the fastest-growing job categories in the United States require some form of post-secondary education. Demand for skilled labor has risen even faster than supply; technological change and globalization suggest that this demand will continue to increase. But US schools do not seem to be adequately preparing students to meet this demand. Standardized test results are discouraging, and the United States scores only slightly above average among OECD countries, despite spending much more on education per student. Moreover, employers increasingly value hard-to-teach qualities like judgment, problem-solving and flexibility.

## The reality of the recession

Higher federal spending on education will be welcome, but it is unlikely to fully offset the broader impact of the economic downturn. Shrinking state and local budgets, constrained credit markets, withering endowments and a slowdown in donations – all at once – will pose major obstacles to improving both access to and the quality of education.

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## I – Learn more, earn more: the role of education

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Public and political attention in the United States is understandably, and necessarily, focused on near-term challenges of economic stabilization and recovery. But many decisions being made today will affect the US economy over the long term, particularly its international competitiveness and role in the world economy. Competitiveness is a complex topic, so we focus here on one critical issue – education – that affects national competitiveness, productivity growth, income inequality and social mobility.

The United States has seen significant gains in educational attainment since the early 1970s, primarily driven by women. Women have surpassed men in college education and overwhelmingly dominated the growth in advanced degrees. At the same time, men's educational attainment has declined. This is not a story of women's gains coming directly at men's expense – in fact the decline for men began in the 1950s, long before women began to make serious inroads into higher education.

At the individual level, education is associated with higher wages, better jobs, lower unemployment and greater social mobility. This is especially important as globalization erodes moderate-skill jobs and the demand for skills in the labor force continues to rise. Education is critical in an economy where two-thirds of the fastest-growing job categories require some form of post-secondary education. At the national level, education is associated with higher productivity growth, lower income inequality and greater competitiveness within the global economy.

Gains in education have come as the US economy is becoming increasingly stratified into highly skilled, highly paid managerial and professional jobs on one end, and labor-intensive, low-skilled and low-wage service jobs on the other. Moderately skilled jobs that once paid middle-class wages have been "hollowed out," either disappearing or lagging in wage growth. These jobs have been displaced in part by global trade, and more importantly by technological change.

Unfortunately, despite the tremendous gains in **access** to education, the **quality** of US education often falls short. The US educational system is not truly preparing its students to meet the demands of the 21<sup>st</sup>-century workforce. Literacy and numeracy standards are low, and the United States scores only slightly above average in international comparisons with other OECD countries, despite spending significantly more on education. Moreover, the attributes that employers increasingly value – judgment, motivation, problem-solving – are difficult to "teach" through traditional forms of classroom instruction.

Investments in education can take years to pay off, but the effects of under-investment can also linger for years. Thus the \$50 billion earmarked for education spending in the proposed 2010 federal budget is welcome news, though only part of what is needed. With education a high government priority, and with an increasing focus on national competitiveness, it may be just the time for a rethink of what United States schools are teaching, how they teach it, and how access can be broadened at the same time that the curriculum is updated to meet future challenges.

In this paper we first highlight the improvements in educational attainment since the early 1970s, particularly women's tremendous gains in access to higher education. We then analyze the links between education and employment, wages and intergenerational mobility. We evaluate ways in which the current educational system is falling short in preparing students for a globally competitive workforce. Finally, we look at the impact of the economic downturn on education and conclude with some policy recommendations for strengthening the educational system and preparing for a 21<sup>st</sup>-century workforce.

## II – Going to college: a better-educated labor force

Educational attainment in the United States has risen considerably in recent decades, most notably in the share of high-school graduates going on to college and in the remarkable increase in women at all levels of advanced education.

### The dark spot: progress in high school has been underwhelming

Before reaching the good news about college enrollment, we must begin in the area where progress has been underwhelming – high school. The headline news is good: nearly 90% (88%) of young adults today have a high school degree or its equivalent. But digging into the details shows that the headline overstates the situation. The graduation rate from public high schools is just 75%, well below the OECD average of 83% (see Exhibit 1). While the United States rate is higher today than in the 1990s, it is only in line with the rate of the 1980s and actually slightly below that of the 1970s.

The gap between the 88% headline figure and the 75% public high-school graduation rate is split roughly evenly between graduates of private high schools and people with high-school equivalency degrees. Equivalency degrees, typically the General Educational Development (GED), are easier to secure and are generally considered less rigorous than a four-year high school curriculum.<sup>1</sup>

Despite a decline in the overall high-school dropout rate below 10% from 15% in 1970 (see Exhibit 2), dropping out remains a persistent problem, which we discuss in detail in the box on page 6.

**Exhibit 1: Graduation rate from US public high schools**

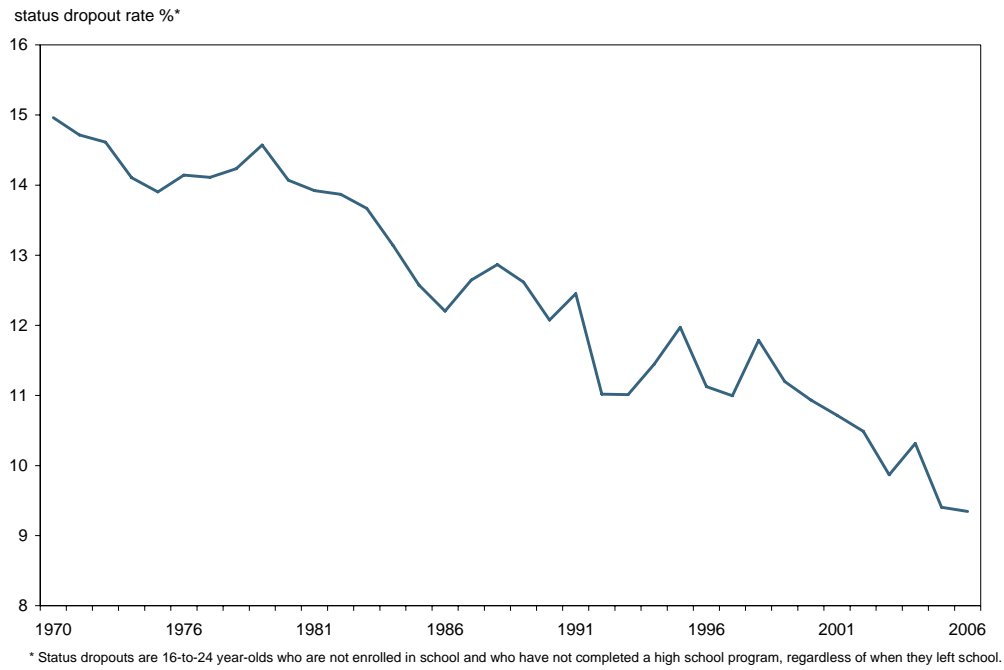


Source: National Center for Education Statistics.

<sup>1</sup> Some research suggests that the GED in fact yields no direct economic return, once differences in ability are taken into account. See “Bias Corrected Estimates of GED Returns,” NBER Working Paper 12018, 2006. Nonetheless, many who take the test indicate that they do so to pursue careers or job opportunities that require a high-school diploma or equivalent, including the military.

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**Exhibit 2: US high-school dropout rate has fallen significantly since 1970**



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Source: National Center for Education Statistics.

**Exhibit 3: The persistent problem of high-school dropouts**

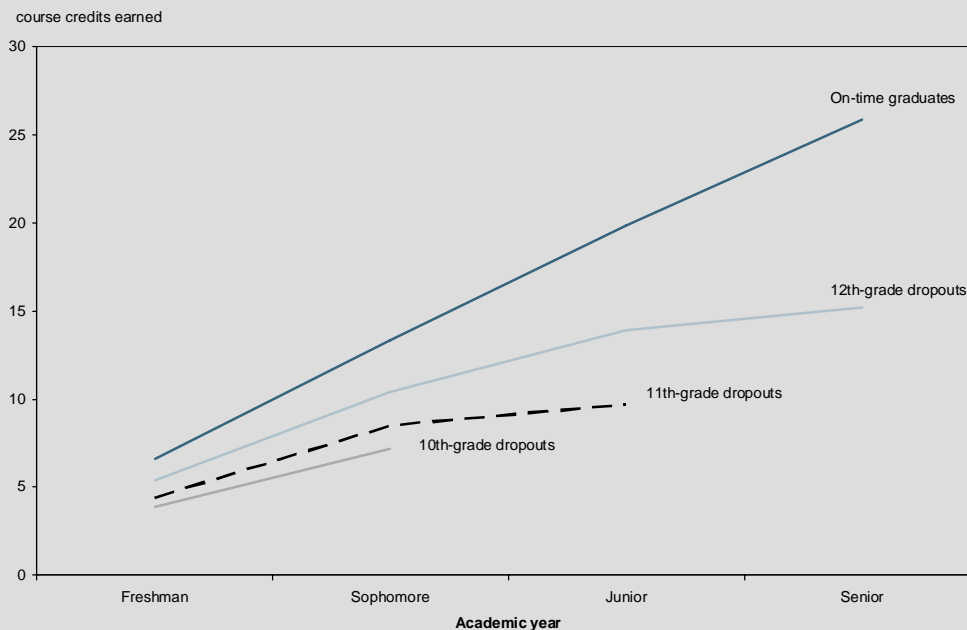
*Despite a decline in the overall high-school dropout rate to below 10% from 15% in 1970, dropping out remains a persistent problem. This is rarely a sudden, one-day event, but is instead a complex phenomenon that is usually several years in the making. Multiple risk factors exist at the individual, family, school and community levels, and most dropouts cite a combination of factors.*

*Certain groups are more at risk than others. Low-income students are considerably more likely to drop out than their middle- or high-income peers, while men are more likely to drop out than women. Students in the South and West are more likely to drop out than are students in the Midwest and New England. City and rural students are more at risk than those from suburbs or smaller towns.*

*Family background is extremely important. Students whose parents or siblings have dropped out are particularly at risk, as are students who have children themselves. Low family socioeconomic status is a risk factor, whether measured by parents' education, income or occupation. In fact, low income tends to outweigh other factors that might keep students in school, including good academic performance. High levels of stress in the household – including family financial problems – also increase the risk. Critically, parents' own attitudes toward education have a powerful influence on their children's likelihood of dropping out. One study indicates that eighth-grade students whose parents did not expect them to graduate from high school are almost 14 times more likely to drop out than students whose parents expected them to receive at least some college education. Conversely, students whose parents are better educated – and who are thus likely to have relatively high expectations for their own children – are less likely to drop out.*

*Students who will ultimately drop out begin to lag in school performance very early in their educational careers; in fact poor performance as early as first grade has been found to influence the risk of dropping out a decade later. In high school, the gap between future dropouts and students who stay in school widens each year, with future dropouts earning fewer credits in the critical fields of English, math and science. Catching up can be a daunting challenge, leaving many of these low-achievers wondering "why bother?" Repeating grades is not an effective solution, because in-grade retention itself is highly correlated with dropping out.*

**Exhibit 4: The gap between future dropouts and future graduates is visible from the start of high school**



Source: National Center for Education Statistics.

*Surveys of dropouts cite a wide range of factors behind their choices. One-third said they needed to earn money; one-quarter became parents (not surprisingly, this is a particularly acute problem for girls); one-fifth had to care for a family member. School-related factors matter too: half say classes are boring, others say the coursework is irrelevant. The vast majority want schoolwork that is more relevant to their lives and to see clearer links between school and good jobs.*

*What can be done? Given the complex set of issues behind dropping out, a multi-faceted approach makes the most sense. Important measures include:*

- *Early warning systems to identify potential dropouts long before high school, as early as elementary schools in some high-risk areas;*
- *Efforts to engage parents in their children's education and to raise their expectations for their children;*
- *Broader (and probably better-financed) support services at school;*
- *Changes in compulsory school-age rules, requiring teenagers to remain in school until age 18; and*
- *Stronger career and technical education (also known as vocational training). These programs are less academically rigorous than the traditional curriculum, but they can be helpful for students who feel that conventional education is not relevant to their future. Good programs have been associated with higher grades, lower dropout rates, higher college attendance and, for men, steadier work, longer hours and higher earnings.*

## **Gains have been far more impressive in college**

Despite sluggish progress in high-school graduation rates, high-school education is so widespread that much of the variation in educational attainment today comes from differences in college education. Here, the progress is consistent and clear.

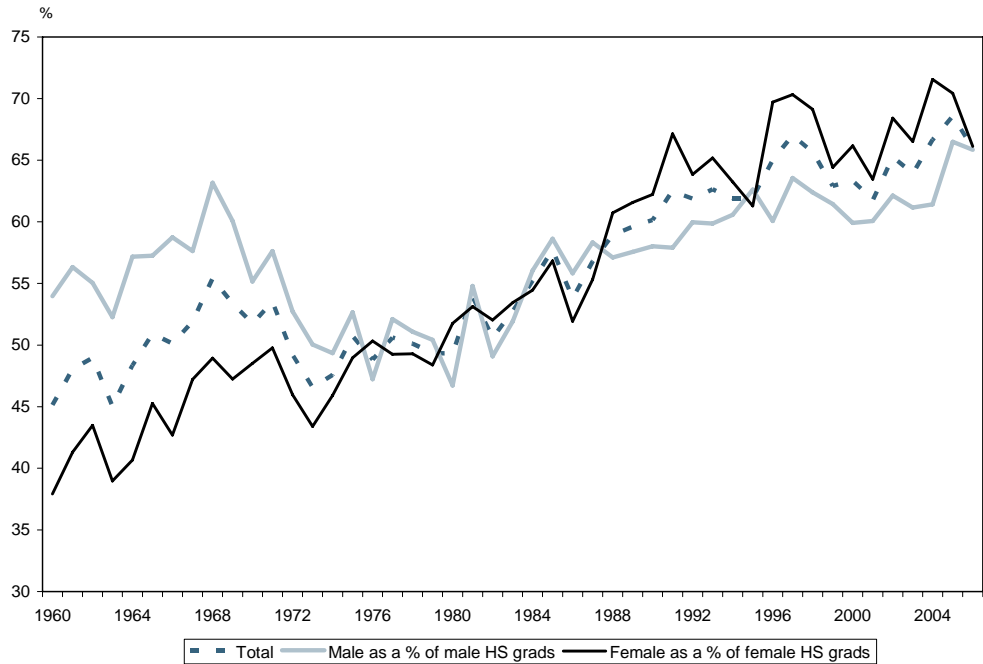
In recent years, roughly two-thirds of high-school graduates have gone on to enroll in college (see Exhibit 5), up from just 45% in 1960.<sup>2</sup> The majority (roughly 60%) of today's college students are full-time students enrolled in four-year degree programs. Among the rest, full-time two-year programs are more popular than part-time enrollment. In fact, two-year programs, which result in associate degrees, have driven much of the growth in college enrollment. In 1970, there were three bachelor's degrees granted for each associate degree. Thanks to nearly three-fold growth in the latter, this ratio has since fallen to two-to-one.

The rapid growth in college enrollment that marked the 1970s and 1980s began to level out in the early 1990s, and future gains from here are likely to be modest. The enrollment rate is currently rising at slightly more than 1% per year. This is down sharply even since the late 1990s, but it comes off what is now a high base.

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<sup>2</sup> For high-school graduates who do not enter college directly after graduation, prospects are darker. Once people leave the educational system, it is difficult to bring them back. Only 15% of high-school graduates who are not enrolled in college in the first year after high school do go on to enroll in the second, according to the US Census Bureau.

**Exhibit 5: Share of high-school graduates enrolling in college has risen, with biggest gains among women**



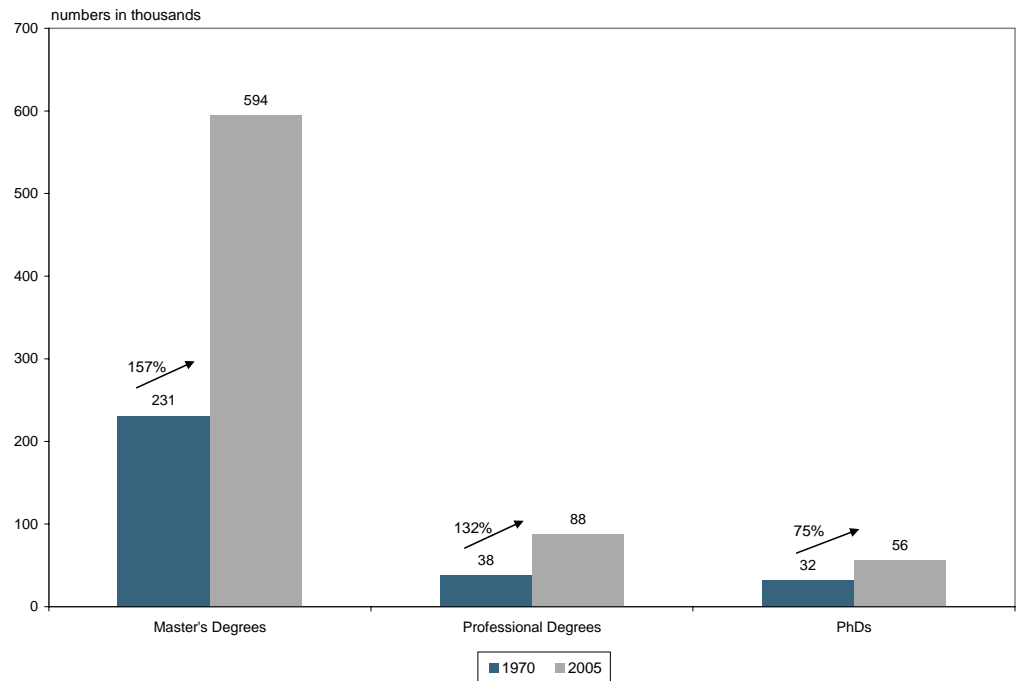
Source: National Center for Education Statistics.

**The number of post-graduate degrees has soared**

Post-graduate education has experienced even more dramatic growth (see Exhibit 6). While the number of bachelor’s degrees awarded has risen by about 75% since 1970:

- The number of master’s degrees awarded has risen by more than 150%, with pronounced growth in engineering, security services and fitness;
- The number of professional degrees awarded has risen by 130%, though these remain just a small fraction of overall advanced degrees. Law degrees are half of all professional degrees, a figure that is basically unchanged over the past 15 years, while medical degrees are slightly below 20%; and
- The number of doctorates awarded has risen by 75%, reflecting growth in fields such as health, computer and information sciences.

**Exhibit 6: Growth in all fields of post-graduate education, especially master’s degrees**



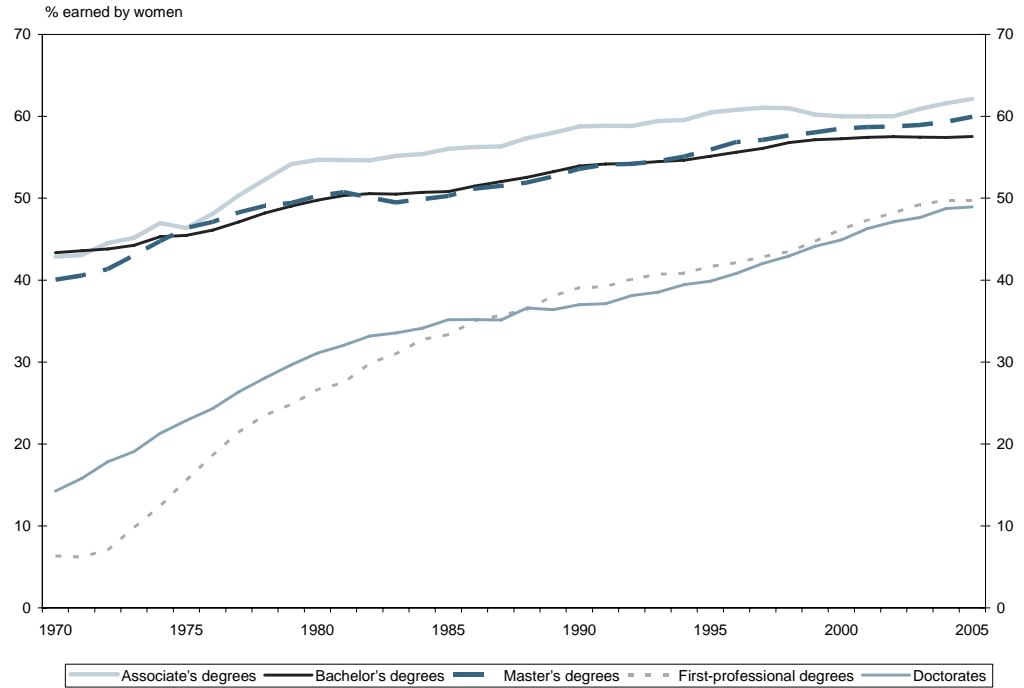
Source: National Center for Education Statistics.

**The story of educational gains over the past 35 years is largely a women’s story**

At the start of the 1970s, men dominated higher education. At the time, 55% of male high school graduates attended college, while 49% of female high-school graduates did. As a result, men were close to 60% of all undergraduates and 70% of all graduate students.

Over the past 40 years, this gender gap has not only narrowed, but has reversed. Women had become the majority among undergraduates by 1980, and among graduate programs as well by the mid-1980s. Today, 58% of undergraduates and 62% of graduate students are women (see Exhibit 7). Similar gains have been seen in most OECD countries and in many major developing economies.

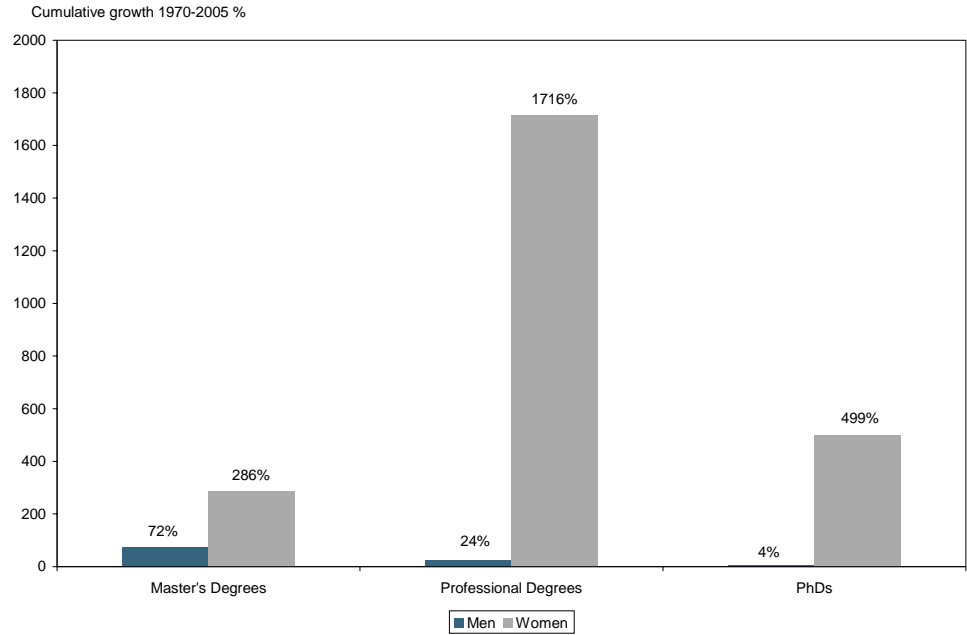
**Exhibit 7: Women are now the driving force in college and post-graduate education**



Source: National Center for Education Statistics.

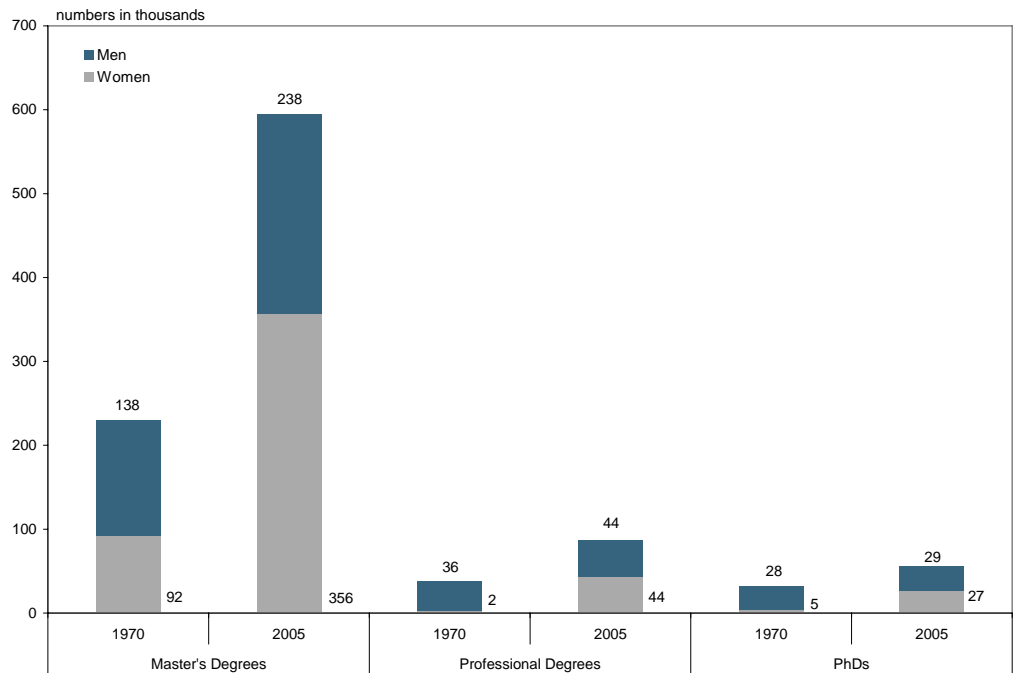
Women’s gains in post-graduate education are even more remarkable. Women have driven 80% of the overall growth in MAs awarded since 1970, and a stunning 99% of growth in both professional and doctorate degrees. Arguably, this overstates the case, because women started from such a low level. (As recently as 1970, for example, women received only 14% of doctorates and 6% of professional degrees.) But the fact that women now significantly outnumber men in college and in master’s programs – and are virtually at parity with men in professional degrees and doctorates – suggests that men have indeed lagged (see Exhibits 8-9).

**Exhibit 8: Women overwhelmingly dominate growth in post-graduate degrees**



Source: National Center for Education Statistics.

**Exhibit 9: Women move to parity with men, and beyond, in post-graduate studies**



Source: National Center for Education Statistics.

Women's educational achievements have been broadly based. The "catching up" process has been visible across the spectrum of academic abilities, and across all socio-economic levels. Notably, the gender gap in women's favor is today highest in the lower half of the socio-economic distribution. In fact, among low-income and minority students, women are 25% more likely than men to enroll in post-secondary education.

### **Educational attainment for men peaked with men born around 1950**

Women's remarkable gains have coincided with a striking decline in men's educational attainment. Overall, men born since the early 1950s have consistently been less well educated than their female peers.

This is not a story of women's gains coming at men's expense. The decline in men's education is clear, above and beyond a shift of educational resources to women. The share of male high school graduates continuing on to college fell from a high of 63% in the late 1960s to just 47% a decade later, and it did not recover its previous high until the late 1990s. In contrast, although the share of women enrolling in college also dipped in the early 1970s, the magnitude of the fall was only half as great, and women's enrollment recovered much more quickly than men's (from 50% in 1971 to 43% in 1973 and back to 50% by 1976). Today, just 42% of college students are male.

What explains the decline in men's education? Part of the answer may lie with the "non-cognitive skills" that are so important to success in an educational setting. Some research suggests that the impact of non-cognitive skills on college enrollment is comparable to that of cognitive ability and socioeconomic status. Girls have a clear edge in these skills; put simply, they tend to be better at "going to school" than are boys. Boys are more likely than girls to have behavioral problems, to repeat grades, to be in remedial classes and to spend less time on homework. In contrast, by high school, girls typically have higher grades and are more likely to be on an academic track. Girls have long been more likely than boys to take foreign languages, which is a strong predictor of college education. And girls reached virtual parity in high-school science and math enrollment – another key predictor – in the early 1990s.

Boys who choose not to attend college are more likely than girls to say that they do not need further education to pursue their chosen career path; that they would rather earn money right away; and that they simply "don't like school." Given the nature of work available to teenagers and young adults, the opportunity costs of continued schooling are now probably higher for men than for women. On the whole, men are better-suited than women for the sorts of low-skilled but relatively better-wage jobs available to those without a college degree, like construction, while women have made few inroads into skilled blue-collar work. As the economy turns down and jobs grow scarcer, however, higher education may become more attractive to these "opportunistic" dropouts.

## III – It pays to go to school: the benefits of higher education

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In previous work,<sup>3</sup> we have shown how women's education is one of the most important and effective economic development tools today, with positive consequences for women and their families, for the labor force and productivity, and for future generations.

In developed countries, the future gains to be had from education are less dramatic, largely because educational access and attainment are already so widespread. But there are still significant gains to be had, affecting lifetime earnings power, health, productivity, competitiveness, and social mobility for both current and future generations. In the United States, the returns to post-secondary education have risen steadily since 1980, as the economy has embraced technology and the demand for skilled labor has risen. Thus it is worth detailing the benefits of education, especially college education.

### Learn more, earn more

Returns to post-secondary education have risen across the board, especially at the top end of the scale. Returns increase with each additional level of education. As Exhibit 10 shows:

- It pays to stay in high school: graduates typically earn 37% more each year than high-school dropouts.
- College graduates earn, on average, 67% more than high-school graduates.
- While some college is better than none, students are financially better off achieving an associate degree (typically a two-year program) than dropping out of a four-year college. In part, this reflects the fact that many associate degree programs provide training for a specific occupation (somewhat akin to advanced technical schools).
- Professional degrees yield the biggest "bang for the buck" in terms of incremental wages. Median earnings for professional-degree holders are a remarkable 90% higher than median earnings for college graduates.
- Over the course of a working lifetime, earnings for people with professional degrees can be more than four times higher than lifetime earnings for high-school dropouts, according to US Census Bureau estimates (see Exhibit 11).

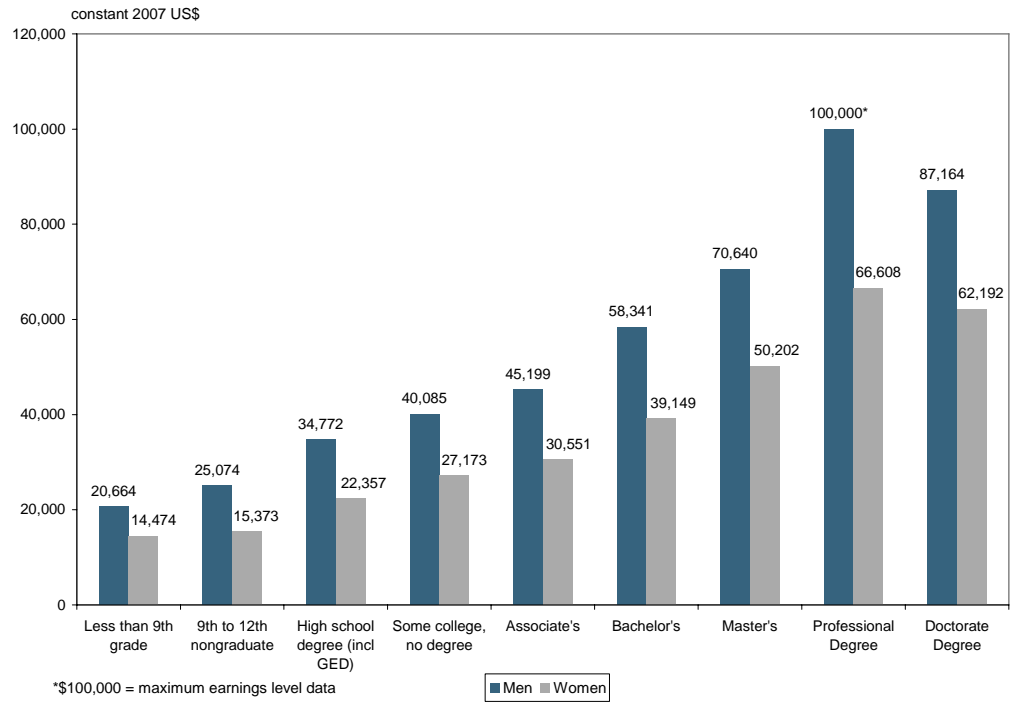
The educational premium is not a new phenomenon. One study finds that, between 1963 and 2002, real labor income for men rose by 78% for those with postgraduate degrees, 41% for college graduates, 17% for those with some college and 11% for high school graduates – but fell 10% for high school dropouts. Among women, wages rose at every education level, with the highest gains at the postgraduate level and the lowest for those without high-school diplomas. Another study finds that real wages for men fell in all educational groups, except college graduates, from 1979 to 2002. At the same time, real wages for women rose in every group except high-school dropouts.<sup>4</sup> There are many ways to calculate these numbers, but the common theme is that the educational premium continues to rise.

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<sup>3</sup> Women Hold Up Half the Sky, Goldman Sachs Global Economics Paper 164, March 4, 2008.

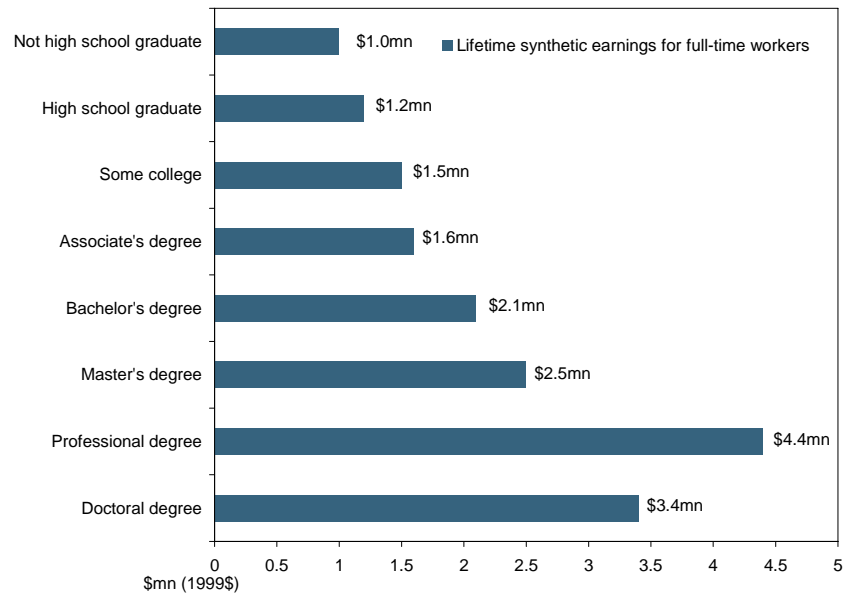
<sup>4</sup> On the Evolution of Income Inequality in the United States, Federal Reserve Bank of Richmond Economic Quarterly Volume 94, Number 2, Spring 2008; Highlights of Women's Earnings in 2002, Bureau of Labor Statistics, US Department of Labor, Report 972, 2003.

**Exhibit 10: Median annual earnings by educational attainment**



Source: US Census Bureau, Current Population Survey, 2008.

**Exhibit 11: Estimated lifetime earnings by educational attainment**

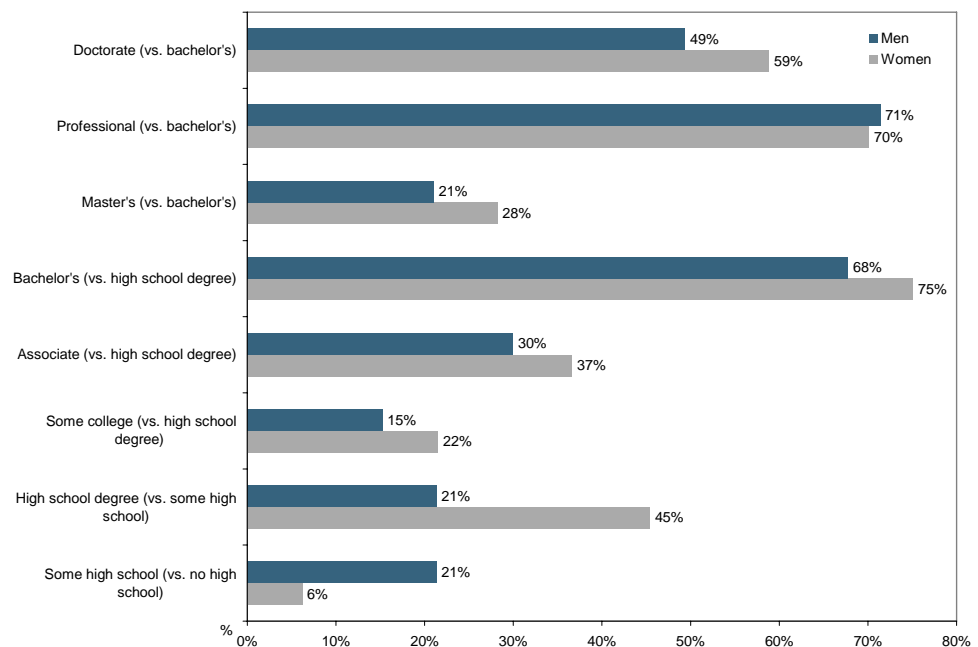


Source: Congressional Budget Office.

Data also indicate that the education premium is higher for women than for men at nearly all levels. As Exhibit 12 shows, women gain relatively more than men, in terms of future earnings potential, at almost all levels of tertiary education, and for graduating from high school (where women’s relative gain is more than twice as large as men’s). The premium is roughly the same for both genders at the professional-degree level (with a difference of just 1% in men’s favor), leaving women trailing men only among high-school dropouts.

Academics generally agree that the college wage premium has been higher for women than for men for some time. But it is as yet unclear whether the **lifetime** returns to college are higher for women, in part because they are more likely than men to take time out of the workplace for child-raising and other personal reasons. Recent studies of professional women suggest that even a short break from the workforce can reduce women’s future earnings dramatically.<sup>5</sup>

**Exhibit 12: Wage premiums for each level of education**



Source: US Census Bureau, Current Population Survey, 2008.

<sup>5</sup> For example, a new study of MBA graduates from the University of Chicago finds that “the presence of children is the main contributor to the lesser job experience, greater career discontinuity and shorter work hours for female MBAs,” and that “the pecuniary penalties from shorter hours and any job discontinuity are enormous for MBAs.” See Bertrand *et al*, “Dynamics of the Gender Gap for Young Professionals in the Corporate and Financial Sectors,” NBER Working Paper 14681, January 2009.

**Exhibit 13: Seventy-four cents on the dollar**

*Wage discrimination offers one explanation for women's greater presence in higher education. Because men still out-earn women at every level of educational achievement, women may well be driven to acquire more education simply to achieve comparable earnings power. Although the gap between male and female wages has narrowed since the 1980s, on an economy-wide basis women earn just 74 cents for every dollar that men earn.*

*Accordingly, to catch up with men, women generally need to obtain more schooling. Women with bachelor's degrees earn roughly as much as men with only some college; female high-school graduates earn about 90% of the median earnings of male high-school dropouts. Exhibit 10 shows that this disparity persists across the spectrum; at the top end, women holding doctorates earn 10% less than men with master's degrees (and excluding those with professional degrees).*

*Wage discrimination is probably part but certainly not all of the story behind unequal wages. Many industries remain segregated by gender (teaching and nursing on the one hand vs. construction on the other), with women dominating the less-well-paid sectors. Moreover, women are more likely than men to take time out of the labor force to raise children, which sets back their earnings, in some cases substantially. Finally, there are as yet few senior women at the top ranks of the highest-paying jobs. In 2008, for example, just 12 of the Fortune 500 firms had women as CEOs.*

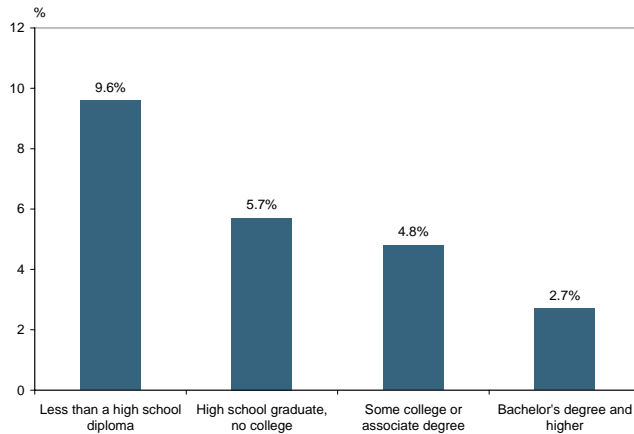
*Nevertheless, for some occupations, the earnings gap is narrowing. In 2008, female chief executives earned about 80% of what male chief executives made; this is up from about 72% in 2003. Other occupations where women have notably reduced the gap in wages since 2003 are purchasing managers, computer and mathematical occupations, editors, physicians and surgeons, bailiffs, correctional officers and jailers, and advertising sales agents.*

*Other important factors driving the (slow) convergence between male and female wages are experience and the economy-wide shift toward technology and services jobs. With 76% of women aged 45-54 and 59% of women aged 55-64 currently in the labor force, men's relative advantage in experience has eroded, and should continue to do so. Additionally, the ongoing shift toward service-sector jobs and the widespread use of technology have worked in women's favor, and against men's, as the share of jobs requiring "brawn" has declined.*

### Learn more, work more

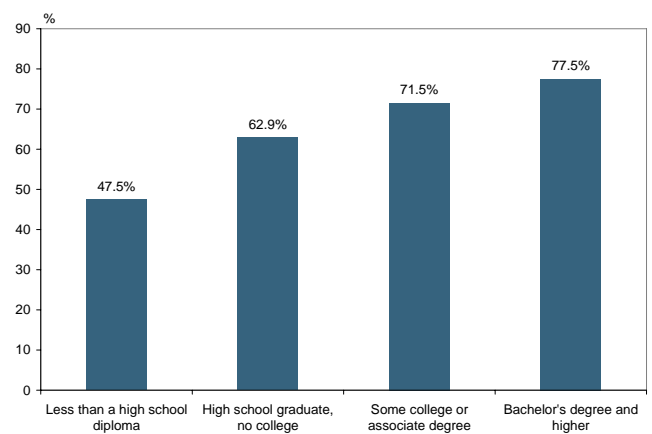
Education increases the opportunity costs of not working. These costs rise with each level of education – the flip side of the earnings premia described above. So it is not surprising to see that labor-force participation rates rise in line with educational attainment. While more than three-quarters of people with a bachelor’s degree are in the labor force (defined as working or actively seeking work), only about half of people who never finished high school are in the labor force (see Exhibits 14-15).

**Exhibit 14: Labor-force unemployment rate by educational attainment**



Source: US Census Bureau.

**Exhibit 15: Labor-force participation rate by educational attainment**

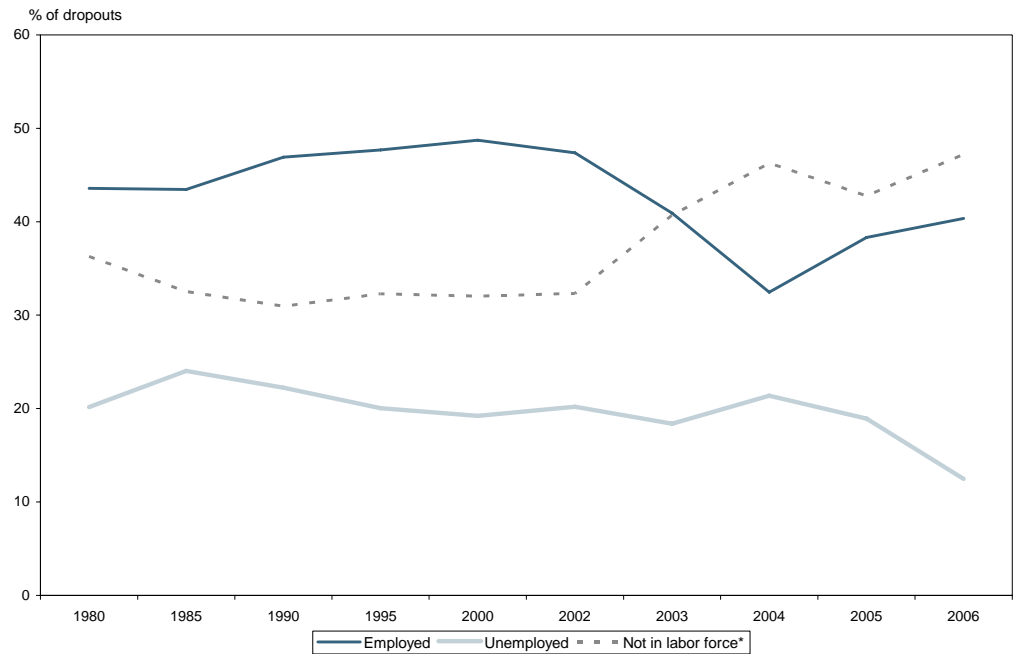


Source: US Census Bureau.

Education also has a particularly strong impact on the likelihood that women work. Close to 80% of female college graduates are working, compared to half of women without high-school diplomas; the gap for men is much smaller. Women with college degrees also tend to have longer careers, in part because their jobs are usually less physically demanding than the jobs generally available to women with less education.

On a related point, unemployment rates typically fall as educational attainment rises. Prior to the start of the current economic crisis, at least, the unemployment rate for people with BAs or higher degrees was less than 3%, notably lower than for people whose education ended with their high-school graduations. Although the share of dropouts who are unemployed has declined from 20% in 1980 to about 13% in recent years, this is actually not such good news, because much of the decline has in fact resulted from people dropping out of the labor force entirely, as Exhibit 16 shows. We expect that the current cyclical deterioration in the labor market will hit the less-educated, and therefore least flexible, population the hardest. Even in better economic times, high-school dropouts are still particularly at risk from the economic impact of technology and globalization.

**Exhibit 16: The fate of high-school dropouts**



\*Persons not in the labor force are defined as those who have no job and are not looking for one

Source: National Center for Education Statistics, US Bureau of Labor Statistics.

**Better-educated people hold higher-skilled jobs**

Better-educated people typically hold higher-skilled and higher-paying jobs. This is a fairly obvious point, but one worth making since it underscores the handicap that limited education imposes. College graduates and advanced-degree holders hold roughly half of all business and finance jobs in the United States, as well as some two-thirds of management and professional jobs. In contrast, people without a college degree hold more than three-quarters of all service jobs, and half of workers without a high-school degree are in low-wage jobs. In construction and transport, for example, 40%-50% of workers have only a high-school degree – but only 1% of workers has an advanced degree. Put differently, according to OECD figures, 68% of workers with a bachelor’s degree are in skilled jobs, while 62% of workers with the equivalent of an associate’s degree are in semi-skilled occupations.

While employer-provided training is to be one way of giving employees needed skills, in practice this does not seem to work very well, particularly in blue-collar jobs. Employers worry that employees will train and then leave, allowing competitors to reap the benefits of their investments. The asymmetric information balance between employers and employees also dulls the incentive for employers to make this investment. In addition, wage rigidities often mean that employers cannot finance training via lower wages. Moreover, according to OECD data, workers with high-school degrees on average receive only about half as much training over the course of their careers as do college graduates.

**Education can reduce income inequality and drive social mobility**

The relationship between education and income inequality is complex. Education can widen inequality if employers are willing to pay outsized compensation to reward the highest level of skills. This phenomenon, dubbed “the CEO effect” (though it encompasses

more than just CEOs), has been seen at the top end of the income distribution since the early 1990s, as compensation in the senior-most levels of professional and managerial jobs has jumped sharply. Thanks to this skew, the wage differentials within segments of the income distribution have widened.

Differences in educational attainment in fact seem to have driven much of the growth in wage inequality over the past three decades. While the returns to post-secondary education have risen across the board, the rest of the wage structure has remained quite stable. The relationship between experience and earnings, for example, is essentially unchanged from the early 1970s.<sup>6</sup>

But education can also help to reduce inequality by narrowing the gap between the median incomes at the lowest and highest levels. This also appears to have occurred in the United States since the early 1990s. While inequality has widened at the top end of the spectrum, it has declined overall when measured between groups. Women's educational gains appear to be responsible for at least part of this improvement. Women have driven income growth at the bottom end of the distribution since the late 1970s. This coincides with their gains in higher education and suggests that overall inequality has declined as women's income have narrowed the gap with men's.

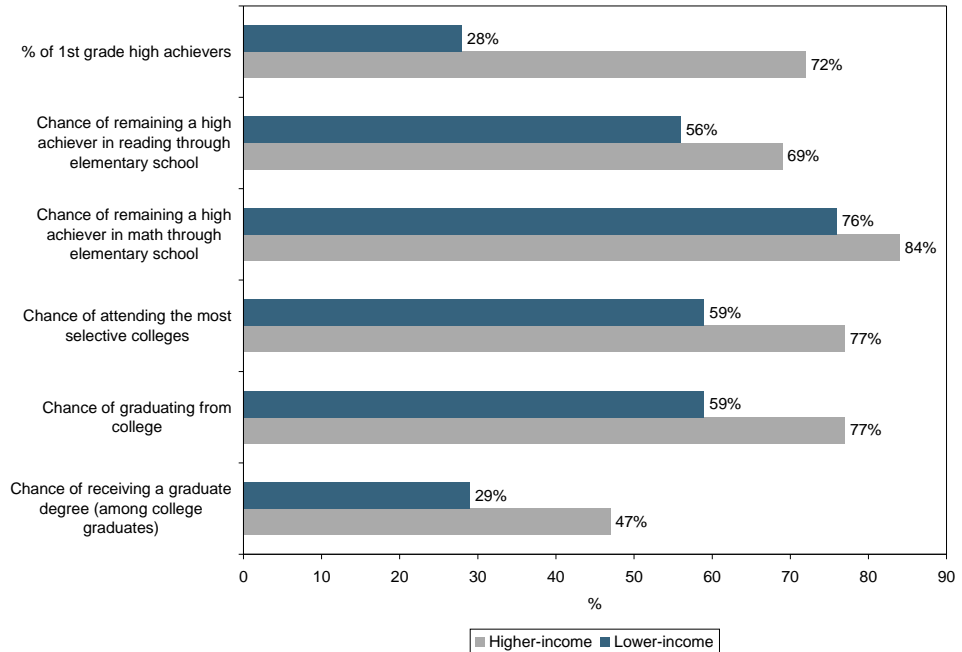
Accordingly, education is a critical factor associated with intergenerational mobility. It is one of the most important ways in which parents' economic status is transmitted to their children – in ways both good and bad.

- Children of better-educated and higher-income parents typically receive more education. This is in part because their wealthier parents are more able to buy houses in good school districts, or to pay for private school, and because they can better afford higher education. In addition, these parents typically have other attributes that reinforce the importance of education – including their expectations for their children. Thus, children can “inherit” some of the background needed to secure highly skilled, highly paid jobs as adults.
- In contrast, children of lower-income parents are considerably more at risk of dropping out of high school than are their better-off peers. Even high achievers are hurt by growing up in poor households. They lose ground to wealthier high achievers as early as elementary school, and this lag compounds over time. Ultimately, low-income high achievers are less likely to graduate from college, less likely to attend the most selective colleges and considerably less likely to receive a graduate degree (see Exhibit 17).
- Not surprisingly, given the data on education and income, education itself is also a strong predictor of socioeconomic status. Poverty rates are notably higher among families headed by someone lacking a high school education – even when compared to families headed by a high-school graduate. And children (as well as siblings) of parents who have dropped out of high school are themselves more likely to drop out, perpetuating this cycle.

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<sup>6</sup> “Post-Secondary Education and Increasing Wage Inequality”, NBER Working Paper 12077, 2006.

**Exhibit 17: Even among high achievers, low income is still a drag on performance**



Source: *Achievement Trap: How America Is Failing Millions of High Achieving Students from Lower Income Families, 2007.* Wynner et al, Report by the Jack Cooke Foundation & Civic Enterprises, with original research by Westat.

## IV – Getting out of school: the workforce of the future

Broadening educational attainment, particularly among the “sticky” core of high-school dropouts, is a policy imperative. But access alone is not enough. Individual employment prospects and national competitiveness alike demand that the quality of education prepare students to meet the needs of the 21st century workforce.

Higher-skilled jobs have grown from less than one-quarter of US total employment in 1980 to about 30% today, with demand outpacing the growing supply of highly skilled labor. The ongoing process of skill-based technological change makes it likely that the United States will continue to see rapid job growth in higher-skilled fields. Specifically:

- One-third of US job openings in the decade from 2004 will be “high-skill,” requiring a bachelor’s degree or post-graduation education, according to the US Bureau of Labor Statistics (BLS).
- About 45% of openings will be “middle-skill” jobs, down from 55% of total employment in 1986, according to the BLS and the Brookings Institute. These jobs, found in fields such as skilled construction, transportation, production and some health care areas, require more than a high school diploma but less than a four-year college degree. This is the demand that two-year associate-degree programs are best-placed to meet.
- Low-skill jobs will be only 22% of new jobs created over that period.
- The US Department of Labor estimates that two-thirds of the fastest-growing job categories in the United States in 2006-2016 will require some form of post-secondary education (see Exhibit 18).

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**Exhibit 18: US Labor Department estimates that two-thirds of the 30 fastest-growing occupations (2006-2016) require post-secondary education or training**

Occupation	Cumulative Growth (%)	Degree of Education needed
Network systems and data communications analysts	53.4%	Bachelor's degree
Personal and home care aides	50.6	Short-term on the job training
Home health aides	48.7	Short-term on the job training
Computer software engineers, applications	44.6	Bachelor's degree
Veterinary technologists and technicians	41.0	Associate degree
Personal financial advisors	41.0	Bachelor's degree
Makeup artists, theatrical and performance	39.8	Postsecondary vocational training
Medical assistants	35.4	Moderate-term on the job training
Veterinarians	35.0	First professional degree
Substance abuse and behavioral disorder counselors	34.3	Bachelor's degree
Skin care specialists	34.3	Postsecondary vocational training
Financial analysts	33.8	Bachelor's degree
Social and human service assistants	33.6	Moderate-term on the job training
Gaming surveillance officers and gaming investigators	33.6	Moderate-term on the job training
Physical therapist assistants	32.4	Associate degree
Pharmacy technicians	32.0	Moderate-term on the job training
Forensic science technicians	30.7	Bachelor's degree
Dental hygienists	30.1	Associate degree
Mental health counselors	30.0	Master's degree
Mental health and substance abuse social workers	29.9	Master's degree
Marriage and family therapists	29.8	Master's degree
Dental assistants	29.2	Moderate-term on the job training
Computer systems analysts	29.0	Bachelor's degree
Database administrators	28.6	Bachelor's degree
Computer software engineers, systems software	28.2	Bachelor's degree
Gaming and sports book writers and runners	28.0	Short-term on the job training
Environmental science and protection technicians, including health	28.0	Associate degree
Manicurists and pedicurists	27.6	Postsecondary vocational training
Physical therapist	27.1	Master's degree
Physician assistants	27.0	Master's degree

Source: US Bureau of Labor Statistics.

Heightened demand for education and skills reflects a fundamental shift in the nature of the US economy over the past two decades. A high-school diploma today is rarely the route to steady, well-paying employment with good benefits that it was a few decades ago. The shift away from manufacturing and toward services, the decline of labor unions and the widespread adoption of technology all mean that some post-secondary education is increasingly a prerequisite to even moderately well-paid work.

Arguably the most important factor is one dubbed "skills-based technological change" (SBTC). This phenomenon, which began in the 1980s, has increased the premium placed on skilled workers and boosted the returns to advanced education.<sup>7</sup> The impact of SBTC is seen most vividly in broad adoption of technology and in some sectors outsourcing and "offshoring." The premium for skills has continued to rise in recent years, with the demand for skilled labor rising even faster than the supply. Over the past 15-20 years, countries including the United Kingdom and Germany have undergone similar changes.

### Are schools preparing students for the workforce of the future?

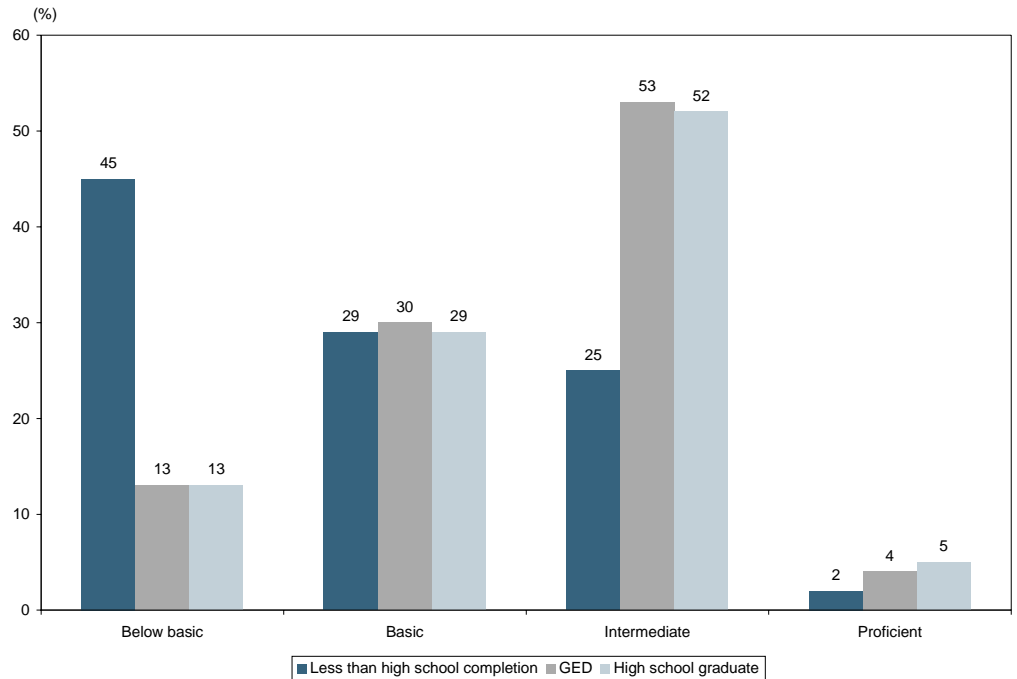
Unfortunately, the US primary and secondary educational system was designed to feed a very different labor market. The demands of today's skills-based economy are changing more quickly than many schools can keep up.

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<sup>7</sup> Additional factors driving changes in the labor market include the decline of labor unions, the erosion of the minimum wage and higher rates of immigration. The academic jury is still out as to which weights to assign to various factors, but most agree that skills-based technological change has been a major force.

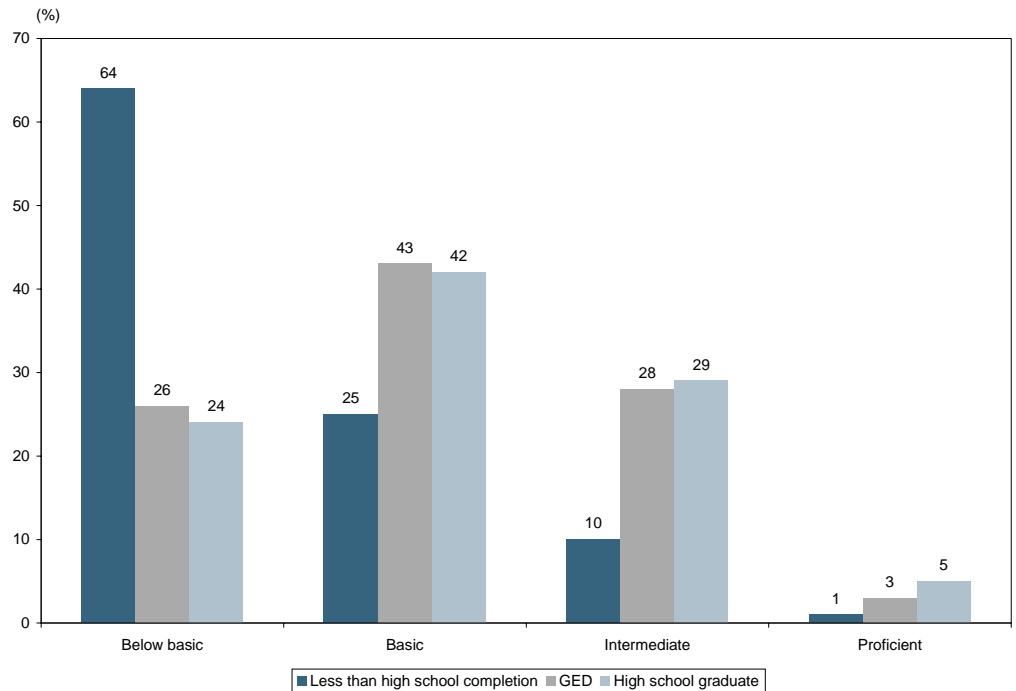
Even in traditional subjects, standardized testing indicates that many US schools are not teaching to the standards needed for today’s workforce. Almost 30% of high-school graduates score only at the “basic” level on literacy tests and a further 13% score “below basic” (see Exhibit 19); in quantitative literacy (numeracy), 42% score at the “basic” level and a further 24% “below basic” (see Exhibit 20). Not surprisingly, the situation is considerably worse for high-school dropouts. Two-thirds of adults who have not completed high school score at “basic” or below in literacy tests, while nearly 90% do in quantitative literacy.

**Exhibit 19: Even with a high-school degree, more than 40% of adults score at “basic” or below in literacy tests**



Source: National Center for Education Statistics.

**Exhibit 20: Even with a high-school degree, two-thirds of adults score at “basic” or below on numeracy tests**



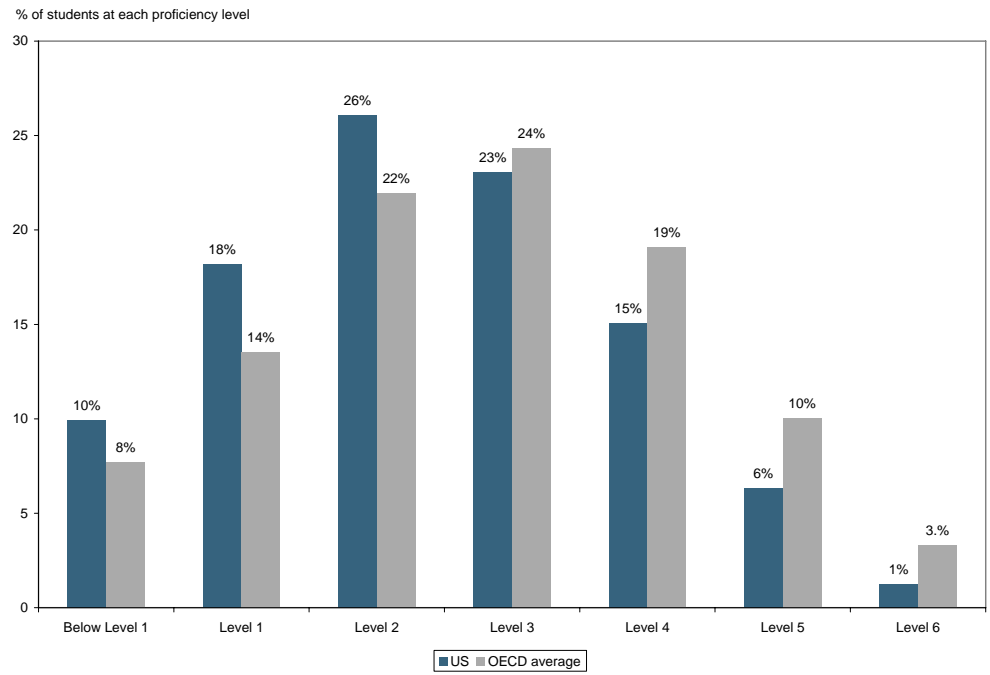
Source: National Center for Education Statistics.

On international comparisons, the United States fares poorly in comparison with its OECD peers. Although it is at the top of the rankings for the share of students who enroll in universities, the US college dropout rate is considerably higher than average. On balance, then, US college graduation rates are only in line with the OECD average. On international standardized tests<sup>8</sup>, US students score far below average in math and relatively poorly in science. On the math test, more than half of US students score in the bottom half of the distribution (including 10% that score “below” the lowest level), compared to 43% in the OECD on average and 32% in Japan. The US also fares poorly at the top end of the scale, with just 1.3% scoring at the highest level, less than half the OECD average (see Exhibits 21-23).

OECD research has concluded that “in most studies, the US performance varies between middling and poor” and says that US students are generally almost a year behind their peers in the countries that score best on these international tests. Similarly poor results in tests of adults indicate that this underperformance is not a recent problem, but is instead a longstanding result of the US educational system.

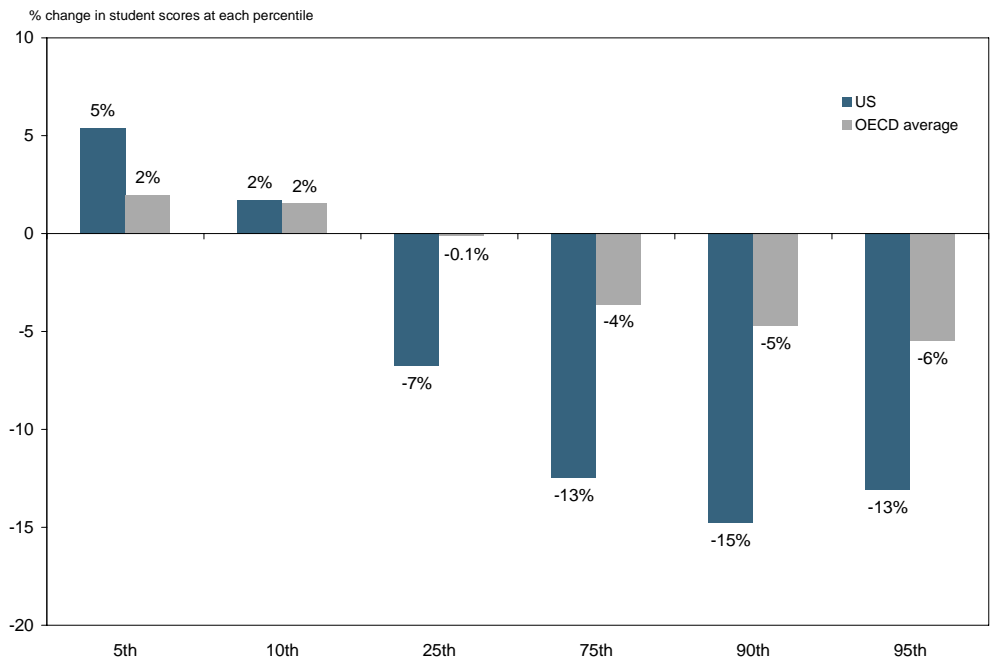
<sup>8</sup> Two widely-used international standardized tests are the PISA (OECD Programme for International Student Assessment, which tests math, science and reading) and the TIMSS (Trends in International Mathematics and Science Study, which tests science). It is obviously difficult to design and apply a standardized test across multiple educational systems and languages, and both the PISA and the TIMSS have been subject to criticism. Nonetheless, they are useful guides to relative performance and to changes within individual countries over time. See “Primary and Secondary Education in the United States”, OECD Economics Department Working Paper 585, March 2008.

**Exhibit 21: US students score below the OECD average on the PISA 2006 math test**



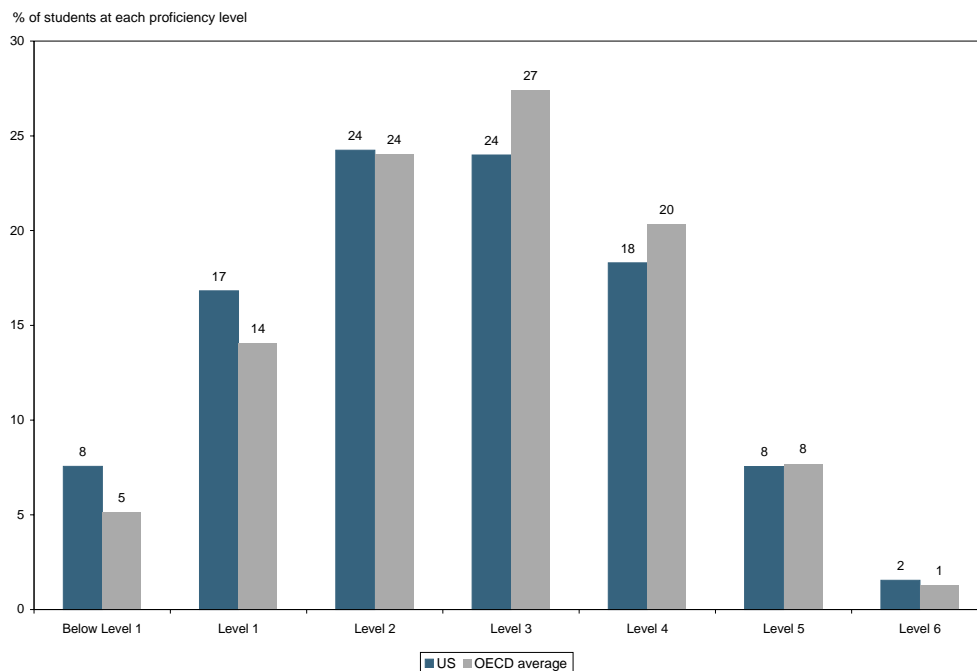
Source: OECD.

**Exhibit 22: US students' performance in the PISA math test worsened relative to the OECD average from 2003-2006**



Source: OECD.

**Exhibit 23: US students also generally score below the OECD average on the PISA 2006 science test**



Source: OECD.

This relatively poor performance comes despite the fact that, on a per student basis, the US outspends the OECD average by about 70%. The largest gap is at the tertiary level, where the US spends twice as much per student as the OECD average. This suggests that some re-orientation of spending priorities toward primary and secondary schooling could help as the United States seeks to strengthen its educational system. We note, however, that this may be difficult to do, given that primary and secondary schooling in the United States is principally funded by local property taxes, while university-level education draws on a wide range of public and private sources of finance.

The weak US performance may in part reflect the nature of the curriculum. In a major speech on education in March 2009, President Obama compared the United States to other countries by saying “It’s not that their kids are any smarter than ours – it’s that they are being smarter about how to educate their kids. They are spending less time teaching things that don’t matter, and more time teaching things that do. They are preparing their students not only for high school or college, but for a career. We are not.”

For example, on an overall basis, students take as many science classes in the United States as elsewhere. But US students are far more likely to study “general science,” while less than 20% are required to study physics and less than 30% to take chemistry – compared to an OECD average of 60% for each. Even including additional students who choose to study these subjects, the overall figures are still below the international average.

The No Child Left Behind (NCLB) Act of 2002 has set tougher performance targets for reading and math, and evidence of its impact is beginning to emerge. However, this legislation gives states wide latitude to set their own standards, with the result that these standards can, and do, vary widely from state to state. This Act has been highly contentious among educators and politicians. The proposed 2010 federal budget includes

provisions to improve standards and assessments, and a heated political discussion about reforms to NCLB and about education more broadly is now brewing in Congress.

An encouraging development is the emergence of the Advanced Placement (AP) curriculum as a de facto national curriculum. The AP program offers a set curriculum in about 35 subjects, along with teacher training and standardized exams. The AP program initially targeted high-achieving students in the best high schools, but enrollment has doubled between 1995 and 2005, with the program now aimed at all students going on to college. Given the rigor of the AP curriculum, some school districts are experimenting with “backward mapping” to develop a robust and structured curriculum for younger grades that will prepare students to do well on the tests as high-school seniors.

Moreover, changes in the economy and labor force are demanding that schools help students develop a new set of skills. Numerous studies have showed that formal education is only part of the preparation for today’s highly skilled and highly paid jobs. In addition to formal and traditional qualifications, employers are seeking – and rewarding – attributes like problem-solving, judgment, persistence, motivation and a general ability to “put it all together.” These skills cannot really be “taught” in a traditional classroom structure, but they can be cultivated through collaborative projects and creative work.

### **Is immigration policy undercutting the returns from investing in higher education?**

Preparing the workforce of the future includes attracting the best students from all around the world. The US educational system is a magnet for the best talent in many fields, especially science and engineering. Foreign citizens received about 35% of the doctoral degrees awarded in the United States in 2006; in science and technology, they averaged 45%, and in engineering, nearly two-thirds of the total. These graduates were the direct and indirect beneficiaries of public spending on education, through state funding of public universities, scholarships and grants for sciences and other fields. This includes a substantial portion of the National Science Foundation’s \$6 billion budget, which supports about 200,000 scientists and funds roughly 20% of all federally supported basic research at US universities.

Roughly three-quarters of the foreign citizens who received PhD degrees between 2000 and 2006 intended to remain in the United States after graduation; more than half had definite plans to do so. But US immigration policy is not always welcoming toward these graduates. Immigration issues become even more politically charged in difficult economic times, such as now. New restrictions on financial firms’ ability to obtain H-1B visas for employees are one example of building political pressures. Nonetheless, by making it difficult for US-educated foreign citizens to stay and work here, the United States is forgoing some of the dividends of its expensive investment in their educations. This may be a boon to the graduates’ home countries, but it is a clear loss for the US economy.

## **V – Paying for education: the reality of the recession**

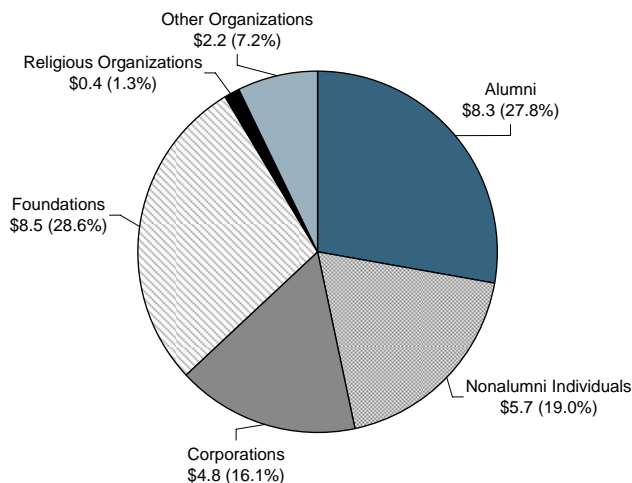
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**It is impossible to discuss education in today’s economy without addressing the challenges that the recession has brought.** While the ultimate scope of the slowdown is not yet clear, its effects are already being felt in education. Shrinking government budgets, constrained credit markets, withering endowments and a slowdown in donations – all at the same time – will make financing college education considerably more difficult than during the boom years from the mid-1990s to 2007. Both belt-tightening and creativity will be needed.

### Universities are likely to suffer on several fronts

- Finances of state universities are likely to be pinched as state and local governments experience falling tax revenues and higher demand for social services. With the municipal bond market still constrained, and the adjustable-rate municipal (ARM) market unavailable, conventional sources of funding will be harder to come by.
- Universities, including many of the most prominent private universities, have already felt the impact of plunging endowment performance and have been hurt by illiquidity in their investment portfolios – just when endowment funds are needed most. Many leading private institutions have already announced budget cuts. Although many have pledged to protect their current faculty and existing financial aid programs, curricula and facilities are likely to be hit harder. While this may not affect the numbers of students educated, it may affect what they learn. And financial aid itself could come under pressure if the economy continues to deteriorate.
- Philanthropic giving is likely to decline. Charitable contributions to US colleges and universities, both public and private, reached nearly \$30 billion in 2007, the most recent year for which data are available (see Exhibit 24). Over the decade to 2007, donations to education rose at an annual rate of 6.5%. In recent months, however, there have been plenty of anecdotal reports of sagging contributions, and continued growth at that historical pace seems unlikely to be sustained in the current economic climate. Any meaningful fall-off in contributions will further exacerbate the burden on already-strained endowments.

**Exhibit 24: Voluntary support to US higher education in 2007: \$29.75 billion**



Source: Council for Aid to Education.

- Universities could also suffer from constraints on funding from the National Science Foundation (NSF), which is the major source of federal support for many fields, including math and social sciences. The proposed 2010 federal budget would boost NSF funding from \$6 billion to \$7 billion, which would be a welcome support for the country’s long-term competitiveness. If the NSF budget is cut, however, this could compel universities to divert spending from other programs, in order to support

ongoing scientific research. The NSF also funds science and engineering education for elementary and high-school students, meaning that any cuts here could have a long-lasting impact on future science. In a positive development, the Obama administration has also expanded the grant-giving ability of the National Institutes of Health, which will benefit medical schools and other graduate-level education and research.

- Students will feel the pinch directly. Tuition is generally still rising above the rate of inflation, and financial aid budgets are increasingly squeezed. Competition at well-regarded state universities (where tuition is typically considerably lower, at least for in-state residents) is likely to increase significantly. The federally-supported student loan program is currently in flux, and is becoming the subject of a heated political debate. (Briefly, the Federal Reserve's TALF (Term Asset-Backed Securities Loan Facility) program includes support for securities backed by student loans, but the administration's proposed budget envisions shifting student loans into a direct lending program. The Obama administration estimates that direct lending would generate savings of more than \$4 billion per year, which would be reinvested in further student aid.)

With unemployment rising rapidly – we forecast it to reach 10% by late 2010, up from 8.5% today and just 4.6% at the start of 2007 – the opportunity costs of remaining in school are falling. This may induce some students to remain in high school. Typically, low unemployment rates encourage students to leave school early, while high unemployment discourages this. Graduate schools are also likely to benefit from higher interest among young people facing a difficult job market.

On the other hand, financial pressures will almost certainly dissuade some students from advancing to college. Household financial challenges may drive some students out of school. Working for more than 20 hours a week significantly raises the risk that students will drop out of high school, or enroll in college but not graduate. Integrating work and school more effectively, perhaps through flexible scheduling and greater institutional support, may help universities to retain students under financial pressure.

Higher education will not be the only sector to feel the costs of the recession. In the United States, public primary and secondary schools are chiefly funded through local property taxes. As house prices continue to tumble – our US Economics Research team expects that the national housing market will fall about 20% further from current depressed levels – and the local tax base dwindles, these schools too are likely to suffer. Funding from the federal fiscal stimulus bill is designed to offset some of this burden, but it is unlikely to make up for the magnitude of the decline, particularly in areas worst-hit by the housing downturn.

## VI – Conclusions: investing in education

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Education is a highly complex subject, full of concerns about equality and fairness, and one where beliefs are held passionately and views often expressed emotionally. We do not wish to wade into debates about such contentious issues as voucher systems or standards for teachers. We see these issues as the “how” of education; from an economics standpoint, we are more concerned about the “what” and the “who”. “What” is being taught will matter tremendously as the United States competes in the global economy in coming decades. “Who” has access will affect society at large.

Whatever the “how” turns out to be, strengthening the US educational system is a long-term project, and the full results will likely not be seen for a decade or more, when today's students enter the labor force. But its importance cannot be overstated – education will drive productivity growth, national competitiveness, improved living standards and lower income inequality. The \$50 billion earmarked for education in the proposed 2010 federal budget will be welcome, and putting it to use in refurbishing classrooms and replacing

textbooks should help to stimulate the economy in the near term. Over the longer term, it is important that this money be spent thoughtfully. Important efforts should include:

- **Stemming the long decline in men's education.** This is a complex issue, one that touches on many fields beyond education. But one helpful step would be to stress the importance of skills and education in the workforce of the future. Men who drop out of school often cite their belief that they do not 'need' more formal education to get a job. While that may be true in the short-term, it is almost certainly not true over the long run for today's students.
- **Protecting low-income students** from being disproportionately hurt by the recession. Household financial pressures and university budgetary constraints may squeeze out some low- and middle-income students as the economy worsens.
- **Keeping young mothers in school.** As we have shown in our previous work on women's education in developing countries, the link between mothers' education and their children's future is especially strong. This is true in developed countries as well. Children of educated women tend to have better health and nutrition, and are more likely themselves to be educated. This self-reinforcing cycle means that women's ascendancy in higher education may pave the way for solid gains in human capital and productivity among future generations. Greater social and financial support may be needed to help young mothers complete high school, while colleges would do well to focus some of their resources on helping these women continue their education.
- **Improving support for people who would otherwise drop out of high school,** and encouraging graduates to make the transition to college. Stressing the flexibility that education and skills give, and drawing clearer links between school and the world of work, might help to reduce the numbers of opportunistic dropouts, especially among men. The Obama budget proposes a new, five-year, \$2.5 billion Access and Completion Incentive Fund to support state efforts to help low-income students complete college.
- **Steering appropriate students into a two-year associate degree** rather than a four-year program. From an economic perspective, the wage disparity between recipients of a two-year degree and those who complete only "some college" – including those who drop out of four-year schools – is more than 10% per year. Attending a four-year program on a part-time basis is a less effective alternative, because part-time students are less likely to graduate than are full-time students. For students who do not anticipate that they will be able to complete a four-year program, whether for financial, family or other reasons, it may well be better to acknowledge this early and enroll in an associate degree program. For students who have a specific career in mind and want to acquire the necessary skills, an associate degree is also probably the best choice.
- **Reworking the curriculum,** not only to improve basic skills like math and reading, but also to foster the development of attributes valued by the higher levels of the labor force – among them problem-solving, creativity and persistence.

On a broader scale, thought should be given to the fundamental question of how to measure education. Typically education is measured in inputs – number of teachers, hours in the classrooms, subjects taught, funds per student. But what really matters is the output – how much students learn and how well they are prepared for work and citizenship. Standardized testing, at the state or national level, provides one way to measure the output. But, as the contentious experience of the No Child Left Behind Act shows, designing a system that is robust enough to be useful yet flexible enough to accommodate community preferences is challenging, to say the least. The success of the Advanced Placement curriculum over the past decade is one helpful step, and it suggests that standards that are adopted voluntarily are more likely to work than ones that are rigidly imposed.

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