
SCHOOL CHOICE AND ECONOMIC GROWTH

A Research Synthesis on How Market Forces
Can Fuel Educational Attainment

Raymond J. **Keating**

FEBRUARY 2015

About the Friedman Foundation for Educational Choice

The Friedman Foundation for Educational Choice is a 501(c)(3) nonprofit and nonpartisan organization, solely dedicated to advancing Milton and Rose Friedman's vision of school choice for all children. First established as the Milton and Rose D. Friedman Foundation in 1996, the Foundation promotes school choice as the most effective and equitable way to improve the quality of K-12 education in America. The Friedman Foundation is dedicated to research, education, and outreach on the vital issues and implications related to school choice.

SCHOOL CHOICE AND ECONOMIC GROWTH

A Research Synthesis on How Market Forces
Can Fuel Educational Attainment

Raymond J. **Keating**

FEBRUARY 2015

Table of Contents

Executive Summary	1
Introduction	3
Public Views of U.S. Education	4
The Economics of Education and the Individual	7
Investment and Productivity	7
Educational Attainment and Employment.....	8
Educational Attainment and Earnings	10
The Economics of Education and Economic Growth	15
Education and Entrepreneurship.....	19
Employment and Productivity.....	19
Costs of Educational Failure	20
The Larger Economic Environment Matters	21
The Economics of Markets and Education.....	22
School Choice Not a Zero-Sum Game	25
School Choice and Performance	26
District of Columbia.....	26
Milwaukee.....	27
New York City.....	27
Broader Evaluations: U.S.....	28
Higher Earnings.....	28
Reduced Taxpayer Costs	29
Broader Evaluations: International	29
What School Choice Would Mean for the Economy.....	31
Ten Key Channels for Expanded School Choice to Feed Economic Growth.....	32
Conclusion	35
Notes	37
About the Author	41

List of Figures

Figure 1: Labor Force Participation Rate by Education Attainment (25 Years and Older), 2012	9
Figure 2: Employment-Population Ratio by Education Attainment (25 Years and Older), 2012.....	9
Figure 3: Unemployment Rate by Education Attainment (25 Years and Older), 2012	10
Figure 4: Median Weekly Earnings by Education Attainment (Employed Full Time, and 25 Years and Older), 2012.....	11
Figure 5: Median Weekly Earnings for Men by Education Attainment (Employed Full Time, 25 Years and Older), 2012	11
Figure 6: Median Weekly Earnings for Women by Education Attainment (Employed Full Time, 25 Years and Older), 2012	12

Executive Summary

Economic growth typically results when businesses, workers, investors, and entrepreneurs are free to compete, innovate, and work to better serve consumers by supplying new or improved goods and services. These incentives govern the marketplace, and when built upon a sound foundation of property rights, the rule of law, open trade, minimal governmental burdens, and price stability, economic growth and prosperity emerge.

Unfortunately, when it comes to primary and secondary education in the United States, the entire structure runs counter to such a market system. Given the dominant role of government in educating children, and the accompanying political decisions, special interest influences, lack of real competition, and the rewarding of failure with increased budgets and staff, the entire public education structure is not designed to generate needed academic results.

True choice and competition in education would shift that system's incentives dramatically, with the education entrepreneurs and providers focused on supplying added value to the customers, that is, students and parents. The resulting improvement in educational quality and attainment would raise productivity, personal earnings, and the overall economy.

Expanding school choice and competition—ideally, transforming a government monopoly into a universal school choice system—would significantly boost both educational attainment and education quality. In turn, economic growth would be spurred through an assortment of channels. Here are 10 ways school choice would aid economic growth:

1. Higher Productivity. Research shows improved education via vastly expanded—preferably universal—school choice enhances economic growth by boosting productivity. Greater productivity increases the contribution that employees make to individual businesses, and in turn, positively affects overall economic output.

2. Enhanced Educational Attainment. The evidence is clear that, on average, improved educational attainment means greater labor force participation, higher employment levels, reduced unemployment, and increased earnings.

3. Improved Educational Quality. The economics literature confirms the common sense notion that it's not just about accumulating more years of education and degrees, but very much about educational quality when it comes to improving productivity, which in turn enhances economic and income growth. Given the improvements in educational quality experienced even in cases of limited school choice and competition, it is clear that robust educational choice would improve educational quality, and thereby, boost economic growth via increased productivity, employment, and income.

4. Greater Entrepreneurial Success. Evidence points to a link existing between years of schooling and entrepreneurial success, including higher earnings, improved growth, and increased chances for business survival. Given the importance of entrepreneurship to economic growth, this is a critical link between education and economic growth.

5. Expanded Innovative Capacity. Innovation—that is, the market introduction of new or improved goods, services, or processes—is central to economic growth. Improved education expands the economic potential and impact of innovation.

6. Technology Investments and Increased Productivity of Capital. Improved education for those using technology and other capital tools makes the investments in those technologies and other forms of capital more valuable, that is, more productive. At the same time, better technology increases the demand for better-educated individuals (such as college graduates).

7. Better Business Performance. From a business standpoint, firms derive clear benefits from improved education levels and skills among employees. Workers become more productive and more valuable, and

enhance the performance of the business by being better able to, for example, work with technology, adapt to new and changing tasks, communicate with and understand other workers, contribute to and cooperate in teams, and so on. For good measure, businesses need not spend as much on training, especially on basic skills and competencies that should be developed with a sound education.

8. Stronger International Competitiveness. The competitiveness of U.S. workers and businesses in the international marketplace is tied directly to productivity. Quite simply, U.S. workers earn more than people elsewhere around the globe because of the productivity of the U.S. workforce. Improvements in educational attainment and quality mean that the U.S. could maintain, or even extend, its edge in productivity.

9. Lower Taxpayer Costs. Studies have shown that expanded school choice and competition would contribute to reduced taxpayer costs in several ways, including lower per-pupil spending, and less spending on the problems resulting from poor educational quality.

10. Education Sector Efficiencies. Whenever an industry becomes more innovative, efficient, and productive, that's a plus for the overall economy. It would be no different with primary and secondary education itself with a move to universal school choice that resulted in increases in entrepreneurship, innovation, competition, efficiency, and value to the consumer. Consider, for example, that in 2009-10, more than \$638 billion was spent on public primary and secondary schools in the U.S. That's equivalent to 4.3 percent of the nation's GDP. Transforming education from a government-dominated and regulated system to a dynamic, competitive, consumer-focused industry would be another clear positive for economic growth.

Understanding how the economy works and the role of education, it's clear that a vast expansion in school choice, or in particular, a complete shift to universal choice would be a major positive for the economy and growth. The magnitude of such a shift is speculative to

a certain degree, but given the importance of education in such areas as productivity, employment, earnings, entrepreneurship, innovation, competitiveness and governmental costs, it is unmistakable that the impact on economic growth would be positive and substantive.

To achieve true excellence in education that will in turn help to accelerate economic growth, government control and regulation must be replaced by true choice and competition whereby entrepreneurs and educators work to better serve their customers, i.e., students and families.

Introduction

Despite all of the noise, debates, and controversies generated in political arenas, on television and radio, via the Internet, and even in assorted classrooms, the basics of how economic growth and prosperity are generated are rather straightforward. There is no secret sauce or mystery at work.

What works are private enterprises and entrepreneurs freely investing, innovating, and working to create value for consumers. Consumer sovereignty reigns; that is, consumers ultimately decide what succeeds and what fails in the marketplace.

This market process is guided by price, profit and loss signals (directing where and how resources should be allocated), and disciplined by competition (whereby businesses and entrepreneurs strive to become more efficient and innovate to serve their customers better, gain market share, and earn profits). To gain and increase income or earnings, individuals and businesses must become more productive and more valuable in terms of their skills and services or goods provided to others—that is, more valuable to those they serve.

These are the incentives that govern the marketplace, and when built upon a sound foundation of property rights, the rule of law, open trade, minimal governmental burdens, and price stability, economic growth and prosperity emerge. It is this market economic system or structure that enabled, or incentivized, Americans to build and sustain the most productive economy in the world and, arguably, in all of history.

With regard to primary and secondary education in the United States, however, what's most striking, perhaps, is its entire structure runs counter to the market system that has built successful, competitive businesses and industries, and has created economic growth.

Consider the following, for example, about the U.S. education system:

- Private enterprise is a minor, heavily regulated player. Entrepreneurs are limited in finding new

and improved ways to create value for consumers. Instead, government, which is subject to very different incentives than the private sector, provides most primary and secondary education services.

- Consumers do not make the ultimate decisions about which schools succeed or fail. Those critical decisions overwhelmingly are left to politicians and their appointees.
- Price and profit and loss signals as to how resources are allocated are nonexistent. Instead, resource allocation is governed by political decisions, influenced and guided by political majorities, special interests, and political incentives.
- Competition is limited to a few, very limited cases or to higher-income individuals, and that competition is so restricted that it is more accurately termed as "quasi-competition." Primary and secondary education in the U.S. overwhelmingly operates as a government monopoly.
- In education, income and earnings have little to do with productivity and creating value for consumers. Instead, they are based on assorted criteria established within a governmental/political system, again, guided by political and special interest influences and incentives. In fact, the public education system has long operated under the worst possible incentives structure whereby failing schools usually are rewarded for such failure with increased budgets and staff.

In the end, the structure of the entire U.S. public education system is not designed to generate the academic results states' economies need to grow. As noted later in this report, Nobel Prize-winning economist Milton Friedman understood and identified these problems decades ago.

At the same time, though, it is widely recognized that investments in human capital—in this case, for education—are critical to America's economic well-

being. In fact, linking the quality of education to U.S. economic health and the nation's competitiveness is not new. It has been going on at least since the late 1950s, when the U.S. was challenged by the Soviet Union's launch of Sputnik, right up to the administration of President Barack Obama.¹

Indeed, education does matter a great deal for children and their futures, including their economic success, with the benefits of expanded and improved education, in turn, accruing to the entire economy as well. Moreover, most parents want to see their children succeed in life, and recognize, albeit to varying degrees, the role education plays in being able to succeed, whether focused on professional or personal achievement.

At the same time, however, research has shown parents have mixed, often negative views regarding the quality of and outcomes in U.S. public schools. More broadly, the American public is highly skeptical of the quality of public education.

Public Views of U.S. Education

From June 21 to July 22, 2013, the Associated Press-NORC Center for Public Affairs Research (with funding from the Joyce Foundation) undertook a national survey of parents or guardians with children who completed a grade between kindergarten and senior year of high school in the 2012-13 school year.² Key results illustrated the mixed, conflicting views parents have about U.S. primary and secondary education. For example:

- When assessing the quality of education at their local public elementary schools, 64 percent said excellent or good, versus 31 percent who said fair or poor. In addition, 54 percent said the quality of education at their local public middle and high schools was excellent or good, with 33 percent ranking local middle schools as fair or poor, and 41 percent saying local public high schools were fair or poor.
- Regarding the quality of education in U.S. public

schools overall, the approval numbers deteriorate substantially, as only 38 percent of parents gave a rating of excellent or good, whereas 37 percent said fair, and 16 said poor or very poor. That's 53 percent of parents saying that overall American public schools are fair or poor versus 38 percent who generally rate American public schools as excellent or good.

- The story grew murkier and more mixed even for local public schools regarding views on performance in terms of preparing for life after high school. As for doing a good job at preparing students for college, 57 percent of parents said their local public schools were doing an excellent or good job, with 41 percent saying fair or poor. In terms of preparing good citizens, 55 percent said their local public schools did an excellent or good job, and 43 percent said fair or poor.
- Though the approval numbers were underwhelming on preparation for college and being citizens—in particular given the long and intense focus on trying to improve public education, including large amounts of taxpayer dollars spent—the numbers dropped further on preparation for the workforce and “surviving as an adult.” In terms of how their local public schools prepare students for the workforce, 45 percent of parents said good or excellent versus 49 percent saying fair or poor. As for “giving children the practical skills they will need to survive as adults,” 46 percent said good or excellent, whereas 52 percent said fair or poor.
- These views of public education contrast sharply with the assessment of private education: “Parents give higher marks to the education in U.S. private schools, with 61 percent saying it is good or excellent, 11 percent saying that it is fair, and just 2 percent saying that it is poor or very poor.”

However, another 2013 survey—*Schooling in America Survey: What Do Mothers Say About K-12 Education?* from the Friedman Foundation for Educational Choice—found more pessimistic views of local public

schools among mothers (“school moms”) having at least one child in preschool, elementary school, or high school.³ Consider:

- When comparing public and private schools in their local areas, 56 percent of school moms gave a grade of A or B for private schools; only 42 percent gave an A or B to public schools. Of the school moms giving grades, 82 percent gave private schools a grade of A or B, while just 44 percent gave public schools an A or B.
- For good measure, when asked if they had the decision to select any type of school, “what type of school would you select in order to obtain the best education for your child,” 42 percent of school moms answered private school, 36 percent said public school, 9 percent charter school, and 9 percent homeschooling. That means 51 percent would select a private sector option, and 60 percent a choice other than a regular public school.
- In addition, school moms were overwhelmingly pessimistic on the general direction of K-12 education, with 32 percent saying it is going in the right direction and 62 percent saying it is on the wrong track.

When moving to the broader population, assessments of public school quality decline notably. Gallup provided a look at responses to a broad array of questions relating to education issues on its website.⁴ Among recent findings:

- On the quality of U.S. public education as captured in a January 7-10, 2013, poll, 41 percent of Americans were very or somewhat satisfied, whereas 56 percent were somewhat or very dissatisfied.
- In an August 9-12, 2012, poll assessing the quality of U.S. education offered by different types of schools, 78 percent of Americans said excellent or good for independent private schools, versus 15 percent that said only fair or poor. Parochial or church-related schools earned 69 percent excellent

or good, with 23 percent saying fair or poor. Charter schools garnered 60 percent excellent or good, and 28 percent fair or poor. Homeschooling received 46 percent saying excellent or good, with 44 percent saying fair or poor. At the bottom were public schools, with 37 percent saying excellent or good versus 61 percent saying fair or poor.

These poll results line up with other surveys. For example, “The 2013 Education Next Survey”—a poll of American adults under the auspices of the Harvard Program on Education Policy and Governance—found:

The public holds the schools in its local community in higher regard than it holds the nation’s schools. Nearly half say that local public schools deserve a grade of either “A” or “B,” but only about one-fifth say the same for the nation’s public schools. But if the public thinks better of local public schools than it does of those in the nation as a whole, it is definitely more satisfied with local private schools than with public ones. Nearly three-fourths of Americans give private schools an “A” or “B”.... Just 5 percent give private schools a “D” or an “F,” as compared to 16 percent giving one of those low grades to local public schools and 23 percent giving those grades to the nation’s schools.⁵

Again, according to the Friedman Foundation’s 2013 survey,⁶ among American adults, 57 percent gave a grade of A or B to local private schools and 39 percent gave grades of A or B to local public schools. Also, when asked “what type of school would you select in order to obtain the best education for your child,” 45 percent answered private school, 34 percent said public school, 10 percent charter school, and 7 percent homeschooling. Once more, that means 52 percent would select a private sector option, and 62 percent a choice other than a regular public school. For good measure, 62 percent of adults believe that K-12 education is on the wrong track, compared with 26 percent saying it is heading the right direction.

As noted in the pages to come, clear links exist between educational attainment and quality with earnings, and educational attainment and quality with employment.

Those education-economic linkages speak to the contributions that investments in human capital, resulting in more highly educated individuals, make in the marketplace—namely, in terms of creating more productive individuals, and thereby boosting U.S. competitiveness and economic growth. The evidence is clear that education does matter for the individual, in terms of achieving success, and for the economy, in terms of enhancing economic growth. The importance of a good education is one of the very rare issues whereby the public, political leaders on both sides of the aisle, and economists of most stripes actually agree.

Given the widely recognized importance of education to the economic health of individuals and the nation, it's even more shocking that the U.S. decided to, and overwhelmingly continues to, ignore what works in terms of producing quality goods and services, in favor of a governmental system without any substantive evidence showing that government has ever created high-quality products in an efficient manner. The poll results previously mentioned, even when viewed under the best possible light for those supporting the current education system, reveal significant displeasure with the performance of public education.

Indeed, public schools ranked dead last in public approval when compared with all other major forms of education; e.g., private independent schools, parochial schools, charter schools, and homeschooling. This should surprise no one. When the customers are not the primary focus of an enterprise, the performance of that enterprise suffers accordingly, and that poor performance, despite the oft-enormous voices and resources claiming success and achievement, will be widely recognized.

As explained in this report, if the U.S. wants to improve education for the benefit of each child and spur the nation's economic growth and competitiveness, a stagnant, government monopoly must give way to true competition, whereby the focus is on serving the actual student, rather than pandering to those with the greatest political power and influence. As is the case in practically every other area of America's economy, what's needed is a wide array of entrepreneurs,

enterprises, and educators competing and working to create added value in education, with consumers—that is, students, parents and guardians—deciding in the end what succeeds and, yes, what fails.

The Economics of Education and the Individual

Why do certain jobs pay more than others do? Why do some people have higher earnings?

To some, the answers to such questions might seem random or mysterious, even disconnected from what's deemed important by many. For example, it's easy to find individuals annoyed by CEOs of large businesses earning compensation levels multiple times what's earned by those on the assembly line, covering the sales floor, or driving the trucks. Others are frustrated by people in "less important" fields—such as sports and entertainment—making so much more than those involved in critical work of, for example, educating children.

However, determinants of compensation in the marketplace are neither random nor mysterious. As is the case with other goods and services, labor compensation is about demand relative to supply, with various factors influencing supply and demand. For example, skills vary widely. If one possesses highly specialized skills, these will lead to higher pay if those skills are in demand.

When talking about skills and other factors influencing pay, compensation is largely about two things: productivity—generally defined as output per hour worked—and value—how much value consumers derive from that individual's output. The more productive an individual is and the more valuable her output, the higher her earnings.

From the perspective of a business, the greater a worker's contribution is to a firm's revenue, due to productivity, the greater the compensation level. Economists refer to this as the "marginal revenue product" of a worker.

So, what about the pay earned by CEOs, entertainers, and professional athletes?

A CEO makes decisions that are central to determining the firm's profitability and very existence, thereby affecting employees, customers, and other enterprises with which the firm does business. For good measure, business

leaders of large companies have more to deal with today than in decades past, including more intense global competition, rapidly changing technology, and increased government oversight. In the end, the CEO greatly impacts the success or failure of the firm's products, the firm's revenues and profits, whether workers have jobs or not, and how productive those workers will be (with worker pay determined accordingly). The CEO, therefore, is compensated accordingly in the market.

When it comes to highly paid entertainers and sports stars, such individuals often generate considerable revenue and are compensated accordingly because their highly specialized and rare skills are in demand by consumers. For example, not everyone has the skills needed to play shortstop for the New York Yankees, quarterback the Denver Broncos, or direct a string of blockbuster movies.

Quite simply, the supply of people who can be teachers, factory workers, sales representatives, truck drivers, or authors of research is much greater compared to the individuals who can run an entire business profitably, direct or star in movies or popular television shows, or play and excel in major league sports, for example.

The key in terms of compensation is to make oneself as valuable to others as possible, that is, to be as productive as possible and produce something valued by consumers. Indeed, once one moves away from emotionally charged complaints over CEO and entertainer pay, the centrality of productivity to earnings seems to become much clearer and more reasonable to a wide swath of the populace. As illustrated by their actions—for example, by earning a college degree or choosing the best education options for their children—people indicate that they do understand the link between productivity and economic success or financial security. Many recognize the benefits of productivity-enhancing investments to earnings potential.

Investment and Productivity

Investments that improve the productivity of labor fall into two basic areas. First, investments made in

technology and physical capital, such as improved computers, telecommunications, machinery, tools, and facilities, affect the productivity of the individuals using those instruments and technologies. Therefore, faster, more powerful computers improve productivity in the wide array of jobs using computers, more advanced manufacturing equipment improves the productivity of factory workers, and so on. The surge in U.S. productivity from 1996 to 2004, for example, has been widely attributed to the production and use of information technology.⁷

Second are investments in human capital, that is, investments in the forms of practice, experience, knowledge, and education. It is the investment in education that warrants greater attention here.

Again, when it comes to parents focusing on the education of their children, and adults considering higher education, investing in education to ultimately boost productivity and earning power is commonly recognized.

This concept is taught in basic economics classes and textbooks. For example, the link between productivity and earnings, and how this incentivizes individuals regarding human capital investment, was neatly communicated by economists James D. Gwartney, Richard L. Stroup, Russell S. Sobel, and David A. Macpherson in their introductory economics textbook:

In a competitive market setting, productivity—that is, output per worker—and earnings are closely linked. When workers are more productive, the demand for their services will be higher, and therefore they will be able to command higher wages. High productivity is the source of high wages. When the output per hour of workers is high, the real wages of the workers will also be high.

In turn, the link between productivity and earnings provides individuals with strong incentives to develop their talents and utilize their resources in ways that are helpful to others. As the value of goods and services supplied to others increases, there will also be a tendency for one's earnings to increase. If you want to earn a lot of money, you had better figure out how to provide services that are highly valued by others....

Productivity differences are an important source of differences in earnings among individuals.⁸

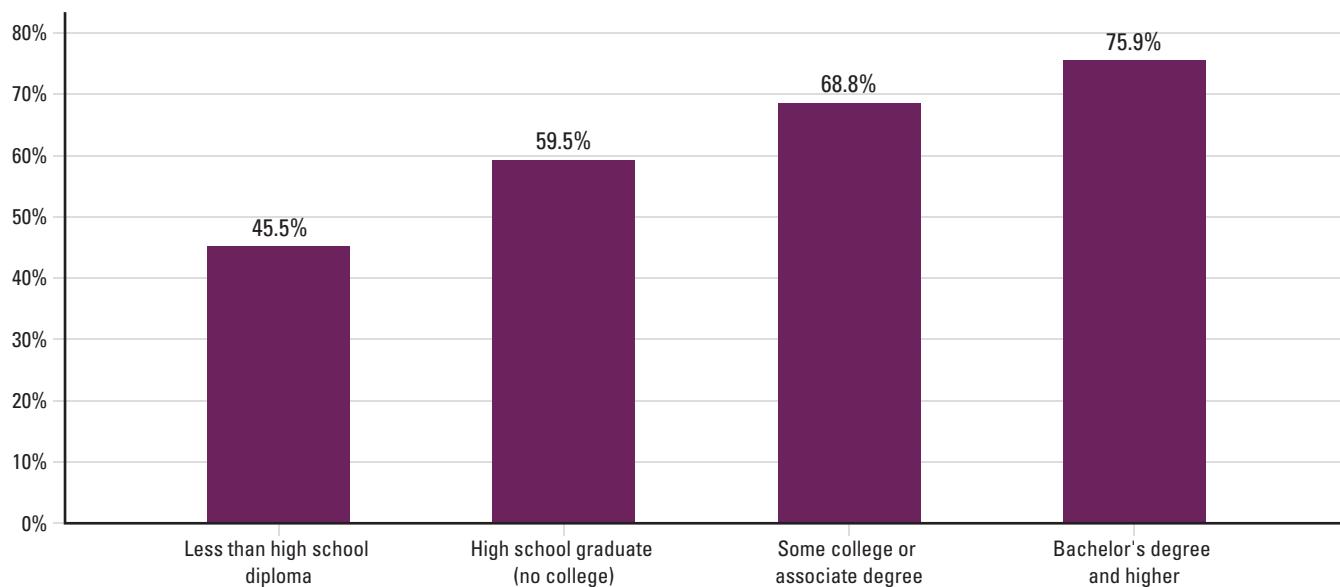
Again, the link between education and enhancing one's earnings is, in effect, about boosting an individual's productivity. This kind of investment in human capital generates returns, on average. That is most evident in differences by educational achievement in terms of labor force participation, employment, and earnings.

Educational Attainment and Employment

First, as noted in Figure 1 (next page), the higher the level of educational attainment, the higher the labor force participation rate. That is, human capital investment in education makes it less likely that individuals, on average, will drop out of the workforce; for example, such as by being discouraged due to a lack of work opportunities. At the low end, in 2012, the labor force participation rate for those 25 years or older with less than a high school diploma was a mere 45.5 percent, compared with 59.5 percent for high school graduates with no college, 68.8 percent with some college or associate degree, and 75.9 percent with a bachelor's degree and higher.

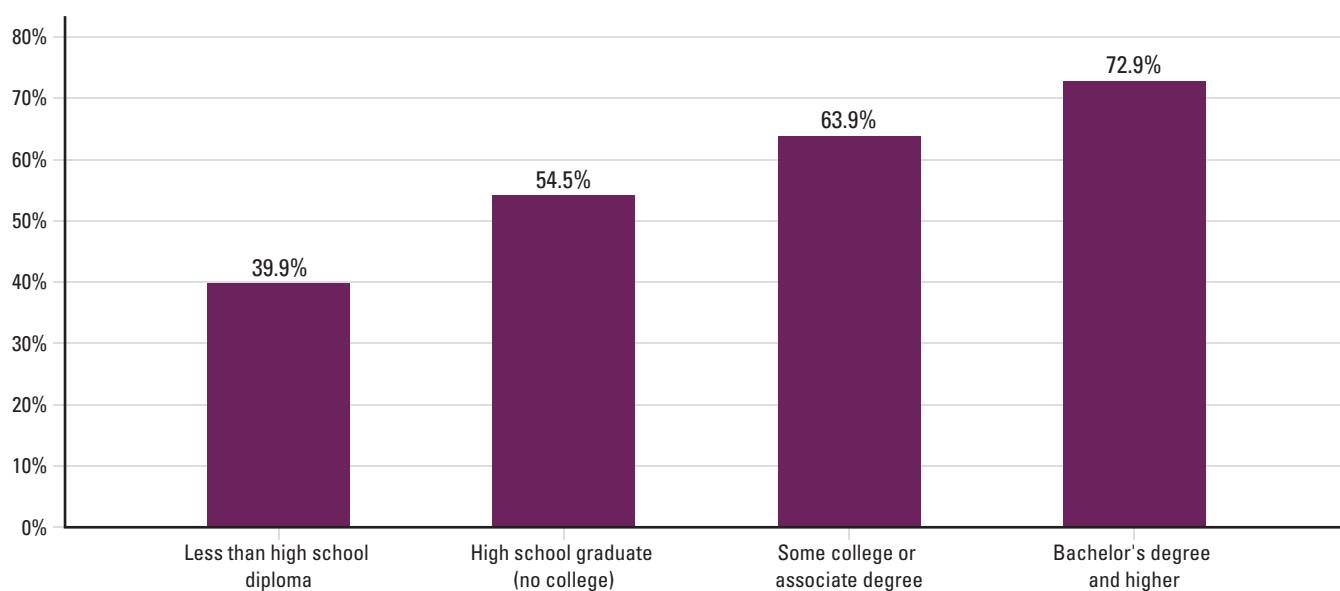
Second, as highlighted in Figures 2 and 3, there are considerable differences by educational attainment in terms of both the employment-population ratios and unemployment rates. Higher educational attainment, on average, makes individuals more productive and more valuable for businesses, for example, and therefore it follows that at higher levels of education attainment, higher employment-population ratios and lower unemployment rates will be observed.

FIGURE 1 Labor Force Participation Rate by Education Attainment (25 Years and Older), 2012



Sources: "Table A-4. Employment Status of the Civilian Population 25 Years and Over by Educational Attainment," U.S. Bureau of Labor Statistics, last modified Feb. 05, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpsatab4.htm>.

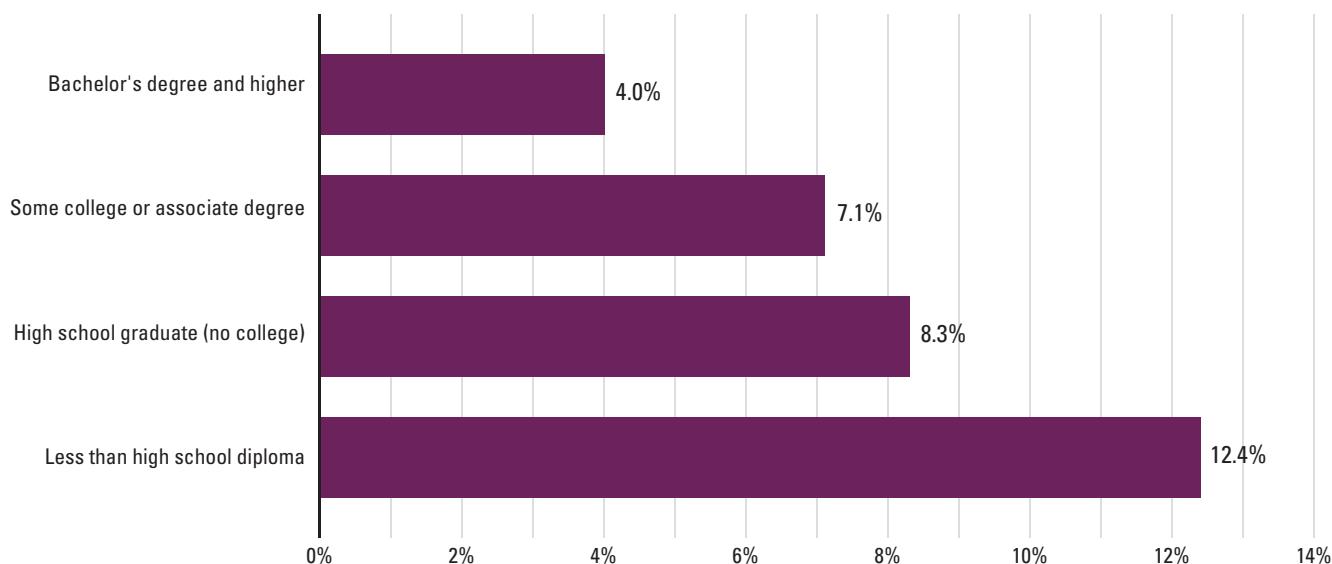
FIGURE 2 Employment-Population Ratio by Education Attainment (25 Years and Older), 2012



Sources: "Table A-4. Employment Status of the Civilian Population 25 Years and Over by Educational Attainment," U.S. Bureau of Labor Statistics, last modified Feb. 05, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpsatab4.htm>.

FIGURE 3

Unemployment Rate by Education Attainment (25 Years and Older), 2012



Sources: "Table A-4. Employment Status of the Civilian Population 25 Years and Over by Educational Attainment," U.S. Bureau of Labor Statistics, last modified Feb. 05, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpsatab4.htm>.

In 2012, the employment-population ratio for those 25 years or older with less than a high school diploma was 39.9 percent, compared with 54.5 percent for high school graduates with no college, 63.9 percent with some college or associate degree, and 72.9 percent with a bachelor's degree and higher.

The unemployment rate for those with less than a high school diploma registered 12.4 percent, whereas it was 8.3 percent for high school graduates with no college, 7.1 percent with some college or associate degree, and 4.0 percent with a bachelor's degree and higher.

When it comes to participating in the labor force, employment levels, and the unemployment rate, the differences by educational attainment levels are unmistakable. The higher the level of educational attainment, the higher the labor force participation rate, the higher the employment-population ratio, and the lower the unemployment rate.

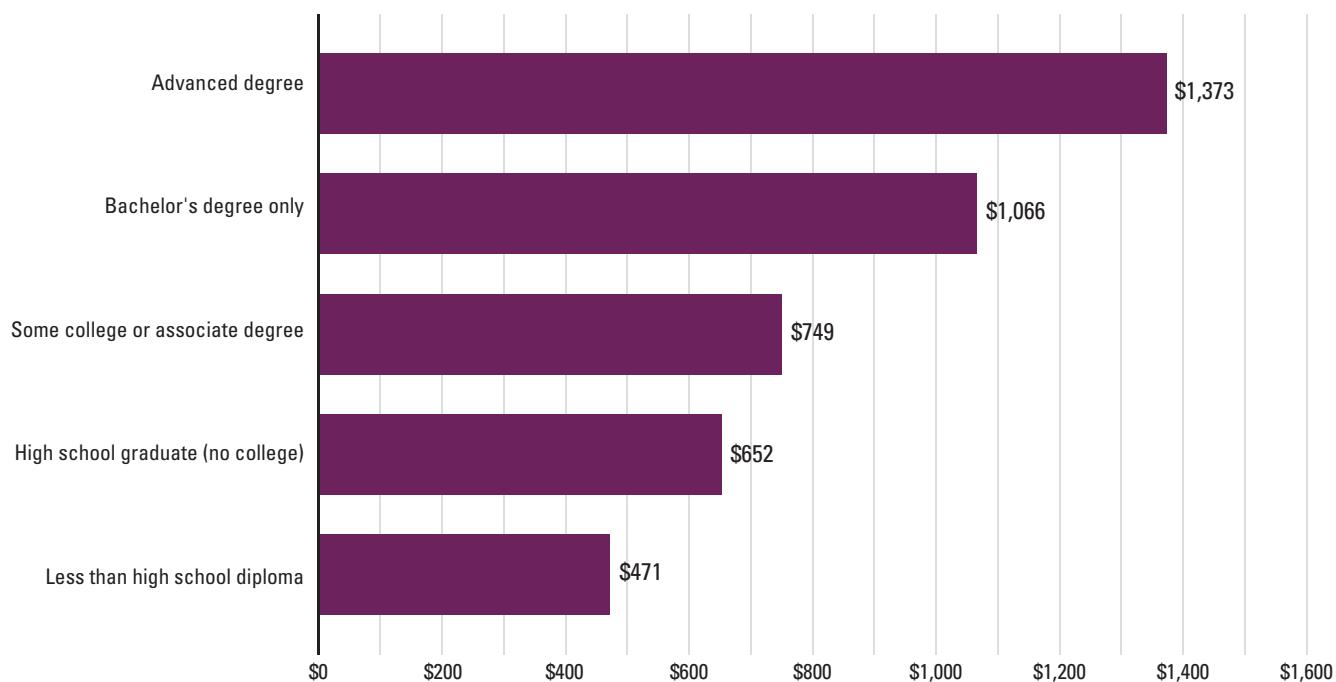
Educational Attainment and Earnings

The disparity between median earnings at different education attainment levels can be rather striking as well.

Figure 4 (next page) shows the differences in median weekly earnings by educational attainment for those employed full time and 25 years and older. Consider the jump in earnings at various steps along the way. The median weekly earnings in 2012 for a high school graduate with no college were 38.4 percent higher than the median for those without a high school diploma. The median earnings with a bachelor's degree only were 63.5 percent higher than the median earnings for a high school graduate with no college. From top to bottom, consider that the median weekly earnings for those with an advanced degree were 191.5 percent higher than median earnings for those without a high school diploma.

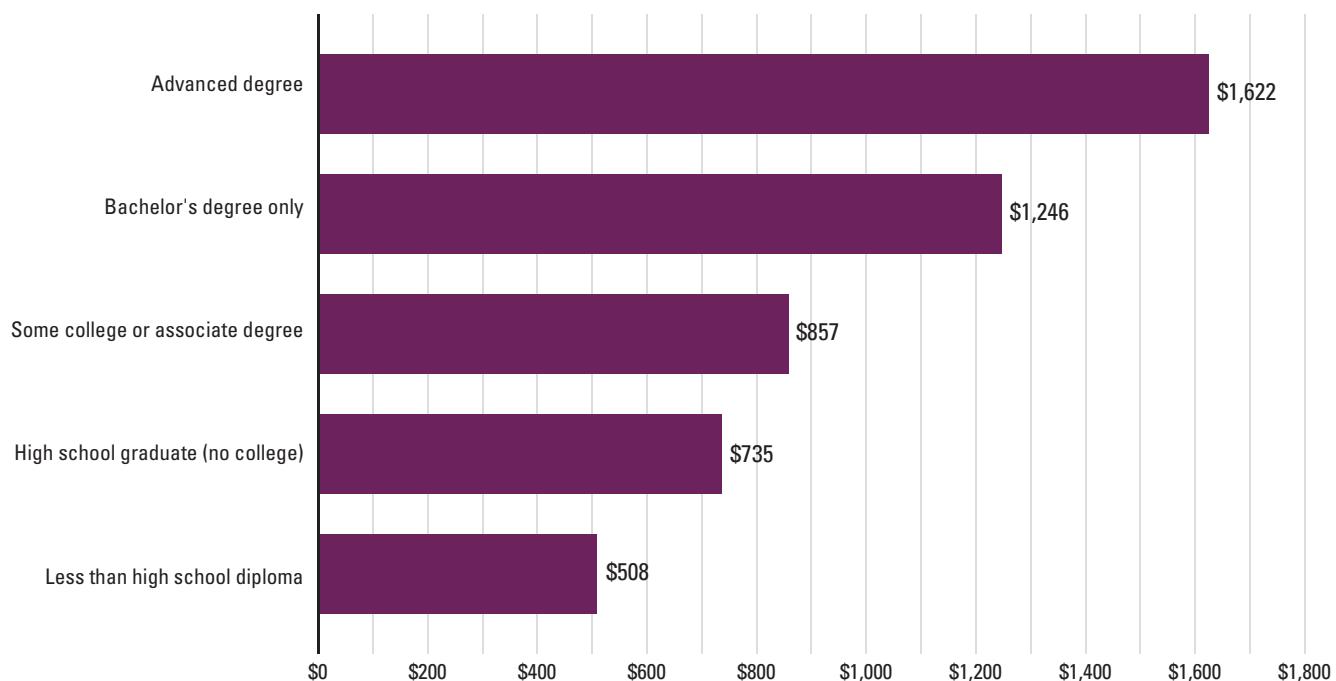
Figures 5 and 6 show similar differences in median earnings at varying levels of education attainment for both men and women, showing the same general disparities at varying levels of education.

FIGURE 4 Median Weekly Earnings by Education Attainment (Employed Full Time, and 25 Years and Older), 2012



Sources: "Table 5. Quartiles and Selected Deciles of Usual Weekly Earnings of Full-time Wage and Salary Workers by Selected Characteristics, Quarterly Averages, Not Seasonally Adjusted." U.S. Bureau of Labor Statistics, last modified July 20, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpswktab5.htm>.

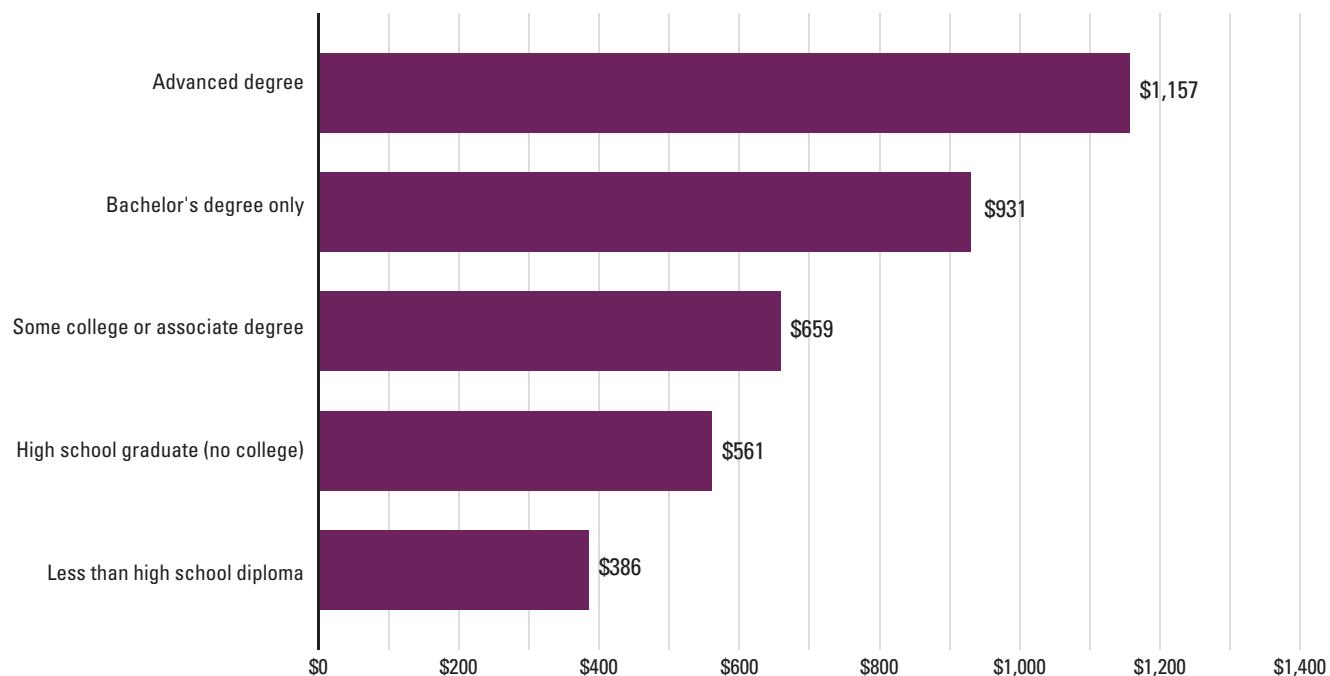
FIGURE 5 Median Weekly Earnings for Men by Education Attainment (Employed Full Time, and 25 Years and Older), 2012



Sources: "Table 5. Quartiles and Selected Deciles of Usual Weekly Earnings of Full-time Wage and Salary Workers by Selected Characteristics, Quarterly Averages, Not Seasonally Adjusted." U.S. Bureau of Labor Statistics, last modified July 20, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpswktab5.htm>.

FIGURE 6

Median Weekly Earnings for Women by Education Attainment (Employed Full Time, and 25 Years and Older), 2012



Sources: "Table 5. Quartiles and Selected Deciles of Usual Weekly Earnings of Full-time Wage and Salary Workers by Selected Characteristics, Quarterly Averages, Not Seasonally Adjusted." U.S. Bureau of Labor Statistics, last modified July 20, 2010, accessed May 2014, <http://www.bls.gov/webapps/legacy/cpswktab5.htm>.

Based on these marked differences, it's clear that investments in human capital as reflected in higher education attainment make substantive differences in terms of productivity, and therefore, employment and earning opportunities. Of course, when choosing which human capital investments to make, potential gains in employment and earnings must be weighed against the direct costs of such investments, as well as the lost earnings when individuals are pursuing their education rather than perhaps working full time.

But even with such caveats, the links between higher educational attainment, productivity, and earnings appear quite strong. A general review of the economic literature further confirms this.

For example, Yolanda K. Kodrzycki, assistant vice president and economist at the Federal Reserve Bank of Boston, summarized, "As has been widely acknowledged and analyzed, educational attainment has been of growing importance in determining income, particularly in the United States, which has relatively little regulation or centralized coordination of pay scales compared to

most other nations. Less-educated persons tend to be out of work more frequently than highly educated persons are. Moreover, during the past couple of decades, even full-time employment has been associated with declining real earnings over time for the less educated. Meanwhile, college graduates have enjoyed a growing payoff to their education."⁹

Even after considering the issues of college costs and lost income while pursuing a degree, the benefits remain. Economist Maria E. Canon and research support coordinator Charles S. Gascon, both at the Federal Reserve Bank of St. Louis, reported, "Many factors influence a high school graduate's decision to enter college. One of the main elements is the college wage premium, which allows a college graduate to catch up to a high school graduate upon degree completion. Although circumstances vary, reasonable estimates indicate that college graduates funding their entire cost of education with student loans will be able to surpass the lifetime earnings of a high school graduate by the time the former are in their mid-30s."¹⁰

College Wage Premium = Skill or Productivity Premium

Economist Maria E. Canon and research support coordinator Charles S. Gascon, both at the Federal Reserve Bank of St. Louis, noted the existence of a “college wage premium,” or a skill premium. Again, this is about productivity.

Canon and Gascon explain:

The skill premium measures the difference in the average earnings of four-year college graduates and that of nongraduates (i.e., dropouts and those who didn’t enroll). Recent estimates suggest the skill premium is between 65 and 75 percent, but estimates vary depending on the data source. This skill premium implies that, on average, a college graduate earns between 65 and 75 percent more than a high school graduate.

The skill premium exists due to differences in the supply and demand for different types of workers. Over time, the demand for college graduates (driven by factors such as better technology) has increased faster than the supply of graduates; at the same time, the demand for less-educated workers has declined. As a result, earnings have diverged....¹¹

Canon and Gascon also linked income disparity between educational levels as being a disparity in terms of skills in demand, or to put it another way, demand being dependent on differences in productivity (see “College Wage Premium” above). They observed, “The skill premium between college graduates and the other two groups has continued to increase. This is primarily due to a decline in real earnings of those without a college degree. Between 1980 and 2008, the college wage premium between male college graduates and those with some college increased by 26 percent. The gap between college and high school graduates grew even more: 33 percent.”¹² They also noted, “[H]igher education is accompanied by a significantly lower rate of unemployment.”¹³

Gary Becker, who won the Nobel Prize in Economic Sciences in 1992, summed up the general findings on

educational attainment this way: “Many studies have shown that high school and college education in the United States greatly raise a person’s income, even after netting out direct and indirect costs of schooling, and even after adjusting for the fact that people with more education tend to have higher IQs and better-educated, richer parents. Similar evidence covering many years is now available from more than a hundred countries with different cultures and economic systems. The earnings of more-educated people are almost always well above average, although the gains are generally larger in less-developed countries.”¹⁴

Of course, exceptions exist. For example, significant differences in earnings and employment levels exist between individuals for a variety of reasons, as well as between different college majors.

For example, the U.S. Census Bureau recently published estimated differences in potential lifetime earnings for those holding a bachelor's degree by college major and occupation.¹⁵ Though the average earnings over a 40-year career for a bachelor's degree holder were estimated at about \$2.4 million (compared with \$1.4 million for a high school graduate with no college), it was noted that "what one chooses to study in college and the careers pursued after college can also mean a difference of \$2.8 million."¹⁶ That is, "Arts and education majors working in service earn about \$1.3 million compared with engineering majors working in management \$4.1 million."¹⁷

In an analysis for the Federal Reserve Bank of Cleveland, economist Jonathan James reported the following about how choice of a college major and advanced degrees beyond a bachelor's factor into the college wage premium issue:¹⁸

- "The college wage premium is calculated as the ratio of the median hourly wage for those holding a bachelor's degree and the median hourly wage for those who have only completed high school.... These data show that the college wage premium increased rapidly through the 1980s and early part of the 1990s, rising from 40 percent to upwards of 70 percent. Since the late 1990s, the premium has experienced a much slower rate of growth, drifting at times below and above 80 percent. Importantly though, the premium has persisted at historically high levels through the 2000s, becoming an enduring feature of the U.S. wage structure."
- "Looking from 1977 to the present, advanced degree earners have experienced growth in wages over and above those with only a four-year degree, from around 20 percent in the early 1980s to around 30 percent today."
- "Even excluding advanced degree holders, the premium for a four-year degree alone remains extremely high at about 60 percent."
- "The college major choice has a potentially large effect on the value of a four-year degree. Comparing engineering majors, who have the highest four-year

premium at 125 percent, to psychology and social work majors, who have the lowest premium at 40 percent, yields a difference in the college major premium of 85 percent, which is the same size as the traditional measure of the college wage premium."

- "This evidence shows that the field of study has a large effect on potential earnings. Despite these large differences, it is important to acknowledge that at the median, there is a strong positive benefit for a four-year degree above a high school diploma, regardless of the degree field chosen."

Of course, differences between colleges matter as well. Increasing attention recently has been placed on the value of a college degree in the current economy. Although that debate goes beyond the scope of this paper, a point made in 2013 by Richard Vedder and Christopher Denhart in the *Wall Street Journal* is worth highlighting: "Declining academic standards and grade inflation add to employers' perceptions that college degrees say little about job readiness. There are exceptions. Applications to top universities are booming, as employers recognize these graduates will become our society's future innovators and leaders. The earnings differential between bachelor's and master's degree holders has grown in recent years, as those holding graduate degrees are perceived to be sharper and more responsible."¹⁹

In addition, the state of the overall economy has an impact on the potential returns on human capital investments. Canon and Gascon, for example, noted the impact of the late 2007 to mid-2009 recession, and the subsequent poor recovery, as having potential negative effects on college enrollment rates and college dropout rates: "Since the recession, the unemployment rate for college graduates has more than doubled, from under 2 percent in 2007 to a peak of 5 percent at the end of 2010, and roughly one-quarter of recent graduates were underemployed. Making things even worse, the economy has experienced a jobless recovery, and four years after the recession began, the unemployment rate is still elevated. These factors have increased the aggregate risk of pursuing a college degree."²⁰ At the same time, however, this is a relative situation. The continuing and substantial

differences in employment and earnings between various levels of education attainment are working in the opposite direction, that is, increasing incentives to earn a college degree.

Finally, the quality, not just the quantity, of education must be considered. In a 2007 World Bank report on education quality and economic growth, researchers Eric A. Hanushek and Ludger Woessmann noted that “higher quality, as measured by tests similar to those currently being used in accountability systems around the world, is closely related to individual productivity and earnings. Three recent U.S. studies provide direct and consistent estimates of the impact of test performance on earnings. They suggest that a one standard deviation increase in mathematics performance at the end of high school translates into 12 percent higher annual earnings. Part of the return to school quality comes from continuing school, perhaps a third to a half of the full return to higher achievement.”²¹

In day-to-day, on-the-job terms, and as most business owners will confirm, the education-productivity link comes down to the following: “Education and skills are important because they expand a worker’s capacity to perform tasks or to use productive technologies. In addition, better-educated workers can adapt more easily to new tasks or to changes in old tasks. Education may also prepare workers to work more effectively in teams because it enhances their ability to communicate with and understand their co-workers.”²²

In the end, on average, the fundamental links between education, productivity, and economic benefits are significant for individuals. That being the case, what enhanced education can mean for the overall economy will now be examined.

The Economics of Education and Economic Growth

Given the importance of productivity and human capital investment at the individual level, it follows that benefits tally up for the entire economy, including in terms of

what a higher quality labor supply means for economic, income, and employment growth, as well as business decisions and competitiveness.

Economist Alexander J. Field stated it quite plainly: “The growth of productivity—output per unit of input—is the fundamental determinant of the growth of a country’s material standard of living.... One cannot have sustained growth in output per person—the most general measure of a country’s standard of living—without sustained growth in output per worker.”²³

The introductory economics textbook cited earlier encapsulates how improved productivity affects the economy at large:

Productivity differences...are also an important source of earnings differences across countries. For example, the earnings per worker are vastly greater in the United States than they are in India or China because the output of U.S. workers is much greater than the output of their counterparts in those countries. The average worker in the United States is better educated, works with more productive machines, and benefits from more efficient economic organization than the average worker in India or China. Thus, the value of the output produced by the average U.S. worker is approximately ten times that produced by the average worker in India or China. American workers earn more because they produce more....

Increased physical capital, improvements in the skill level of the labor force, and advances in technology drive productivity and earnings growth. For several decades, both the educational level of American workers and the capital equipment per worker have steadily increased. Technological advances have also enhanced productivity and contributed to the growth of output and income.²⁴

Productivity in the U.S. versus places like China and India speaks directly to the issue of competitiveness of U.S. workers and businesses in the global economy. Under a system whereby products are traded globally—to the benefit of consumers in terms of, for example, price, quality, and choice—U.S. workers rank among

the world's top earners due to their productivity. This speaks favorably of U.S. competitiveness, and the central importance of current and future investments in physical capital, education, and technology.

Another way to look at the role of productivity and its impact on economic growth is to consider the time value of work or the time cost of goods:

Over time, the productivity of the average worker in America has increased substantially. This increased worker productivity is the key to higher real incomes and improved living standards....

As worker productivity grows, real incomes increase, and the time cost required to purchase products falls. This process generates higher living standards and brings goods that used to be luxuries, costing weeks' or months' worth of a worker's salary, within reach of most Americans.²⁵

To help clarify the link between education, productivity, economic output, and income, it is worth taking note of the two ways in which GDP (gross domestic product) can be measured. GDP is the market value of final goods and services produced in a country during a period of time (typically during a calendar year). GDP can be measured on an expenditure basis—that is, what is purchased by consumers, investors, government, and foreigners (in terms of net exports)—or on an income basis, that is, aggregate income payments, along with indirect business costs (indirect business taxes and depreciation) and net foreign income.²⁶ A key point to understand from this dual way of arriving at GDP is that output and income are tied together, and therefore, increases in output are the sources of increased income. That holds for individuals and for entire economies.

As for looking in greater detail at the contributions of productivity and educational attainment on the economy, it was summed up in a 1997 National Center for Education Statistics report as follows:

Economic research based on growth-accounting methods has shown that education has made a major contribution to growth in U.S. economic productivity.

Denison (1979) estimated that education contributed about 20 percent of the growth in national income per person from 1948 through 1973. Using similar methods and data for the same period, Jorgenson (1984) estimated that education accounted for 38 percent of the total labor contribution to U.S. output growth, or about 17 percent of growth overall. Recent estimates for the period from 1973 through 1984 (Sturm 1993) suggest that education accounted for about 15 percent of the growth in output per hour worked over this period. A more comprehensive study of productivity from 1948 through 1990 using growth accounting (U.S. Department of Labor 1993) showed that during this period, rising levels of educational attainment were responsible for about 14 percent of the growth in output per hour worked in the private sector.²⁶

Economist Yolanda K. Kodrzycki has pointed out, "The most detailed accounting of the role of educational attainment in U.S. growth is found in a series of papers by Dale Jorgenson and various co-authors. These studies conclude that increases in labor quality via rising educational attainment have had a measurable effect on economic growth in recent decades."²⁸

For example, in a 1993 study, Jorgenson and Barbara M. Fraumeni explained, "[I]nvestment in human beings, like investment in tangible forms of capital such as buildings and industrial equipment, generates a stream of future benefits.... One of the most important benefits of education is higher income from participation in the labor market. This increase in income is the key to understanding the link between investment in education and economic growth. People differ enormously in effectiveness on the job. Substituting more effective for less effective workers increases output per worker. More highly educated or better-trained people are more productive than less educated or poorly trained people. However, education and training are costly, so that substitution of people with more education and training requires investment in human capital."²⁹ The authors summed up: "The most important finding is that investment in human and nonhuman capital accounts for the largest part of U.S. economic growth during the postwar period."³⁰

In a 2004 report for the Federal Reserve Bank of New York, Jorgenson, Mun S. Ho, and Kevin J. Stiroh identified three sources of increases in average labor productivity: 1) capital deepening, or “the increase in capital services per hour worked,” that is, “workers become more productive if they have more or better capital,” 2) gains in labor quality, as “firms shift their hiring toward workers with more experience and education,” that is, the shift to a more highly educated workforce, and 3) total factor productivity, which is “often associated with technological progress....”³¹

Again, the focus here is on gains attributable to labor quality. In a subsequent, updated study, Jorgenson, Ho, and Stiroh estimated that, from 1959 to 2006, U.S. private output grew at 3.58 percent annually, with hours worked contributing 1.44 percentage points and average labor productivity 2.14 percentage points. That speaks powerfully to the majority of economic growth coming via productivity rather than simply working more—a clear case of working smarter via investments in capital deepening, labor quality, and total factor production. In particular, labor quality contributed 0.26 percentage points to that average growth rate of 3.58 percent.

According to Jorgenson, Ho, and Stiroh, from 1959 to 2006, private output grew at 3.58 percent annually, with labor quality contributing 0.26 percentage points. During that time period, the authors note that:

- From 1959 to 1973, private output grew at 4.18 percent annually, with labor quality contributing 0.28 percentage points.
- From 1973 to 1995, private output grew at 3.08 percent, with labor quality chipping in 0.25 percentage points.
- During the 1995 to 2000 timeframe, private output growth registered 4.77 percent, and labor quality contributed 0.19 percentage points.
- And finally, from 2000 to 2006, private output averaged 3.01 percent, with labor quality contributing 0.31 percentage points.³²

Jorgenson, Ho, and Stiroh summed up the trend in labor quality this way: “Labor quality rose relatively

quickly prior to 1973 with the more rapid improvement in education, but these improvements in aggregate labor quality slowed with education gains tapering off and the rapid entry of young workers during the post-1995 boom. After 2000, this temporary surge of less-educated workers ceased and the contribution of labor quality increased due to a resumed rise in educational attainment and aging of the workforce.”³³

Another study by Jorgenson, Ho, and Stiroh spoke directly to the contribution of higher education to economic growth.³⁴ The authors sought to identify the sources of economic growth from 1977 to 2000, and their findings included:

- Growth in aggregate value added in the U.S. economy—that is, economic growth—averaged 3.08 percent annually over this period, with college-educated workers’ contributions adding 0.72 percentage points to this growth rate, versus 0.48 percentage points from non-college workers.³⁵
- “The contribution of college-educated workers dominates the growth of labor input during the period 1977-2000, even though these workers are less numerous than non-college workers. This reflects the facts that college-educated workers have higher marginal products on average, as can be seen in the college wage premium, and that the number of college-educated workers has been growing more rapidly than that of non-college workers.”³⁶
- “The growth of college-educated labor input dominates that of non-college-educated labor input during the period of our study. This is concentrated in trade, finance, and service industries that also make large investments in IT [information technology]. A possible explanation is that college-educated labor is complementary to IT capital, so that the decline in the price of IT drives up the demand for both IT capital and college-educated workers. An alternative explanation is that productivity growth is biased toward college-educated workers, making them relatively more productive than non-college-educated workers.”³⁷

But is there even more at work in terms of the impact of education on economic growth than Jorgenson and his co-authors documented?

Yolanda K. Kodrzycki has, quite reasonably, argued: “As valuable as the calculations of Jorgenson and his co-authors are, they may possibly underestimate the overall importance of education in U.S. economic growth in recent years. The neoclassical framework used in these studies measures the contribution of education to workers’ productivity, but it does not attempt to quantify the role of rising educational attainment in making capital more productive. An increase in the supply of educated workers increases the market size for technologies that are complementary to educated labor and may induce the use of such technologies (Acemoglu, 1998). This relationship is illustrated by comparing recent information technologies with older inventions: It takes more education to use a computer than to turn on an electric light switch or to drive an automobile. Thus, some of the growth that Jorgenson and his co-authors attributed to the greater use of information technologies (0.5 to 1 percent in the 1990s) might not have come about were it not for the education of the labor force.”³⁸

In tying together the productivity-education-technology-growth loop, Gary Becker also highlighted the interplay between new technologies and human capital investments:

The continuing growth in per capita incomes of many countries during the 19th and 20th centuries is partly due to the expansion of scientific and technical knowledge that raises the productivity of labor and other inputs in production. And the increasing reliance of industry on sophisticated knowledge greatly enhances the value of education, technical schooling, on-the-job training, and other human capital. New technological advances clearly are of little value to countries that have very few skilled workers who know how to use them. Economic growth closely depends on the synergies between new knowledge and human capital, which is why large increases in education and training have accompanied major advances in technological knowledge in all countries that have achieved significant economic growth.³⁹

In their World Bank report on education quality and economic growth, Hanushek and Woessmann noted the technology angle as well: “For an economy, education can increase the human capital in the labor force, which increases labor productivity and thus leads to a higher equilibrium level of output. It can also increase the innovative capacity of the economy—knowledge of new technologies, products, and processes promotes growth. And it can facilitate the diffusion and transmission of knowledge needed to understand and process new information and to implement new technologies devised by others, again promoting growth.”⁴⁰

Hanushek and Woessmann also highlighted key findings regarding the relationship between both quantity and quality of education, and economic growth:

- “A vast early literature of cross-country growth regressions tended to find a significant positive association between quantitative measures of schooling and economic growth. The research reported here suggests that each year of schooling boosts long-run growth by 0.58 percentage points.... There is a clear association between growth rates and school attainment.”⁴¹
- “Over the past 10 years, growth research demonstrates that considering the quality of education, measured by the cognitive skills learned, dramatically alters the assessment of the role of education in economic development. Using the data from the international student achievement tests through 1991 to build a measure of educational quality, Hanushek and Kimko (2000) find a statistically and economically significant positive effect of the quality of education on economic growth in 1960-90 that is far larger than the association between the quantity of education and growth. So, ignoring quality differences very significantly misses the true importance of education for economic growth.”⁴²
- “In sum, the evidence suggests that the quality of education, measured by the knowledge that students gain as depicted in tests of cognitive skills, is substantially more important for economic growth than the mere quantity of education.”⁴³

Education and Entrepreneurship

However, there is yet more to unpack and consider when evaluating the impact of education on economic growth, and that comes via the effect that education has on entrepreneurship. Entrepreneurs undertake the risks of owning, organizing, and operating private businesses. The entrepreneur as innovator who starts up and builds a business not only is the popularly held view of what entrepreneurs do, but it also is the most critical economic role of the entrepreneur. Indeed, it can be argued, quite convincingly, that the entrepreneur is the central player in the economy.

Entrepreneurs are risk takers who innovate, introduce new products and services, find better ways to do things, boost productivity, enhance competition and choice, fuel economic growth, and create new jobs. Economist Joseph Schumpeter emphasized the innovative entrepreneur as the creator who drives the process of “creative destruction” whereby new products and industries overturn the old, while other entrepreneurs, as economist Israel Kirzner noted, discover and act on existing, but heretofore-unnoticed profit opportunities.⁴⁴

Economists Justin van der Sluis, Mirjam van Praag, and Wim Vijverberg reviewed the empirical literature on “the relationship between schooling and entrepreneurship outcomes, i.e. the choice of becoming an entrepreneur and the entrepreneur’s performance.”⁴⁵ The authors’ findings based on their meta-analysis warrant attention, including the following:

- Though no evidence was found for “a systematic relationship between an individual’s schooling level and the probability of selection into entrepreneurship,” the “relationship between schooling and performance” was found to be “significant and positive,” that is, “the higher the schooling level or the more years of education have been pursued, the higher are the chances that performance is good: earnings are higher, growth is more likely, survival chances are better.”⁴⁶
- Although studies pertaining to Europe found that “the returns to education are slightly lower for

entrepreneurs than for employees,” the results for the U.S. found “the opposite result.” For good measure, “the likelihood of a positive and significant effect of education on earnings is also higher in the USA than elsewhere.”⁴⁷ (Author’s note: This could speak to the differences in how entrepreneurship is viewed and treated in the U.S. versus much of Europe, that is, with entrepreneurship highly valued and respected in American culture and society, and the tax and regulatory costs of starting up, operating, and investing in a business in Europe being more burdensome.)

- Finally, the authors found “some evidence that the effect of schooling on performance has increased over the past decades.”⁴⁸

This relationship between education and entrepreneurial achievement or success is another important factor in terms of considering the ultimate effect of educational attainment on the economy.

Employment and Productivity

When turning to employment, increased economic growth obviously provides a boost to job creation. But increased employment also has its own feedback benefits for productivity and the economy.

The point about employment and productivity was made in May 2013 by Federal Reserve Chairman Ben Bernanke, when he highlighted the flip side of the relationship, that is, the negative impact of unemployment and underemployment on the productivity of individuals, on the economy, and on government fiscal well-being. He said, “High rates of unemployment and underemployment are extraordinarily costly: Not only do they impose hardships on the affected individuals and their families, they also damage the productive potential of the economy as a whole by eroding workers’ skills and—particularly relevant during this commencement season—by preventing many young people from gaining workplace skills and experience in the first place. The loss of output and earnings associated with high unemployment also reduces government revenues and

increases spending on income-support programs, thereby leading to larger budget deficits and higher levels of public debt than would otherwise occur.”⁴⁹

To summarize from the positive perspective, increased employment and higher incomes feed back into higher economic growth, as productivity improves and additional resources are available for saving, investment, and consumption, and that added growth in the economy reduces pressures for increased government spending on income-support programs and increased government revenues.

Costs of Educational Failure

Just as higher educational attainment and improved education quality are economic positives, the negatives of education failure must be noted as well.

For example, when it comes to high school dropouts, the costs are considerable in terms of lost output, productivity, and income, as well as additional burdens on governments and taxpayers. The Friedman Foundation for Educational Choice in recent years has published, or co-published, a series of reports on the costs of high school dropouts or poor graduation rates in various states:

- California high school dropouts “are more likely to be unemployed or out of the labor force and twice as likely to be living in poverty,” have lower earnings, generate less in tax revenues, “require more public health resources,” and “drive up the state’s incarceration costs.” The authors summed up: “California’s economy will benefit tremendously by reducing dropouts. We estimate that each prevented dropout will result in a present value lifetime benefit of \$28,227. By permanently cutting the dropout rate in half, each new graduating class of high school students would yield more than \$1.4 billion in direct gross economic benefits to the state. Completely eliminating the dropout problem would save the state \$2.8 billion annually, or approximately 14 percent of its present budget deficit.”⁵⁰

- In Texas, “the annual public costs associated with just one year’s class of dropouts is \$377 million, or about \$3,168 per dropout,” while over a lifetime of 50 years, “one year’s class of dropouts will cost Texas taxpayers \$19 billion.” However, because those costs only include lost taxes and fees, and Medicaid and incarceration costs, “the true public cost of dropouts is larger than \$3,168 per dropout per year.”⁵¹

- “Tennessee has a population of more than 750,000 high school dropouts. At a cost of nearly \$3,000 per individual annually, dropouts cost the state more than \$2 billion a year,” based on conservative estimates.⁵²

- Oregon high school dropouts on average “earn \$10,000 less each year than those who graduate from high school, reducing the overall earnings of the state significantly each year,” have an unemployment rate “more than twice the rate of those who have graduated from high school,” have lower earnings which result in some \$173 million in lost tax revenues annually, and generate substantially higher Medicaid and incarceration costs.⁵³

- In Wisconsin, high school dropouts earn, on average, “\$10,000 less each year than those who graduate from high school,” suffer an unemployment rate “almost three times higher than those who have graduated from high school or college,” “cost the state \$209,385,000 in Medicaid costs in 2007,” and generated less tax revenues on the order of \$121 million annually due to lower earnings.⁵⁴

Reducing the costs imposed on government from education failures also has the potential to boost economic growth not only due to the enhancements in productivity, income, and employment, but also if reduced spending burdens and increased revenues for government translate into reduced governmental burdens on the private sector, such as via lower taxes on productive economic activity like working, saving, investing, and entrepreneurship.

The Larger Economic Environment Matters

Of course, questions exist as to the size and timing of education's contribution to economic growth. Indeed, it is critical to understand that quality math and science education will mean very little to the well-being of an economy if the overall system is not conducive to or does not provide a foundation for economic opportunity and growth.

Economic freedom remains essential to such opportunity and growth. In the *2013 Index of Economic Freedom*, which provided world rankings of 177 nations on economic freedom (according to 10 areas: business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom), it was explained:

Economic freedom, enhanced and secured by the rule of law, limited government, regulatory efficiency, and open markets, is a vital element of human dignity, providing individuals the ability to plan and direct their lives in ways that maximize their happiness as they see fit. In addition, economic freedom is the key to achieving the broad-based economic dynamism that ensures lasting growth and increased prosperity for society as a whole.... Nineteen years of data in the *Index of Economic Freedom* have documented the clear association between higher levels of economic freedom and greater levels of overall prosperity. Equally important, improvements in economic freedom, from whatever level, have been shown to enhance economic dynamism and social progress. Governments that choose policies that increase economic freedom are placing their societies on the pathway to more meaningful and productive work, higher incomes, and better standards of living for all.⁵⁵

Specifically, it was shown that a strong relationship existed between economic freedom and levels of per capita income; greater economic freedom has "had a major positive impact on poverty levels over the past decade"; and nations with higher levels of economic freedom enjoy "better education and more comprehensive health care" and cleaner environments.⁵⁶

Eric A. Hanushek and Ludger Woessmann also highlighted the importance of education within the larger context of crucial economic institutions, in particular, trade freedom and property rights: "Recent literature on the determinants of economic growth emphasizes the importance of the institutional framework of the economy. The most common and powerful measures of the institutional framework used in empirical work are the openness of the economy to international trade and the security of property rights."⁵⁷

Hanushek and Woessmann later explicitly tied together the impact of education and these institutional factors: "In sum, both the quality of the institutional environment and the quality of education seem important for economic development. Furthermore, the effect of educational quality on growth seems significantly larger in countries with a productive institutional framework, so that good institutional quality and good educational quality can reinforce each other. Thus, the macroeconomic effect of education depends on other complementary growth-enhancing policies and institutions. But cognitive skills have a significant positive growth effect even in countries with a poor institutional environment."⁵⁸

The following points from Yolanda K. Kodrzycki are also worth highlighting: "All the empirical studies conclude that there is a positive association between education and growth. However, because of measurement issues inherent in comparing countries with different educational systems and economies, disagreement continues to exist about how strongly and quickly education *causes* growth."⁵⁹ At the same time, however, she noted that for the United States, "future growth would be higher if the average quality of schooling were higher and if the nation continued to make progress in raising the average number of years of schooling."⁶⁰

But, as noted previously, what matters for individuals and for entire economies is not just the number of years of schooling, but the quality of that schooling as well.

The Economics of Markets and Education

Given the importance that society in general—from parents to elected officials—places on education, and the realities of how education and the economy tie together, it actually surprises many people how mediocre to poor the U.S. primary and secondary education system performs.

As has been widely documented, the U.S. does not fare well on a variety of education performance measures. For example:

- Consider the spending-results scenario that has played out over the past four decades. Real per-pupil public school total expenditures (in 2012-13 dollars) increased to \$12,608 in 2010-11 (latest available) from \$5,650 in 1970-71.⁶¹ That was a 123-percent increase. Were students performing any better in reading and math as they were ready to leave high school? Quite simply, no. The average National Assessment of Educational Progress (NAEP) reading scale score for 17-year-olds effectively did not budge from 1971 to 2012, nor did the average NAEP mathematics score for 17-year-olds from 1973 to 2012.⁶²
- The U.S. graduation rate improved to 78.2 percent in 2009-10 from 73.7 percent in 1990-91.⁶³ That still means that more than one in five U.S. students failed to graduate on time. However, it must also be noted that the graduation rate has been the subject of much debate. In a 2007 paper, Nobel laureate James J. Heckman and his co-author Paul A. LaFontaine found that the graduation rate—or as they put it, the “graduation ratio” defined as “the number of public and private high school diplomas issued by secondary schools each year divided by the size of the 17-year-old population in that year”—fell for nearly four decades, and after experiencing some recovery starting in the late 1990s, stood at the same level in 2004 as it was at in the late 1960s. That is, no gains were made.⁶⁴
- As for international comparisons, the United States rates, at best, in the middle of the pack. The

Programme for International Student Assessment (PISA) “is a triennial international survey that aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students.”⁶⁵ Consider key points made about the 2012 results from the United States:

- “Among the 34 OECD countries, the United States performed below average in mathematics in 2012 and is ranked 26th (this is the best estimate, although the rank could be between 23 and 29 due to sampling and measurement error). Performance in reading and science are both close to the OECD average. The United States ranks 17 in reading, (range of ranks: 14 to 20) and 21 in science (range of ranks 17 to 25). There has been no significant change in these performances over time.”
- “While the U.S. spends more per student than most countries, this does not translate into better performance.” The U.S. spends more than double the amount per student than the Slovak Republic, for example, yet students perform at the same level. In fact, only four nations—Austria, Luxembourg, Norway, and Switzerland—spend more on a per-student basis than the U.S.⁶⁶

Given the structure of primary and secondary education, however, no one should be surprised by the fact that the U.S. is a top spender on education, and a middling to poor performer. As noted in the introduction to this report, economic principles and the means for economic success as exemplified by the rest of the U.S. economy not only have been ignored when it comes to primary and secondary education, but the exact opposite system has been established.

Eric A. Hanushek, Paul E. Peterson, and Ludger Woessmann encapsulated the problems with the current education system as a struggle between competing interests: “The battle is not young versus old but a conflict between the needs of school-age children and the interests of those adults who have agreed to educate them in our public schools. The school workforce—teachers, principals, superintendents, other administrators, and ancillary personnel—to often favors only those changes

to the status quo that enhance their income or lighten their workload. They oppose changes in the organization and structure of the school system that would likely enhance the learning opportunities of those for whom they are educationally responsible. When that happens, the promise of our nation's prosperity is endangered.”⁶⁷

Again, that is exactly what should be expected when decisions, including resource allocation and work rules, are governed by special interests and political pressures, rather than by market signals and disciplines via, for example, prices, profits, losses, competition, and consumer sovereignty in a competitive marketplace.

The overarching emphasis when it comes to schooling is on spending levels, including how much is spent per pupil, on facilities, and on teachers, with little or no regard for incentives. Economics, however, is at its core all about incentives. For example, if increased spending and compensation are de-linked from what parents desire and from student performance, then few incentives exist to be concerned about how to create value for parents and students.

Consider the issue of teacher compensation in public education. More than a half-century ago, Milton Friedman explained the problem that persists to this very day:

With respect to teachers' salaries, the major problem is not that they are too low on the average—they may well be too high on the average—but that they are too uniform and rigid. Poor teachers are grossly overpaid and good teachers grossly underpaid. Salary schedules tend to be uniform and determined far more by seniority, degrees received, and teaching certificates acquired than by merit.... If one were to seek deliberately to devise a system of recruiting and paying teachers calculated to repel the imaginative and daring and self-confident and to attract the dull and mediocre and uninspiring, one could hardly do better than imitate the system of requiring teaching certificates and enforcing standard salary structures that has developed in the larger city and state-wide systems. It is perhaps surprising that the level of ability in elementary and secondary school teaching is as high as it is under these circumstances.⁶⁸

Decades later, Hanushek and Woessmann noted that teacher quality has been found to be critical to student performance, but that the public education system is structured to work against teacher quality:

The most consistent finding across a wide range of investigations is that the quality of the teacher in the classroom is one of the most important attributes of schools. Good teachers, defined in terms of student learning, are able to move the achievement of their students far ahead of those of poor teachers. Yet the identification of good teachers has been complicated by the fact that the simple measures commonly used—such as teacher experience, teacher education, or even meeting the required standards for certification—are not closely correlated with actual ability in the classroom.⁶⁹

More broadly, Hanushek and Woessmann, and a host of others, have acknowledged the incentive problems in the entire current education system. Hanushek and Woessmann explained: “Pure resource policies that adopt the existing structure of school operations are unlikely to lead to the necessary improvements in learning.... [T]here is no relationship between spending and student performance across the sample of middle- and higher-income countries with available data. Investigations within a wide range of countries, including a variety of developing countries, further support this picture.”⁷⁰

The problem? Again, it is the incentives at work. Hanushek and Woessmann sum up:

The largest problem in current school policy is the lack of incentives for improved student performance. Neither students nor school personnel in most countries of the world are significantly rewarded for high performance. Without such incentives, it is no surprise to find that added resources do not consistently go toward improvement of student outcomes. Three sets of policies head the list for improving the overall incentives in schools: strong accountability systems that accurately measure student performance; local autonomy that allows schools to make appropriate educational choices; and choice and competition in schools so that parents can enter into determining the incentives that schools face.⁷¹

Indeed, true choice and competition would bring primary and secondary education in the United States in line with the rest of the economy, and with sound economic principles and basic common sense.

Again, Milton Friedman understood this in his early call for school choice, as clearly exemplified in the following three fundamental points:

- “Governments could require a minimum level of schooling financed by giving parents vouchers redeemable for a specified maximum sum per child per year if spent on ‘approved’ educational services. Parents would then be free to spend this sum and any additional sum they themselves provided on purchasing educational services from an ‘approved’ institution of their own choice. The educational services could be rendered by private enterprises operated for profit, or by non-profit institutions. The role of the government would be limited to insuring that the schools met certain minimum standards, such as the inclusion of a minimum common content in their programs, much as it now inspects restaurants to insure that they maintain minimum sanitary standards.”⁷²
- “If present public expenditures on schooling were made available to parents regardless of where they send their children, a wide variety of schools would spring up to meet the demand. Parents could express their views about schools directly by withdrawing their children from one school and sending them to another, to a much greater extent than is now possible. In general, they can now take this step only at considerable cost by sending their children to a private school or by changing their residence. For the rest, they can express their views only through cumbrous political channels.”⁷³
- “Parents who choose to send their children to private schools would be paid a sum equal to the estimated cost of educating a child in a public school, provided that at least this sum was spent on education in an approved school.... It would permit competition to develop. The development and improvement of all schools would thus be stimulated. The injection

of competition would do much to promote a healthy variety of schools. It would do much, also, to introduce flexibility into school systems. Not least of its benefits would be to make the salaries of school teachers responsive to market forces. It would thereby give public authorities an independent standard against which to judge salary scales and promote a more rapid adjustment to changes in conditions of demand and supply.”⁷⁴

Unsurprisingly, Friedman’s analysis fits perfectly with how markets work, and how individuals, businesses, and industries respond to market incentives. There is no reason to expect incentives to work any differently in the field of education. In fact, there’s a glimmer of how it works when it comes to higher education, whereby even with considerable government involvement, the market provides a wide array of choices for consumers, with choice only expanding further in recent years, and into the future, with distance / online education options flourishing.

Nonetheless, assorted protests are raised to expanding choice and competition in primary and secondary education, with most springing either from special interests seeking to protect the status quo, or from economic ignorance.

For example, many seem incapable of imagining an education system that is markedly different from what exists now. They doubt Friedman’s point about choice and competition generating “a healthy variety of schools” and introducing “flexibility into school systems.”

Economist Caroline Hoxby addressed this issue, and explained quite clearly how the market responds on the supply side:

The school choice debate is also plagued by confusion about the supply of schools of choice. A common misapprehension is that, under school choice, students would have to be allocated among each existing school’s current number of places. Another common misapprehension is that, under a voucher program that allowed religious private schools to accept vouchers, approximately 85 percent of private

school enrollment would be in religious schools because that is the current composition of private schools. Such misapprehensions stem from the belief that the supply of schooling is inelastic.

Economists realize that such an assumption is extreme and very unlikely to be true. In every sector, there are factors that determine supply, and economists know that understanding such factors is the key to predicting supply accurately. Economists focus on factors that would determine what the supply of schools would look like under choice: the cost of school inputs, economies of scale, and the features on which parents are willing to spend their vouchers.

For example, it is useful to know how much it costs to build new schools and how much it costs to refurbish current schools so that they can be used for reorganized or new schools. Those who believe that the supply of schools is inelastic apparently believe that such costs are prohibitively high. They are not, as is demonstrated by the ability of school management companies that now routinely build new schools and renovate current schools for their use (Edison Schools, Advantage Schools, etc.). Moreover, many school inputs are in elastic supply and can be purchased at a price that can be readily established: classroom equipment, school accounting software, computers, and so on. There are numerous economic studies of how the quantity and quality of teachers responds to salaries and benefits, and we can use estimates from such studies.

If we wish to understand what the supply of schools would look like under choice, it is also useful to know the preferences of the parents who are most bound by the constraints that a school choice program would relax.⁷⁵

School Choice Not a Zero-Sum Game

In addition, there is the problem of zero-sum thinking among school choice critics. When it comes to economics, zero-sum thinking happens when the size of the economic pie, for example, is deemed to be a certain size, and therefore, if one individual experiences, say, a gain in

income, then someone else is somehow losing out. In the area of education, this viewpoint was on full display when former Milwaukee Superintendent Howard Fuller said the following regarding his opposition to a bill in Wisconsin that expanded the state-funded voucher program beyond low-income families:

I will continue to fight for vouchers, tax-credit scholarships, opportunity scholarship programs, charter schools, home schools, virtual schools—anything that empowers low-income and working-class people to be able to have some of the capacity to choose what those of us with money have. I will never fight for giving people who already have means more resources. Because, in the end, that will disadvantage and squeeze out the possibility of poor parents having some of these options.⁷⁶

It is critical to understand that in a competitive market, when choice is expanded for one group, it in no way means that expanding choice to everyone would somehow limit or eliminate the original group's options. Markets simply do not work that way, nor produce such results. Quite the contrary, the market process normally proceeds from products being introduced at higher prices for certain market segments, with investment, innovation, and competition leading to lower prices and wider distribution, not to mention increased quality.

As noted earlier, this phenomenon was highlighted in the introductory economics textbook. Given, once again, increased productivity, the authors noted:

Using average wage rates, W. Michael Cox and Richard Alm of the Federal Reserve Bank of Dallas have computed the time of work required for the typical worker to purchase many common items. Their analysis shows that Americans today are able to acquire most goods with much less work time than was previously the case....

In 1908, a new automobile cost \$850, which took the average worker 4,696 hours to earn. In 1955, a new automobile costing \$3,030 took 1,638 hours to work, and by 1997, a \$17,995 new automobile cost a typical worker only 1,365 hours of work. The time cost of a

new car today is less than 30 percent of the time cost in 1908. Furthermore, even today's most economical model is light-years away from the 1908 version with regard to power, performance, and dependability.⁷⁷

So, expanding choices—that is, empowering consumers in education—will only serve to invigorate competition, supply, and variety in the market.

The economy is not a zero-sum game. Economic growth and wealth creation occur. So, entrepreneurs and other education providers will respond to market incentives, and alter the education marketplace by concentrating on creating value for students and parents.

School Choice and Performance

In the United States, and elsewhere around the globe, there exist pockets of what might best be called very limited, very quasi-market choice in education. Universal voucher programs—whereby all children, no matter their family income levels or locations, for example, would be able to use vouchers to attend the schools of their own choosing—are not operating anywhere in the U.S.⁷⁸

Economist John Merrifield has argued that current school choice programs in the U.S. fall far short of how actual competitive markets work. While touching on his concerns or objections a bit more later in this section, key shortcomings he has pointed to include the following:

Present U.S. school choice programs create some potential for producer rivalry, but school leaders have little authority or incentive to engage even in that, much less to exhibit aggressive competitive behavior. There are high entry barriers, and the combination of copayment limits, participation caps, and means testing arguably rules out price change, and all but rules out significant profit.... The actual key lesson is that market forces are largely absent but that even small doses of increased freedom to choose from a largely static menu of schooling options can still produce measurable, though modest and perhaps short-lived, improvements.⁷⁹

Regarding the limited scope of school choice, yet the

otherwise near-ubiquitous evidence of the benefits of competition, Hanushek and Woessmann noted: "But experience is still limited. The teachers unions and administrator groups dislike competition—because it puts pressure on them. So, not many examples of operational, large-scale attempts at competition have been evaluated. Nonetheless, the benefits of competition are so well documented in other spheres of activity that it is inconceivable that more competition would not be beneficial."⁸⁰

Actually, a significant number of studies has made clear that benefits accrue even in these limited cases of school choice injecting at least some quasi-market incentives into education. These benefits can be found when it comes to an assortment of results, including graduation rates, academic achievement, parental satisfaction, future earnings, and taxpayer savings. That is, benefits can be seen in each area where one would expect, given even a minimal injection of market-like competition and incentives.

Consider the following samples:

District of Columbia

The District of Columbia's Opportunity Scholarship Program (OSP) is a means-tested voucher program, with priority "given to students who attend schools deemed in need of improvement, corrective action, or restructuring under the federal No Child Left Behind Act; were awarded a scholarship in the preceding year; or have a sibling participating in the program."⁸¹

- It was reported in the 2010 final report on the Opportunity Scholarship Program: "The offer of an OSP scholarship raised students' probability of completing high school by 12 percentage points. The graduation rate based on parent-provided information was 82 percent for the treatment group compared to 70 percent of the control group. There was a 21 percent difference (impact) for using a scholarship to attend a participating private school."⁸²

- Malcolm Glenn and Randan Swindler also noted:

"Students participating in the D.C. Opportunity Scholarship Program made statistically significant gains in reading, according to a study by the U.S. Department of Education. In fact, voucher students gained approximately 3.1 months of additional learning in reading over their public school peers."⁸³

Milwaukee

The Milwaukee Parental Choice Program is a means-tested voucher program.

- In a 2011 study, John Robert Warren reported: "In 2009, we reported graduation rates for six years—2002-03 through 2007-08—for students in the Milwaukee Parental Choice Program (MPCP) and students in the Milwaukee Public Schools (MPS). The current study, which provides updated evidence for 2008-09, reinforces the earlier conclusion that students in the MPCP are more likely to graduate from high school than MPS students. Like the earlier report, this study incorporates reasonable assumptions about the direction and magnitude of biases inherent in the type of graduation rate measure that is used. Overall, had MPS graduation rates equaled those for MPCP students in the classes of 2003 through 2009, the number of MPS graduates would have been about 18 percent higher. That higher rate would have resulted in 3,939 more MPS graduates during the 2003-2009 years."⁸⁴

An additional point by Warren is worth noting in terms of expectations regarding social and economic backgrounds. He observed: "By law, students who participate in the MPCP are from lower-income families. Students in MPS schools come from a much broader range of social and economic backgrounds. Given the well-documented relationship between socioeconomic background and high school completion rates, this fact suggests that we *ought* to observe *lower* high school completion rates among students in MPCP schools. On the other hand, families who are sufficiently motivated to make use of vouchers and to send their children to MPCP schools may be different from other families in such a way that would lead us to *expect higher*

graduation rates among students in MPCP schools."⁸⁵

- Malcolm Glenn and Randan Swindler reported: "Students participating in the Milwaukee Parental Choice Program boast a higher graduation rate—more than 7.2 percentage points higher—than the graduation rate of students in Milwaukee Public Schools. According to an independent evaluation of the program, students participating in the voucher program are also more likely to enroll in a four-year college and persist in college."⁸⁶

They also noted: "Over a four-year period, students in the Milwaukee Parental Choice Program had higher achievement growth in reading than similar students in Milwaukee Public Schools."⁸⁷

New York City

The New York School Choice Scholarships Foundation Program, a privately-funded, means-tested voucher program, "in the spring of 1997 offered three-year scholarships worth up to a maximum of \$1,400 annually to as many as 1,000 low-income families with children who were either entering first grade or were public school students about to enter grades two through five."⁸⁸

- In a July 2013 study, Matthew M. Chingos and Paul E. Peterson reported: "In this paper we report experimentally generated estimates of the effects of a school voucher intervention in New York City on college enrollments of participating students, all of whom were from low-income families. Outcome information was obtained for over 99 percent of those participating in the experiment, greatly reducing the potential for bias caused by attrition from the evaluation. Overall, no significant impacts are observed. However, large, positive, statistically significant impacts are observed for African American students and small, positive, but statistically insignificant impacts are observed for Hispanic students."⁸⁹

Broader Evaluations: U.S.

Research efforts on school choice programs have provided insights via a broader, national picture of the impact of expanded competition in education. These reviews of studies point to a rather powerful impact that even a limited dose of choice and competition can have.

- In a 2008 review article, Patrick J. Wolf noted: "A total of 10 gold-standard, peer-reviewed experimental studies have been produced thus far, demonstrating conclusively that school vouchers increase parental satisfaction with schools and providing substantial evidence that at least some students are helped academically by vouchers."⁹⁰
- Clive R. Belfield and Henry M. Levin found the following in a 2002 review of the evidence: "This paper systematically reviews the cross-sectional research evidence on the effects of competition on educational outcomes.... Outcomes are separated into those relating to academic test scores, graduation/attainment, expenditures/efficiency, teacher quality, wages, and house prices. The sampling strategy identifies over 41 empirical studies testing the effects of competition. A sizable majority of these studies report beneficial effects of competition across all outcomes, with many reporting statistically significant correlations."⁹¹ The authors also found, "Educational outcomes are higher in more competitive markets...."⁹²
- In *A Win-Win Solution: The Empirical Evidence on School Choice*, published in 2013, Greg Forster summed up the high-quality research done on school choice as relating to academic outcomes of participants, academic outcomes on public schools, and the impact on taxpayers. He reported:
 - "There have been 12 studies using random-assignment methods to examine how school choice affects the academic outcomes of participants. These studies consistently find that school choice benefits students. Six of them find that choice had a positive impact across all students participating. Another five find that

choice had a positive impact on some student groups and no visible impact on other students. One study found no visible impact from choice. None find that choice had a negative effect."⁹³

- "Twenty-three empirical studies have been conducted on how school choice programs impact academic outcomes in public schools. Of these studies, 22 find that choice improves academic outcomes at public schools. The one remaining study found that choice had no visible impact on public schools. No empirical study has ever found that choice had a negative impact on public schools."⁹⁴
- "There have been six empirical studies examining the fiscal impact of school choice on taxpayers. All six of these studies find that school choice saves money for the public. Two studies examine every school choice program in the nation for all the years they've existed, making the research in this area an especially comprehensive overview of the issue in question."⁹⁵

Higher Earnings

In a report for the Federal Reserve Bank of St. Louis, Michael T. Owyang and E. Katarina Vermann found significant results when it came to Catholic high school graduates experiencing higher earnings, and greater likelihood of enrolling in higher education and earning a college wage premium. That speaks to the level of educational quality in, and the value in the marketplace of, a Catholic education, with Catholic schools, of course, being the largest private alternative to public schools. Owyang and Vermann reported:

- "After controlling for individual and job characteristics, private high school graduates earn 2.6 percent more than their public school counterparts. This increase, however, is not statistically significant. In contrast, Catholic high school graduates earn a statistically significant 13.6 percent wage premium.... This result could indicate that there are significant differences in unquantifiable aspects of school quality

that could affect earnings later in life.”⁹⁶

- “The results indicate that graduates of private and Catholic high schools are 6.2 percent and 6.5 percent more likely, respectively, to enroll in higher education than are graduates of public high schools. Further, the students who attend private and Catholic schools are 19.7 percent and 15.8 percent more likely, respectively, than graduates of public schools to earn a bachelor’s degree. Since individuals with at least a bachelor’s degree in our data set earn approximately 35 percent more than those with only a high school diploma, one can argue that attending a parochial school increases the chances of a student getting the college wage premium in the future.”⁹⁷

Reduced Taxpayer Costs

As discussed earlier, the per-pupil costs of public education have skyrocketed in recent decades. For good measure, the U.S. ranks as a big spender on primary and secondary education compared with other nations. Yet, at the same time, student performance measures have stagnated over the past four decades as spending has risen, and despite being a top global spender, U.S. results in international comparisons rate mediocre to poor.

One of the wonders of the private marketplace, guided by prices, profits, losses, competition, and consumer sovereignty, is that incentives push suppliers to improve quality and expand service, while also reducing prices. Indeed, that is what occurs throughout the private marketplace—from automobiles to computers to refrigerators to cell phones to food production. However, increased quality and service, at lower prices, is rarely the case in government, especially when it comes to public education.

Options in education, however, not only have had the impact of raising outcomes (as explained earlier), but also wind up reducing taxpayer costs. Consider the following, for example:

- In a 2014 analysis, Jeff Spalding reported: “Between 1990 and 2011, the 10 voucher programs analyzed

in this report generated \$1.7 billion in fiscal benefits. On a per-student basis, with nearly 505,000 students served on a full-time equivalent (FTE) basis, that equals about \$3,400 saved per voucher student per year—freeing up dollars for additional spending on public school students, school choice, health care, public safety, social services, tax relief, or whatever priorities state lawmakers may have.”⁹⁸

“For the first iteration of this study, authored by Susan Aud, only six of these voucher programs were examined. The cumulative savings for those programs was about \$240 million from 1990 to 2006. This study adds five years and four new voucher programs to the analysis and finds the cumulative savings have escalated to more than \$1.7 billion.”⁹⁹

- In a March 2012 analysis, Benjamin Scafidi found:

“The United States’ average spending per student was \$12,450 for the 2008-09 academic year. I estimate that 36 percent of these costs can be considered fixed in the short-run. The remaining 64 percent, or \$7,967 per student, are considered variable costs, even in the short-run. The implication of this finding is that a school choice program where less than \$7,967 per student is redirected from a child’s former public school to another school of his or her parents’ choosing would actually improve the fiscal situation of the public school district.”¹⁰⁰

Keep in mind, according to Scafidi, “the goal of this report is to create an overestimate of fixed costs. A cautious overestimate allows us to be comfortable that school choice programs where ‘the money follows the child’ can be designed in such a manner to improve the fiscal situation of public school districts.”¹⁰¹

Broader Evaluations: International

Finally, the results of school choice programs—given their limited scope—are impressive and speak to the potential for what universal school choice would achieve.

Again, economist John Merrifield has identified how choice programs fall far short of what true market competition means. He has noted, for example:

The novelty and minuteness of existing U.S. school choice programs are not the only factors that limit their value in assessing the merits of free-market education. Several key aspects of market accountability are virtually absent from those programs: price change, easy market entry, and the profit motive, among others. Prices determined by supply and demand are a key attribute of markets, but they are almost unheard of in K-12 education—even under most school choice programs. Furthermore, existing private schools' tuition rates are greatly distorted by the taxpayer-funded competition from "free" public schools.¹⁰²

He later adds: "Other stunning examples of mistakenly assumed competition and market forces include programs that cap market entry and set prices (charter laws, and most current voucher programs); policies that strongly favor some school providers; and regulations that give private schools very little leeway to differentiate themselves from the public schools or from each other."¹⁰³

Given these limitations, international comparisons carry greater weight in considering how choice and competition affect education performance. Andrew Coulson, director of the Cato Institute's Center for Educational Freedom and author of *Market Education: The Unknown History*, made the case for the power of international experiences when it comes to the value of competition and private education options:

If a particular approach to organizing and funding schools consistently outperforms other approaches across widely varying circumstances, we can be fairly confident that the observed pattern is the result of the system itself, and not simply an accident of circumstance—because, although the circumstances will have varied from place to place, the results will have remained the same. In fact, the greater the cultural and economic differences among the nations studied, the more striking any consistent pattern of results becomes.¹⁰⁴

International results can speak powerfully to the benefits

of choice, competition, and private education. Consider:

- In a 2013 analysis, Anna J. Egalite reported: "This review of the literature on the competition effects of public voucher and tuition tax-credit scholarship programs on student academic performance uncovered 21 total studies.... Results from studies using this approach unanimously find positive impacts on student academic achievement. Such overwhelming evidence supports the development of market-based schooling policies as a means to increase student achievement in traditional public schools."¹⁰⁵
- In their 2007 World Bank report, Hanushek and Woessmann noted: "In a cross-country comparison, students in countries with a larger share of privately managed schools tend to perform better."¹⁰⁶
- In a September 2008, Coulson reviewed 25 years of international research, a total of 55 studies covering 20 nations, comparing market and government provided education. He found:

Across time, countries, and outcome measures, private provision of education outshines public provision according to the overwhelming majority of econometric studies. Findings of a statistically significant advantage for private schooling outnumber findings of a significant advantage for public schooling by a ratio of nearly 8 to 1, and the statistically significant advantage for private schools outnumbers by a ratio of 5 to 1 statistically insignificant findings. However, since the funding and regulatory structures of "public" and "private" schools vary widely, this breakdown of the research is insufficiently detailed to be of real use to policymakers. If we want to ascertain the merits of real market reform in education, we must compare genuinely market-like private school systems (which are minimally regulated and are funded, at least in part, directly by parents) with state school monopolies protected from significant market competition (such as the typical U.S. public school system). When we assess the evidence using these more specific

criteria, the results are more stark: There are 35 statistically significant findings of market-like education systems out-performing government monopoly schooling, and only two findings of the reverse, for a ratio of more than 17 to 1 in favor of free education markets. There is but a single statistically insignificant finding among market versus monopoly comparisons, and every finding comparing the efficiency of market and monopoly schooling is both statistically significant and favors markets.¹⁰⁷

The domestic evidence regarding the impact of U.S. school choice programs is considerable, especially given the limited number and scope of the various programs. Expanding the view to the international setting further buttresses confidence that more market-oriented education systems outperform government systems.

What School Choice Would Mean for the Economy

Economic growth matters, and education, coupled with other critical factors, impacts such growth.

As noted earlier, GDP measures both the market value of all final goods and services produced in a nation, and the income received by the suppliers of those goods and services. An easy way to grasp the importance of faster economic growth is to consider the economist's "Rule of 70." Divide 70 by the average annual rate of growth, and one arrives at the number of years it takes for GDP, income, or living standards to double. At 5 percent real annual growth, for example, it takes 14 years for living standards to double, while at 1 percent, it would take 70 years. Over the lifetime of an individual, that's a striking, substantive difference.

So far, this paper has made clear the following factors contribute to the economy and its growth:

- **Market Competition.** In general, economic growth results when businesses, workers, investors, and entrepreneurs strive to supply new or improved

(such as in terms of quality and price) goods and services, within the market process guided by price and profit and loss signals (directing where and how resources should be allocated), disciplined by competition (whereby businesses and entrepreneurs strive to become more efficient and innovative to serve their customers better and gain market share), and built upon a sound foundation of property rights, the rule of law, open trade, minimal governmental burdens, and price stability.

- **Productivity and Individual Earnings.** For each individual within the market setting, income is largely about productivity. The more productive an individual is, the higher that person's earnings. Productivity is dependent upon investments in technology, physical capital, and human capital, including education. The link between education, productivity, and enhanced earnings is apparent given that investments in education generate, on average, substantial benefits in terms of labor force participation, employment, and income.
- **Productivity and Education.** It follows that productivity growth is central to a nation's economic growth, and human capital investments that enhance educational attainment and quality are critical to productivity and economic growth.
- **Education Structure and Limits on Growth.** As a government-run monopoly, the structure of primary and secondary education effectively ensures that large increases in and high levels of per-pupil spending on public schools do not generate corresponding academic outcomes. Those results serve to restrain students' productivity, earnings, and economic growth. In addition, the current public education sector itself, with resources funneled to inefficient, ineffective, or under-performing schools, serves as a direct restraint on economic growth, as those resources could be used more productively under a different, market-driven system.
- **Market Incentives and Competition.** True choice and competition in education would shift incentives

dramatically, with the education entrepreneurs and providers focused on supplying added value to the actual customers, that is, students and parents. The resulting improvement in educational quality and attainment—which is evidenced by the limited cases of quasi-market competition and choice provided in various school choice programs and broader international analyses—would boost productivity, earnings, and the economy through assorted channels.

Moving to expand school choice and competition—ideally, transforming education from a government monopoly into a universal school choice system, allowing for true market competition—would provide a tremendous boost to both educational attainment and quality. Indeed, the gains in outcomes from such a systematic transformation are likely to dwarf what many can imagine, as current thinking and experience are greatly constrained by the current system.

Economic growth will be advantaged through an assortment of channels by shifting to a market system of choice, competition, and consumer sovereignty. The following summarizes these key channels or means for boosting economic growth via true choice and competition in primary and secondary education.

Ten Key Channels for Expanded School Choice to Feed Economic Growth

1. Higher Productivity. Improved education via vastly expanded—preferably universal—school choice would enhance economic growth by boosting productivity. Augmented productivity increases the contribution that employees make to individual businesses, and in turn, positively affects overall economic output. As already noted, increases in productivity thanks to elevated educational attainment and quality have contributed significant shares of growth in productivity, output, and income in the U.S.

2. Enhanced Educational Attainment. The evidence is clear that, on average, improved educational attainment means greater labor force participation, higher employment levels, reduced unemployment,

and increased earnings. As discussed earlier, in 2012, for example, the labor force participation rate for those 25 years or older rose markedly with higher levels of educational attainment, with the same pattern holding for employment levels (coupled with lower rates of unemployment), and for median earnings.

Given the positive results experienced even in cases of limited choice and competition in education, it is clear that robust school choice would increase educational attainment, with commensurate improvements seen in labor force participation, employment, and income. Those are obvious positives for economic growth, with more individuals making positive contributions to businesses and output, and gains in income generating additional saving, investing, and consumption—again, each feeding back into additional economic growth.

3. Improved Educational Quality. The economics literature confirms the common sense notion that it's not just about accumulating more years of education and degrees, but very much about educational quality when it comes to improving productivity, which in turn enhances economic and income growth.

Given the improvements in educational quality experienced even in cases of limited choice and competition, it again is clear that robust educational choice would improve educational quality, and thereby, boost economic growth via increased productivity, employment, and income.

4. Greater Entrepreneurial Success. Evidence shows that, not surprisingly, a link exists between years of schooling and entrepreneurial success, including higher earnings, improved growth, and increased chances for business survival, and that this effect has increased in recent decades. Given the importance of entrepreneurship to economic growth, this is a critical link between education and economic growth.

5. Expanded Innovative Capacity. Innovation—that is, the market introduction of new or improved goods, services, or processes—is central to economic growth. Improved education expands the economic potential and impact of innovation. As Eric A. Hanushek and Ludger

Woessmann noted, improved education can “increase the innovative capacity of the economy—knowledge of new technologies, products, and processes promotes growth. And it can facilitate the diffusion and transmission of knowledge needed to understand and process new information and to implement new technologies devised by others, again promoting growth.”¹⁰⁸

6. Technology Investments and Increased Productivity of Capital. Following closely on the idea of an expanded innovative capacity for the economy comes the issue of technology and physical capital. Improved education for those using technology and other capital tools makes the investments in those technologies and other forms of capital more valuable, that is, more productive. At the same time, better technology increases the demand for better-educated individuals (such as college graduates).

7. Better Business Performance. From a business standpoint, firms derive clear benefits from improved education levels and skills among employees. Workers become more productive and more valuable, and enhance the performance of the business by being better able to, for example, work with technology, adapt to new and changing tasks, communicate with and understand other workers, contribute to and cooperate in teams, and so on. For good measure, businesses need not spend as much on training, including on basic skills and competencies that should be developed with a sound education.

8. Stronger International Competitiveness. The competitiveness of U.S. workers and businesses in the international marketplace is tied directly to productivity. Quite simply, U.S. workers earn more than people elsewhere around the globe because of the productivity of the U.S. workforce. Improvements in educational attainment and quality mean that the U.S. could maintain, or even extend, its edge in productivity. That, in turn, translates into enhanced opportunities in the international marketplace, and improved economic growth via, say, greater export growth.

9. Lower Taxpayer Costs. Research has shown school choice and competition would contribute to reduced taxpayer costs in several ways, including lower per-pupil spending, and less spending on the problems resulting

from poor educational quality, including expenditures on unemployment, income-support programs, and incarceration, as well as lost tax revenues because of reduced employment, lower incomes, and slower economic growth.

Of course, if government expenditure savings and increased revenues due to the positive results from expanded educational choice and competition simply are channeled into other governmental undertakings, then the impact on economic growth would be minimal at best. However, if such savings meant that resources were left or returned to the private sector via tax relief, then the impact on economic growth would be noteworthy.

10. Education Sector Efficiencies. Finally, whenever an industry becomes more innovative, efficient, and productive, that's a plus for the overall economy. It would be no different with primary and secondary education itself with a move to universal school choice that resulted in increases in entrepreneurship, innovation, competition, efficiency, and value to the consumer. Consider, for example, that in 2009-10, more than \$638 billion was spent on public primary and secondary schools.¹⁰⁹ That's equivalent to 4.3 percent of GDP. Transforming education from a government-dominated and regulated system to a dynamic, competitive, consumer-focused industry would be another clear positive for economic growth.

Understanding how the economy works and the role of education, it's clear, as summarized in the aforementioned 10 points, that a vast expansion in school choice, or in particular, a complete shift to universal choice would be a major positive for the economy and growth.

As for the magnitude of such a shift, that is by definition speculative, especially given the various avenues whereby improved education would feed into growth. But given the importance of education, as examined throughout this paper, in such areas as productivity, employment, earnings, entrepreneurship, innovation, competitiveness, and governmental costs, it's safe to conclude the impact on economic growth would be substantive.

To drive home this point, it's worth looking at growth

estimates made by Eric A. Hanushek, Paul E. Peterson, and Ludger Woessmann in their 2013 book *Endangering Prosperity: A Global View of the School*. Although their assumptions are very cautious, they offer some interesting projections for enhanced economic growth over coming decades due to non-specified education reforms.

The authors assume that improved education will only have a long-term effect on economic growth due to the time it takes to implement reforms and have those reforms affect performance, the time for those with increased skills to move into the workforce, and the time it takes for new technologies, resulting from enhanced skills, to be developed and implemented.¹¹⁰ Their estimates regarding the growth in real per-capita GDP are based on improvements made in mathematics scores (according to PISA) over 20 years, that is, by 2033, that would bring U.S. performance up to the levels of three nations—Germany, Canada, and Singapore—and cover an overall time horizon of a lifetime from 2013 to 2093.¹¹¹ The authors' three key findings are:

- “Reaching Germany’s performance level would lift the GDP per capita in 2093 to 25 percent above what would obtain if no gains in student performance were realized. Put differently, this goal has a present value of \$46 trillion. This is close to three times the current level of GDP, which is approximately \$16 trillion in 2013. In terms of individual workers, it amounts to an average increase in every worker’s income of 12 percent every year for the next eighty years.”¹¹²
- “Matching the level of achievement of our northern neighbor, Canada, would be the equivalent of adding 20 percent to the paycheck of every worker for every year of work. This totals to \$77 trillion, some five times our current GDP.”¹¹³
- “[R]eaching the achievement level of Singapore would, according to historical patterns, produce a present value of economic gains of \$160 trillion, about 10 times our current GDP. Spread across the future and across the paychecks of all workers, this would be the equivalent of a 43 percent salary increase for the average worker.”¹¹⁴

If these projections seem fantastic—and perhaps anything but conservative—consider that real per-capita GDP in 2007 (in 2005 dollars) was \$44,000, compared with \$15,000 in 1950, and over that period real per capita GDP grew at an annual average rate of 2.1 percent, which is the rate projected under the aforementioned Germany scenario.¹¹⁵

It should be noted, though, that the authors decided to assume that real per-capita U.S. GDP would grow at only 1.5 percent a year over this period without any education reforms. However, that was based on “the average annual growth rate of potential GDP per worker of the OECD area over the past two decades.”¹¹⁶ The U.S. history on real per-capita GDP growth has been a bit more positive. For example, before this recent recession and poor economic recovery, over the previous two decades, annual growth in real per capita GDP averaged 1.97 percent. From 1970 to 2007, it average 2.02 percent. Factor in the last few years, and real per-capita GDP growth averaged only 1.59 percent over the last two decades, and 1.78 percent since 1970.

However, even if the original baseline assumption were ranked as being somewhat pessimistic, it’s clear that improvements in mathematical scores, according to this analysis, would still provide a large increase in real economic growth.

When looking at the potential effects of universal school choice on economic growth, the assessment by Hanushek, Peterson, and Woessmann, again, is arguably cautious given that the authors chose not to specify any kind of education reform, and therefore could not factor in all of the potential transformative benefits that true choice and competition would have on education and the economy. Those benefits, given a proper understanding of markets and incentives, arguably will have even greater significance than the already substantial economic benefits estimated by Hanushek, Peterson, and Woessmann.

Conclusion

It's clear that investments in human capital—including education—matter to economic growth.

The link between education and growth has long been a talking point for elected officials—and they have it right. However, given the poor performance of the U.S. economy for at least the past six years—average real GDP growth of 1.0 percent, and for the past 13 years, average real GDP growth of 1.8 percent, compared with average real growth of 3.7 percent from 1950 to 2000—the imperative to improve economic growth has not been more important, arguably, than since the Great Depression.

Unfortunately, too much talk about boosting education to boost the economy comes back to the simplistic and costly proposal of throwing more taxpayer dollars at an education system long bloated by taxpayer dollars, with little to show for such massive expenditures—except a staffing surge. These dollars invested in public education that do not boost student achievement are dollars that could have been spent, for example, on scientific breakthroughs, on modernizing factories and other business facilities, or on other goods and services actually chosen by consumers.

The structure of primary and secondary education in the United States—that is, government-run and regulated—runs counter to the market system of competition and freedom that has provided the foundation for building successful, competitive businesses and industries focused on serving consumers, and creating the most powerful economy on the planet. Therefore, no one should be shocked that enormous resources are spent on this education system, while that same system fails to achieve corresponding results. After all, this effectively is a government monopoly, and why would anyone expect innovation, quality, efficiency, and a focus on the consumer from a monopoly? Moreover, government monopolies, given their waste and failures, serve as serious drags on economic growth.

To achieve true excellence in education that will in turn help to accelerate economic growth, government control and regulation must give way to true choice and

competition whereby entrepreneurs and educators work to better serve their customers, i.e., students and families.

Greg Forster summed it up this way: "Worst of all, the monopoly pushes out educational entrepreneurs who can reinvent schools from the ground up. Only a thriving marketplace that allows entrepreneurs to get the support they need by serving their clients better can produce sustainable innovation. In any field of human endeavor, whether education or medicine or politics or art or religion or manufacturing or anything else, entrepreneurs who want to strike out in new directions and do things radically differently need a client base. There need to be people who will benefit from the new direction and support it. And that client base must be robust on three dimensions: size, strength, and suffrage. There must be enough supporters, they must have enough ability to provide support, and they must have enough freedom to decide for themselves what to support."¹¹⁷

More money, along with a host of other efforts, such as curriculum changes and reforms in teacher compensation policies, will mean little in terms of education outcomes and the economy, given that the government-controlled system will remain in effect.

Substantive change that dramatically alters educational performance and positively impacts the economy requires universal school choice. Interestingly, more support for school choice, including universal school choice, exists than most people probably think.

Consider that, according to the *Education Next* 2013 survey of American adults on the question of a universal voucher initiative that "gives all students an opportunity to go to private schools with government funding," 44 percent were in favor, with 37 percent opposed.¹¹⁸

However, a 2013 Friedman Foundation for Educational Choice survey provided definitions of what is actually meant by various forms of school choice, and the poll results among American adults are quite encouraging. For example:

- A "tax-credit scholarship system" was favored by 66 percent of adults, with 24 percent opposed.

(Definition: “A ‘tax credit’ allows an individual or business to reduce the final amount of a tax owed to government. Some states give tax credits to individuals and businesses if they contribute money to nonprofit organizations that distribute private school scholarships. A ‘tax-credit scholarship system’ allows parents the option of sending their child to the school of their choice, whether that school is public or private, including both religious and non-religious schools.”)

- Education savings accounts were favored by 64 percent of adults, with 25 percent opposed. (Definition: “An education savings account—often called an ESA—allows parents to withdraw their child from a public district or charter school, and receive a payment into a government-authorized savings account with restricted, but multiple uses. Parents can then use these funds to pay for private school tuition, online education programs, private tutoring or saving for future college expenses.”)
- On school vouchers, when asked if they favor or oppose without any definition, 43 percent were in favor, with 28 percent opposed. But when vouchers were defined, those in favor jumped to 60 percent and 32 percent were opposed. (Definition: “A school voucher system allows parents the option of sending their child to the school of their choice, whether that school is public or private, including both religious and non-religious schools. If this policy were adopted, tax dollars currently allocated to a school district would be allocated to parents in the form of a ‘school voucher’ to pay partial or full tuition for their child’s school.”)
- Finally, universal school vouchers gained large support, whereas means-tested vouchers did not. When noted that “Some people believe that school vouchers should only be available to families based on financial need,” 58 percent disagreed and 37 percent agreed. Meanwhile, when noted that “Some people believe that school vouchers should be available to all families, regardless of incomes and special needs,” 58 percent agreed, and 37 percent disagreed.

When choice and competition in education are truly expanded in a substantive, substantial way, the benefits will flow forth in terms of improving educational attainment and quality, thereby boosting U.S. productivity, innovation, entrepreneurship, and economic growth.

Notes

1. As noted, for example, Eric A. Hanushek, Paul E. Peterson, and Ludger Woessmann, *Endangering Prosperity: A Global View of the American School* (Washington, DC: Brookings Institution, 2013), pp. 1-5.
2. Trevor Tompson, Jennifer Benz, and Jennifer Agiesta, *Parents' Attitudes on the Quality of Education in the United States* (Chicago: Associated Press-NORC Center for Public Affairs Research, 2013), http://www.apnorc.org/PDFs/Parent%20Attitudes/AP_NORC_Parents%20Attitudes%20on%20the%20Quality%20of%20Education%20in%20the%20US_FINAL_2.pdf; and *National Education Survey* (Chicago: Associated Press-NORC Center for Public Affairs Research, 2013), http://www.apnorc.org/PDFs/Parent%20Attitudes/AP-NORC%20National%20Education%20Survey%20Topline_FINAL.pdf.
3. Paul DiPerna, *Schooling in America Survey: What Do Mothers Say About K-12 Education?*, Polling Papers 15 (Indianapolis: Friedman Foundation for Educational Choice, 2013), <http://www.edchoice.org/Research/Reports/Schooling-in-America-Survey--What-Do-Mothers-Say-About-K-12-Education.aspx>.
4. "Education," Gallup, accessed on Dec. 21, 2013, <http://www.gallup.com/poll/1612/education.aspx>.
5. Michael B. Henderson and Paul E. Peterson, "The 2013 Education Next Survey," *Education Next* 14, no. 1 (Winter 2014), <http://educationnext.org/the-2013-education-next-survey>.
6. See note 3 above.
7. Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "Will the U.S. Productivity Resurgence Continue?" *Current Issues in Economics and Finance* 10, no. 13 (New York: Federal Reserve Bank of New York, 2004), p. 1, http://www.newyorkfed.org/research/current_issues/ci10-13.pdf.
8. James D. Gwartney, Richard L. Stroup, Russell S. Sobel, and David A. Macpherson, *Macroeconomics: Private and Public Choice*, 13th ed. (Mason, OH: South-Western Cengage Learning, 2011), p. 582.
9. Yolanda K. Kodrzycki, "Educational Attainment as a Constraint on Economic Growth and Social Progress," in *Education in the 21st Century: Meeting the Challenges of a Changing World* (Boston: Federal Reserve Bank of Boston, 2002), p. 64, <http://www.bostonfed.org/economic/conf/conf47/conf47d.pdf>.
10. Maria E. Canon and Charles S. Gascon, "College Degrees: Why Aren't More People Making the Investment?" *Regional Economist* (St. Louis: Federal Reserve Bank of St. Louis, 2012), p. 7, http://www.stlouisfed.org/publications/pub_assets/pdf/re/2012/b/college_degrees.pdf.
11. Ibid, p. 6.
12. Ibid.
13. Ibid.
14. Gary S. Becker, "Human Capital," in *The Concise Encyclopedia of Economics*, ed. David R. Henderson, 2nd ed. (Indianapolis: Liberty Fund 2007), p. 248, <http://www.econlib.org/library/Enc/HumanCapital.html>.
15. Tiffany Julian, "Work-Life Earnings by Field of Degree and Occupation for People With a Bachelor's Degree: 2011," *American Community Survey Briefs*, ACSBR 11-04 (Washington, DC: US Census Bureau, 2012), <http://www.census.gov/prod/2012pubs/acsbr11-04.pdf>.
16. Ibid., p. 4.
17. Ibid.
18. Jonathan James, "The College Wage Premium," *Economic Commentary*, no. 2012-10 (Cleveland: Federal Reserve Bank of Cleveland, 2012), <http://www.clevelandfed.org/research/commentary/2012/2012-10.pdf>.
19. Richard Vedder and Christopher Denhart, "How the College Bubble Will Pop," *Wall Street Journal*, Jan. 8, 2014, <http://online.wsj.com/news/articles/SB10001424052702303933104579302951214561682?mg=reno64-wsj>.
20. Canon and Gascon, "College Degrees," p. 9.
21. Eric A. Hanushek and Ludger Woessmann, *Education Quality and Economic Growth* (Washington, DC: World Bank, 2007), p. 2, http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/547664-1099079934475/Edu_Quality_Economic_Growth.pdf.
22. Paul T. Decker, Jennifer King Rice, Mary T. Moore, and Mary R. Rollefson, *Education and the Economy: An Indicators Report*, NCES 97-269 (Washington, DC: US Dept. of Education, National Center for Education Statistics, 1997), p. vii, <http://nces.ed.gov/pubs97/97269.pdf>.
23. Alexander J. Field, "Productivity," in *The Concise Encyclopedia of Economics*, ed. David R. Henderson, 2nd ed. (Indianapolis: Liberty Fund, 2007), p. 417, <http://www.econlib.org/library/Enc/Productivity.html>.
24. Gwartney et al., *Macroeconomics: Private and Public Choice*, pp. 582-83.
25. Ibid, pp. 162-63.
26. These basic concepts are explained in nearly all economics textbooks. For example, see: Ibid, pp. 150-54.
27. Decker et al., *Education and the Economy* p. 10.
28. Kodrzycki, "Educational Attainment as a Constraint," p. 43.
29. Dale W. Jorgenson and Barbara W. Fraumeni, "Education and Productivity Growth in a Market Economy," *Atlantic Economic Journal* 21, no. 2 (June 1993), p. 1, doi: 10.1007/BF02302312.
30. Ibid, p. 3.
31. Jorgenson, Ho, and Stiroh, "Will the U.S. Productivity Resurgence Continue?" p. 2.
32. Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "A Retrospective Look at the U.S. Productivity Growth Resurgence," *Journal of Economic Perspectives* 22, no. 1 (Winter 2008), doi:10.1257/jep.22.1.3.
33. Ibid., p. 12.
34. Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "Growth of U.S. Industries and Investments in Information Technology and Higher Education," in *Measuring Capital in the New Economy*, ed. Carol Corrado, John Haltiwanger and Dan Sichel (Chicago: University of Chicago Press, 2005), pp. 403-78, <http://www.nber.org/chapters/c10627.pdf>.
35. Ibid., p. 406.

36. Ibid., pp. 405-406.
37. Ibid., p. 468.
38. Kordzycki, "Educational Attainment as a Constraint," p. 44.
39. See note 14 above.
40. Hanushek and Woessmann, *Education Quality and Economic Growth*, p. 3.
41. Ibid., p. 4.
42. Ibid., p. 5.
43. Ibid.
44. Russell S. Sobel, "Entrepreneurship," in *The Concise Encyclopedia of Economics*, ed. David R. Henderson, 2nd ed. (Indianapolis: Liberty Fund, 2007), p. 155, <http://www.econlib.org/library/Enc/Entrepreneurship.html>.
45. Justin van der Sluis, Mirjam van Praag and Wim Vijverberg, "Education and Entrepreneurship Selection and Performance: A Review of the Empirical Literature," *Journal of Economic Surveys* 22, no. 5 (2008), p. 796, doi:10.1111/j.1467-6419.2008.00550.x.
46. Ibid., p. 817.
47. Ibid.
48. Ibid.
49. *The Economic Outlook, Before the Joint Economic Comm.*, 113th Cong. (2013) (statement of Ben S. Bernanke, Chairman of the Board of Governors of the Federal Reserve System), <http://www.federalreserve.gov/newsevents/testimony/bernanke20130522a.pdf>.
50. David A. Stuit and Jeffrey A. Springer, *California's High School Dropouts: Examining the Fiscal Consequences* (Indianapolis: Foundation for Educational Choice, 2010), p. 6, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/574/California-s-High-School-Dropouts---Examining-the-Fiscal-Consequences.pdf>.
51. Brian J. Gottlob, *The High Cost of Failing to Reform Public Education in Texas*, rev. ed., School Choice Issues in the State (Indianapolis: Milton and Rose D. Friedman Foundation; Dallas: National Center for Policy Analysis; Washington, DC: Hispanic Council for Reform and Educational Opportunities, 2008), p. 5, http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/107/TEXAS_STUDY%200108.pdf.
52. Christian D'Andrea, *Tennessee's High School Dropouts: Examining the Fiscal Consequences*, (Indianapolis: Foundation for Educational Choice, 2010), p. 5, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/564/Tennessee-s-High-School-Dropouts---Examining-the-Fiscal-Consequences.pdf>.
53. Emily A. House, *Oregon's High School Dropouts: Examining the Economic and Social Costs* (Indianapolis: Foundation for Educational Choice, 2010), p. 5, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/494/Oregon-s-High-School-Dropouts---Examining-the-economic-and-social-costs.pdf>.
54. Emily A. House, *The High Cost of Wisconsin's Dropout Rate, School Choice Issues in the State* (Indianapolis: Friedman Foundation for Educational Choice; Waukesha, WI: John K. MacIver Institute for Public Policy, 2009), p. 5, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/369/WI%20dropout%20study.pdf>.
55. Terry Miller, Kim R. Holmes, Edwin J. Fuelner, Anthony B. Kim, Bryan Riley, and James M. Roberts, *2013 Index of Economic Freedom* (Washington, DC: Heritage Foundation; New York: *Wall Street Journal*, 2013), pp. 92-93, http://www.heritage.org/index/pdf/2013/book/index_2013.pdf.
56. Ibid., pp. 14-15.
57. Hanushek and Woessmann, *Education Quality and Economic Growth*, p. 7.
58. Ibid., p. 10.
59. Kordzycki, "Educational Attainment as a Constraint," p. 46.
60. Ibid.
61. "Table 236.55. Total and Current Expenditures Per Pupil in Public Elementary and Secondary Schools: Selected Years, 1919-20 through 2010-11," National Center for Education Statistics, accessed May 2014, http://nces.ed.gov/programs/digest/d13/tables/dt13_236.55.asp.
62. *Trends in Academic Progress: The Nation's Report Card*, NCES 2013-456 (Washington, DC: US Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, 2013), p. 1, <http://nces.ed.gov/nationsreportcard/subject/publications/main2012/pdf/2013456.pdf>.
63. "Public High School Graduation Rates," National Center for Education Statistics, accessed May 2014, http://nces.ed.gov/programs/coe/indicator_coi.asp.
64. James J. Heckman and Paul A. LaFontaine, *The American High School Graduation Rate: Trends and Levels*, IZA Discussion Paper 3216 (Bonn, Ger.: Institute for the Study of Labor, 2007), p. 48, <http://ftp.iza.org/dp3216.pdf>.
65. "About PISA," Organisation for Economic Co-operation and Development, accessed May 2014, <http://www.oecd.org/pisa/aboutpisa>.
66. Organisation for Economic Co-operation and Development, *Programme for International Student Assessment (PISA): Results from PISA 2012: United States* (Paris: Organisation for Economic Co-operation and Development, n.d., ca. 2013), <http://www.oecd.org/pisa/keyfindings/PISA-2012-results-US.pdf>.
67. Hanushek, Peterson, and Woessmann, *Endangering Prosperity*, p. 3.
68. Milton Friedman, *Capitalism and Freedom*, 40th anniversary ed. (Chicago: University of Chicago Press, 2002), pp. 95-96.
69. Hanushek and Woessmann, *Education Quality and Economic Growth*, p. 16.
70. Ibid., p. 14.
71. Ibid., pp. 20-21.
72. Friedman, *Capitalism and Freedom*, p. 89.
73. Ibid., p. 91.
74. Ibid., p. 93.

75. Caroline M. Hoxby, introduction to *The Economics of School Choice*, ed. Caroline M. Hoxby (Chicago: University of Chicago Press, 2003), pp. 10-11, <http://www.nber.org/chapters/c10083.pdf>.
76. Adam Emerson, "Howard Fuller – podcastED," Apr. 18, 2011, <http://www.redefinedonline.org/2011/04/howard-fuller-podcasted>.
77. Gwartney et al, *Macroeconomics: Private and Public Choice*, p. 162.
78. Malcolm Glenn and Michelle Gininger, *School Choice Now: The Year of School Choice: School Choice Yearbook 2011-12* (Washington, DC: Alliance for School Choice, 2012), p. 9, http://s3.amazonaws.com/assets.allianceforschoolchoice.com/admin_assets/uploads/67/scy2012.pdf.
79. John Merrifield, *Dismal Science: The Shortcomings of U.S. School Choice Research and How to Address Them*, Policy Analysis 616 (Washington, DC: Cato Institute, 2008), p. 8, <http://www.cato.org/sites/cato.org/files/pubs/pdf/pa-616.pdf>.
80. Hanushek and Woessmann, *Education Quality and Economic Growth*, p. 17.
81. Malcolm Glenn and Randan Swindler, *School Choice Now: The Power of Educational Choice: School Choice Yearbook 2012-13* (Washington, DC: Alliance for School Choice, 2013), p. 63, http://s3.amazonaws.com/assets.allianceforschoolchoice.com/admin_assets/uploads/167/School%20Choice%20Yearbook%202012-13.pdf.
82. Patrick J. Wolf, Babette Gutmann, Michael Puma, Brian Kisida, Lou Rizzo, Nada Eissa, Matthew Carr, and Marsha Silverberg, *Evaluation of the DC Opportunity Scholarship Program: Final Report*, NCEE 2010-4018 (Washington, DC: US Dept. of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, 2010), p. xx, <http://ies.ed.gov/ncee/pubs/20104018/pdf/20104018.pdf>.
83. Glenn and Swindler, *School Choice Yearbook 2012-13*, p. 18.
84. John Robert Warren, *Graduation Rates for Choice and Public School Students in Milwaukee, 2003-2009* (Milwaukee: School Choice Wisconsin, 2011), p. 2, <http://www.schoolchoicewi.org/files/1613/6018/6466/2011-Grad-Study-FINAL3.pdf>.
85. Ibid., p. 7.
86. Glenn and Swindler, *School Choice Yearbook 2012-13*, p. 17.
87. Ibid., p. 18.
88. Matthew M. Chingos and Paul E. Peterson, "Experimentally Estimated Impacts of a School Choice Intervention on Long-Term Educational Outcomes: The Effects of School Vouchers on College Enrollment," paper presented at the Annual Meeting of the Association for Public Policy Analysis and Management, Washington, DC, 2013, p. 3, <http://www.hks.harvard.edu/pepg/PDF/Papers/PEPG12-10.pdf>.
89. Ibid., p. 3.
90. Patrick J. Wolf, "School Voucher Programs: What the Research Says About Parental School Choice," *Brigham Young University Law Review* 415 (2008), p. 445, <http://digitalcommons.law.byu.edu/cgi/viewcontent.cgi?article=2402&context=lawreview>.
91. Clive R. Belfield and Henry M. Levin, *The Effects of Competition on Educational Outcomes: A Review of US Evidence* (New York: Columbia University, Teachers College, National Center for the Study of Privatization in Education, 2002), p. 2, http://www.ncspe.org/publications_files/688_OP35V2.pdf.
92. Ibid., p. 35.
93. Greg Forster, *A Win-Win Solution: The Empirical Evidence on School Choice*, 3rd ed. (Indianapolis: Friedman Foundation for Educational Choice, 2013), p. 7, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/994/A-Win-Win-Solution--The-Empirical-Evidence-on-School-Choice.pdf>.
94. Ibid., p. 11.
95. Ibid., p. 15.
96. Michael T. Owyang and E. Katarina Vermann, "Measuring the Effect of School Choice on Economic Outcomes, *Regional Economist* (St. Louis: Federal Reserve Bank of St. Louis, 2012), p. 8, http://www.stlouisfed.org/publications/pub_assets/pdf/re/2012/d/high_schools.pdf.
97. Ibid., pp. 8-9.
98. Jeff Spalding, *The School Voucher Audit: Do Publicly Funded Private School Choice Programs Save Money?* (Indianapolis: Milton and Rose D. Friedman Foundation, September 2014), p. 39, www.edchoice.org/SchoolVoucherAudit
99. Ibid.
100. Benjamin Scafidi, *The Fiscal Effects of School Choice Programs on Public School Districts* (Indianapolis: Friedman Foundation for Educational Choice, 2012), p. 15, <http://www.edchoice.org/CMSModules/EdChoice/FileLibrary/796/The-Fiscal-Effects-of-School-Choice-Programs.pdf>.
101. Ibid., p. 1.
102. Merrifield, *Shortcomings of U.S. School Choice Research*, p. 2.
103. Ibid., p. 6.
104. Andrew J. Coulson, *Markets vs. Monopolies in Education: A Global Review of the Evidence*, Policy Analysis 620 (Washington, DC: Cato Institute, 2008), p. 3, <http://object.cato.org/sites/cato.org/files/pubs/pdf/pa620.pdf>.
105. Anna J. Egalite, "Measuring Competitive Effects From School Voucher Programs: A Systematic Review," *Journal of School Choice* 7, no. 4 (2013), p. 460, doi:10.1080/15582159.2013.837759.
106. See note 69 above.
107. Coulson, *Markets vs. Monopolies in Education*, pp. 10-11.
108. See note 40 above.
109. "Fast Facts: Expenditures," National Center for Education Statistics, accessed Jan. 24, 2014, <http://nces.ed.gov/FastFacts/display.asp?id=66>.
110. Hanushek, Peterson, and Woessmann, *Endangering Prosperity*, p. 59.
111. Ibid., pp. 60-61.
112. Ibid., pp. 62-63.
113. Ibid., p. 63.

114. Ibid.

115. Ibid., p. 64.

116. Ibid., 6n, p. 127.

117. Forster, *Empirical Evidence on School Choice*, p. 28.

118. See note 5 above.

About the Author



Raymond J. Keating serves as chief economist with the Small Business & Entrepreneurship Council (SBE Council), a nonpartisan, nonprofit small-business advocacy group. He writes, speaks, and testifies on a wide range of issues affecting the economy.

Keating also writes a weekly column for *Long Island Business News*. Previously, for more than 11 years, he wrote a column for *Newsday* on Long Island.

In addition, Keating is an adjunct professor and lecturer in the business school at Dowling College.

Keating has written nine books, including *Unleashing Small Business Through IP: Protecting Intellectual Property*, *Driving Entrepreneurship* (2013), “*Chuck*” vs. the Business World: Business Tips on TV (2011), *U.S. by the Numbers: What’s Left, Right, and Wrong with America State by State* (2000), *New York by the Numbers: State and City in Perpetual Crisis* (1997), and *D.C. by the Numbers: A State of Failure* (1995). He also has written four novels and contributed essays to four other nonfiction books.

Keating has penned hundreds of articles, with pieces published in such periodicals as *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *Boston Globe*, *National Review*, *Investor’s Business Daily*, *Chicago Tribune*, *The Washington Times*, *New York Post*, *Daily News*, and many more.

His areas of expertise include taxation; federal, state and city budget issues; monetary policy; regulation; education policy; energy policy; supply-side economics; the economics of sports stadiums and arenas; the U.S. economy; trade; and a host of other small-business issues.

Keating holds an MA in economics from New York University, an MBA in banking and finance from Hofstra University, and a BS in business administration and economics from St. Joseph’s College.

Commitment to Methods & Transparency

The Friedman Foundation for Educational Choice is committed to research that adheres to high scientific standards, and matters of methodology and transparency are taken seriously at all levels of our organization. We are dedicated to providing high-quality information in a transparent and efficient manner.

All individuals have opinions, and many organizations (like our own) have specific missions or philosophical orientations. Scientific methods, if used correctly and followed closely in well-designed studies, should neutralize these opinions and orientations. Research rules and methods minimize bias. We believe rigorous procedural rules of science prevent a researcher's motives, and an organization's particular orientation, from pre-determining results.

If research adheres to proper scientific and methodological standards, its findings can be relied upon no matter who has conducted it. If rules and methods are neither specified nor followed, then the biases of the researcher or an organization may become relevant, because a lack of rigor opens the door for those biases to affect the results.

The author welcomes any and all questions related to methods and findings.



One American Square
Suite 2420
Indianapolis, IN 46282
(317) 681-0745
edchoice.org

Dr. Milton Friedman, Founder
Nobel Laureate

Dr. Rose D. Friedman, Founder
Noted Economist

BOARD OF DIRECTORS

Dr. Patrick Byrne, Chairman
CEO, Overstock.com

Janet F. Martel, Vice Chairperson

Lawrence A. O'Connor, Jr., Treasurer
Butler Business Consulting Group

J. Scott Enright, Secretary
Exec. VP & General Counsel, Emmis Communications Corp.

Robert C. Enlow
President & CEO, Friedman Foundation for Educational Choice

Charles H. Brunie

Dr. David D. Friedman
Professor, Santa Clara University

Greg Gianforte
Founder, RightNow Technologies

William J. Hume
Chairman of the Board, Basic American, Inc.

Fred S. Klipsch
Chairman, Hoosiers for Quality Education

Fred Reams
Reams Asset Management

Virginia Walden Ford
Education Activist

Dr. Michael Walker
President, The Fraser Institute Foundation

 facebook.com/edchoice

 twitter.com/edchoice