

3/1/2013

Prepared for Inclusion in Public Economics: The Government's Role in American Economics
edited by Steven Payson

Government Intervention in the U.S. Market for Education

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I. Introduction

The amount of education an individual obtains has enormous effects on the individual and on society. A person's education affects their probability of employment, occupation, and earnings.¹ In addition to these labor market effects, a person's education may also impact the person's health, happiness and leisure activities.² The levels of education obtained by the population also have implications for society as it affects tax revenues, tax expenditures, and economic growth.³ Society may also benefit as higher levels of education are correlated with increases in civic participation, charitable giving, and reductions in crime levels.⁴ The enormous effects of education on society, the potential for market failure in the education sector and a concern over the equitable distribution of education within society all provide a rationale for government intervention in the market for education.

The purpose of government involvement in education is to insure that individuals invest in the optimal level of education and that education is produced efficiently. In this chapter, we provide an overview of human capital theory and highlight some of the reasons why individuals may not choose the socially optimal level of education. We then discuss the rationale for government intervention in the market for education. Currently, the federal government intervenes in the education market by providing federal funds, evaluating educational programs

¹ Heckman, Lochner and Todd (2006) provide a survey of the theory and statistical methods used to evaluate the returns to education. Deere and Vesovic (2006) provide a survey of historical estimates of the returns to education and relates them to changes in the wage structure. Both surveys provide evidence that education affects earnings.

² See Haveman and Wolfe (1984) and Wolfe and Haveman (2002) for overviews of the effects of education on the individual and on society. Grossman (2006) provides an analysis of the effects of education on nonmarket outcomes with a special focus on the effects of education on health. Cutler and Lleras-Muney (2008) also provide an overview of the effects of education on health. Oreopoulos and Salvanes (2011) document a relationship between happiness and educational levels as does Helliwell (2003).

³ Baum, Ma, Payea (2010) report education increases tax revenues. Hanushek and Kimko (2000) evaluate the effects of education on economic growth.

⁴ Lochner and Moretti (2004) provide evidence on the relationship between education and crime. Milligan, Moretti and Oreopoulos (2004) demonstrate that education increases voter participation.

and administering educational programs. Federal funds are used to defray the costs of education for some students, to evaluate educational programs and / or to encourage innovation in education.⁵ In this chapter, we also present a few of the challenges facing higher education in the United States.

II. Human Capital Theory and Evidence on Earnings and Employment Differences

The decision of whether to invest in education depends on the expected benefits and costs of the investment. According to Becker (1962, 1964), individuals should invest in education if the present discounted value of their net lifetime earnings is higher than it would be without the investment.⁶ In theory, the decision of whether to invest in education is quite clear. In reality, individuals may not know the benefits of education and / or the costs of education.⁷ This lack of perfect information can lead to individuals choosing a suboptimal level of education. Since Becker's seminal work on human capital, an enormous literature has arisen seeking to measure the exact effects of education on earnings.⁸

⁵ Race to the Top (RTTT) is an example of federal funds used to promote innovation in education.

⁶ The net earnings incorporates the costs of investing in education. The present discounted value is necessary in order to evaluate the difference in earnings over the person's lifetime. As noted by Becker, the theory can easily be extended to individuals comparing their utility from different education levels. Dickson (2012) provides an example of how to calculate the present discounted value of earnings for different education levels and also provides an overview of the literature surrounding the investment decision.

⁷ Dominitz & Manski (1996), Betts (1996) and Blau and Feber (1991) all demonstrate that individuals do not accurately predict the benefits of education. Avery and Kane (2004) show that students may be unaware of the true costs of education. It may also be the case that individuals are able to accurately predict current earnings for college graduates but those earnings may not accurately represent their earnings when they graduate from college. Uncertainty in regards to the returns to the investment or to the costs of the investment may also affect the decision of whether to invest in education.

⁸ The primary effects of education on earnings were first evaluated using estimating equations based on the work of Jacob Mincer (1974). These earnings equations relate earnings back to individual choices of education levels. Since that time, the method by which researchers have sought to measure the effects of education on earnings has grown to account for possible selection bias. Card (1999) provides an overview of the literature on the causal estimates of the returns to education. Heckman, Lochner and Todd (2006) provide a survey of the theory and statistical methods used to evaluate the returns to education.

Almost all of the research on the effects of education on individuals and society rely on either government data or on government funding. The Bureau of Labor Statistics (BLS) collects an enormous amount of data on individuals' earnings, employment, and occupations.⁹ These data include the Current Population Surveys as well as the National Longitudinal Surveys.¹⁰ The National Center for Education Statistics (NCES), within the Department of Education, also collects data on schools, educational attainment and labor market outcomes for individuals.¹¹ NCES maintains databases on elementary and secondary schools as well as for colleges and universities.¹² NCES also records individual-level information from surveys such as: the National Education Longitudinal Study of 1988, the High School and Beyond Survey, and the National Postsecondary Student Aid Survey.¹³ In addition to using federal funds to collect these data, the federal government also helps to fund studies evaluating the education production process as well as studies evaluating the barriers to obtaining more education.¹⁴

Current information on earnings and unemployment rates are provided by the Bureau of Labor Statistics (BLS). Table 1 provides the average unemployment rate and weekly earnings in 2011 for individuals separated by educational attainment.

⁹ The Bureau of Labor Statistics is a part of the Department of Labor. It maintains its own website here: <http://www.bls.gov/home.htm> In the guide to websites at the end of the chapter, I provide some of the links to available data sources.

¹⁰ The National Longitudinal Surveys include: The National Longitudinal Survey of Youth 1997 (NLSY97), The National Longitudinal Survey of Youth 1979 (NLSY79), NLSY79 Children and Young Adults, National Longitudinal Surveys of Young Women and Mature Women (NLSW), and the National Longitudinal Surveys of Young Men and Older Men.

¹¹ National Center for Education Statistics maintains its own website here: <http://nces.ed.gov/>.

¹² The National Center for Education Statistics records information on high schools with the Common Core of Data (CCD) and the Schools and Staffing Survey (SASS) for example. NCES also maintains the Integrated Postsecondary Education Data System (IPEDS) that records information on colleges and universities.

¹³ These are only a few of the surveys that NCES records. They also maintain the Education Longitudinal Survey as well as many others. A complete listing can be found on their website: <http://nces.ed.gov/>

¹⁴ Too many studies have been done on the effects of inputs on the educational process to mention each by name. An example of a study commissioned by the Department of Education was the Coleman Report (1966). The Coleman report has spurred numerous other studies in an attempt to discover what factors affect the production of education. Recently, the Department of Education and the Department of the Treasury wrote a report making the case for higher education. It is available here: http://www.treasury.gov/connect/blog/Documents/20121212_Economics%20of%20Higher%20Ed_vFINAL.pdf

[Insert Table 1 here]

These statistics show the averages by education level but do not control for any individual-level characteristics that may also affect earnings such as: age, job experience, occupation or ability. These data show large average differences in earnings and unemployment by education.

In almost every case, an increase in education is associated with an increase in earnings and a decrease in the unemployment rate.¹⁵ High school graduates earn on average \$187 more per week than individuals without a high school diploma. College graduates earn on average \$415 more per week than an individual with a high school degree. As shown in Table 1, more educated workers are on average more likely to be employed. Individuals without a high school diploma report the highest unemployment rate at over 14% while college graduates maintain an unemployment rate below 5%. The unemployment rate for individuals with a professional or doctorate degree are approximately 2.5 percent.

The information in Table 1 underestimates the average differences in total compensation by education. Workers with more education are more likely to work in jobs that offer paid sick leave, health insurance, and retirement benefits as part of their compensation.¹⁶ Pierce (2001) demonstrates that total compensation inequality is greater than wage inequality.¹⁷ In addition to receiving paid benefits, workers who are more educated are also more likely to work at jobs that offer other types of benefits. For example, individuals with more education are less likely to

¹⁵ The one exception is the transition from a professional degree to a doctorate degree.

¹⁶ Leibowitz (1983) provides information on labor costs and fringe benefits offered to employees.

¹⁷ Pierce demonstrates this for the period of 1981-1997.

work night and evening shifts.¹⁸ They are also more likely to report psychological benefits such as a feeling of satisfaction from working.¹⁹

The large differences in compensation between individuals of differing education levels may be due in part to the characteristics of individuals who choose to obtain more education. If, for example, individuals who obtain more education are of higher ability than individuals who choose not to obtain more education, then the returns to education are potentially biased by ability.²⁰ Ability could be related to cognitive skills that are easily measured on aptitude tests or could also be related to non-cognitive skills such as a person's work ethic that is not easily measured on a test. Heckman et. al (2006) demonstrate that an individual's non-cognitive skills affect whether he / she obtains more education and also affect his / her earnings after controlling for education.

Researchers use a variety of approaches to account for possible selection bias in the returns to education.²¹ Angrist and Krueger (1991) exploit differences in compulsory schooling laws to evaluate the effects of education on earnings. Their argument for using compulsory schooling laws is that these should be unrelated to ability and therefore the returns to education should be due only to the differences in education. They find that education leads to approximately a 7 percent increase in earnings. While the validity of their instrument has been questioned, their results are similar to other studies that find 7-10 percent increase in earnings

¹⁸ Hamermesh (1999) shows that less educated workers are more likely to be engaged in night and evening shift work.

¹⁹ Duncan (1976) shows that education positively affects working conditions. Oreopoulos and Salvanes (2011) show more educated workers are more likely to derive satisfaction from working and are also more likely to report that they are happier conditional on income.

²⁰ Willis and Rosen (1979) provide a structural model to evaluate the extent that selection bias affects estimates of the returns to education. They find that expected earnings do affect the probability of an individual pursuing more education.

²¹ Selection bias is the idea that individuals who self-select to obtain more education may differ in substantial ways from individuals who choose not to obtain more education.

due to education.²² Ashenfelter and Rouse (1998) estimate a 9 percent return per year of education using data from twins. The argument for using twins is that twins share the same genetic makeup and so the difference in earnings should be due to differences in education rather than differences in innate ability. Bronars and Oettinger (2006) use data from non-twin sibling pairs and also find estimates of the returns to schooling ranging from 3-6% for males and approximately 7% for females.

Two explanations exist for why education positively affects earnings and lowers the probability of unemployment. One of the explanations for higher earnings is that education increases an individual's amount of human capital and this makes him or her more productive.²³ Another potential explanation is that education serves as a signal to the employer about the individual's level of ability. Spence (1973) provides a model of investing in education so as to signal ability to potential employers. The rationale for investing in education is that individuals know their own ability but this is unknown to future employers. Employers can receive signals about ability and thus individuals choose to invest in education so as to send a signal to employers about their ability. The critical assumption in the signaling model of education is that it is less costly for individuals of high-ability to obtain the signal. This assumption could be explained by either lower costs of education due to scholarships or by lower psychic costs of investing in more education as it might be easier for high-ability individuals to learn new information. Weiss (1995) provides an overview of the two theories and notes that sorting models are broader than pure human capital models. Sorting models, as Weiss (1995) notes, allow for some characteristics of individuals not observed directly by the firm to be correlated

²² Bound and Jaeger (1996) suggest season of birth is a weak instrument and thus may bias the results. Card (2001) reviews estimates of the returns to schooling and in many of the studies the estimates are between 7 and 10 percent.

²³ Becker (1962, 1964) provides an introduction to human capital theory. Human capital theory assumes that individual investments in education make them more productive.

with the individual's choice of schooling. The literature does provide some empirical evidence in support of the idea that at least some of the returns to education are due to signaling.

A large literature focuses on the signaling nature of the General Education Development (GED) exam. Individuals can choose to obtain their high school degree either by taking and passing the GED exam or by graduating from high school through traditional means. Heckman et al (2012) show that state policies that make it easier for individuals to take and pass the GED actually increase the number of individuals dropping out of high school. This is unfortunate as evidence by Cameron and Heckman (1993) demonstrate that individuals who obtain their high school degree by examination are not equivalent to individuals who obtain their degree by traditional means. As noted by Cameron and Heckman (1993) and Heckman and Rubinstein (2001), individuals who obtain the GED do not possess the same non-cognitive skills as traditional high school graduates. The GED may serve as a signal to employers that these individuals are not able to persevere like traditional high school graduates and this may explain why they earn less than traditional high school graduates with equal test scores.

III. Rationale for Government Intervention

The government is involved in the market for education due to a concern that market failures may prevent individuals from investing in the socially optimal level of education and that individuals may not be given equal access to education. The literature suggests there may be three types of market failures in the market for education: externalities, credit constraints, and imperfect information.²⁴ Externalities, a cost or benefit bestowed on someone outside the transaction, are often mentioned as a reason for government involvement in education. With

²⁴ Hanushek (2002) also provides economies of scale as a possible reason for government intervention in the market for education. However, there is little evidence that economies of scale are present in the market for education and thus we chose not to discuss it as a possibility.

positive externalities, the government should subsidize education in an effort to increase investment. Credit constraints may also lead to market failure in education. This can lead to under investment in education without government involvement. A third reason for government involvement in education is asymmetric or incomplete information. Individuals may not be able to accurately discern the benefits to education, the costs of education or the quality of education. In the presence of information problems, then the government should undertake actions to promote transparency and accountability of schools. In this section, we explore each of the three reasons given for government involvement in detail.

A. Externalities from Education

Education may carry with it externalities that affect both the individual and society. When choosing his / her optimal level of education, the individual may only consider their own private benefits and may only narrowly consider their own monetary benefits. Yet, research shows that the effects of education go beyond the labor market and extend beyond just the individual obtaining the education. For the individual, evidence suggests it affects health, happiness, quantity of children, leisure choices, marital prospects and many other outcomes.²⁵ In addition, education also affects society by decreasing crime, increasing civic participation, and increasing charitable giving. Society may also benefit from increases in tax revenues, reductions in tax expenditures and increases in economic growth.²⁶

²⁵ Haveman and Wolfe (1984) and Wolfe and Haveman (2002) provide an overview of the benefits of education that accrue to individuals and societies. These include both marketed benefits such as higher earnings and nonmarketed benefits that are not traded in markets such as leisure choices fertility and marital prospects. Currie and Moretti (2003) provide evidence on the effects of maternal education on infant health. Oreopoulos and Salvanes (2011) document a relationship between happiness and educational levels as does Helliwell (2003).

²⁶ Baum, Ma, Payea (2010) also report that education increases tax revenues and report that individuals with more education are less likely to receive food stamps and are less likely to use the national free and reduced lunch program.

A large literature is devoted to the relationship between education and health. Grossman (2006) and Cutler and Lleras-Muney (2010) evaluate the theories relating education and health status. A challenge in this literature is that it is difficult to discern whether the relationship between education and health is causal. Individuals who invest in education may choose to invest in health as well because they value the future more than others. This would suggest that the relationship between education and health may be due to the preferences of the individuals rather than being due to a causal relationship between education and health.²⁷ Education could potentially cause better health by reducing the probability that individuals engage in certain unhealthy behaviors such as smoking or by helping individuals to better understand the health ramifications of their actions.²⁸ Cutler and Lleras-Muney (2010) provide estimates of the effects of education on health and find that one year of education increases life expectancy by approximately 0.18 year. The exact monetary value of this 0.18 year of life depends on a series of assumptions about the value of life as well as discount rates. If education does affect health, then education may also make individuals more productive just by making them healthier.

Education may boost the productivity of workers in society through knowledge spillovers and thereby may increase economic growth. Moretti (2004a, 2004b) uses data from cities to demonstrate the spillover effects of having more college-educated workers in a city on both productivity levels and wages. He finds spillover effects at the city level which suggest that externalities can cause economic growth. On a larger scale, Hanushek and Kimko (2000) use international data and find a strong relationship between test scores and gross domestic product. Hanushek and Woessman (2008) review the evidence on the relationship between economic

²⁷ Tenn et. al (2010) show that the relationship between smoking and education may be due to correlation rather than causation.

²⁸ Currie and Moretti (2003) show education decreases the probability of smoking. Kenkel et. al (2006) show education decreases the probability of smoking though only for males. However, Kenkel et. al (2006) find no effect of education on obesity.

growth and education and suggest that the most important factor for economic growth is the cognitive skills of the population.

The effects of education on economic growth are only one of the means by which education affects society. Lochner and Moretti (2004) provide evidence that education decreases crime levels. Decreases in crime levels can improve society by reduced expenditures on criminal enforcement but may also benefit society through increased social cohesiveness. Milligan, Moretti and Oreopoulos (2004) find that education increases voter turnout and increases political interests. Dye (1980) and James (2009) show that education positively affects both volunteer time and charitable estate planning. The effects on voter turnout and on volunteer time would also both serve potentially to increase social cohesiveness.

Ideally, individuals would incorporate all of these positive effects on themselves, their family and on the country when deciding whether to invest in education. The problem with externalities, though, is that individuals do not have an incentive to internalize benefits that extend beyond themselves. This would cause them to potentially underinvest in education from society's viewpoint. One of the methods both the state government and federal government uses to encourage investment in education is to subsidize the costs of education. The rationale for subsidizing the costs of education could be due either to positive externalities from education or credit constraints that prevent students from investing in the optimal level of education.

B. Credit Constraints and Equity Concerns

Credit constraints may prevent individuals who desire to obtain more education from investing in education. The question of whether individuals are credit constrained has received considerable attention in the literature and has important policy implications. Credit constraints

could exist both for children and for young adults deciding to invest in education. With primary and secondary education, families must invest in education for their children. For college, students as well as their families may face credit constraints that may prevent them from investing in a college education.

Children must rely on their parents to make educational investments for them. These investments could take many forms including the parents choosing to buy a house in a good school district or parents choosing to pay for private school tuition. Black (1999) and Figlio and Lucas (2004) both demonstrate that parents pay more for houses where their children attend high quality public schools controlling for the characteristics of the house. Credit constraints, though, may limit the ability of parents to pay for either more housing or for the tuition of private schools. Hoxby (1996) notes that children are biologically timed to arrive when parents' income is low. Caucutt and Lochner (2006) demonstrate that the timing of parents' income affect investments in children and that having lower income early in life can lead to under-investments in education. Lochner and Monge-Naranjo (2012) discuss the role of credit constraints on education decisions and suggest that early childhood credit constraints may play a larger role in investments in education than credit constraints during high school and college.²⁹

In recent years with increasing tuition levels, college attendance is becoming more closely tied to household income. Haveman and Wilson (2007) document large differences in college attendance and college graduation by family income. Using data from the Panel Study of Income Dynamics (PSID), they find that the difference in college attendance rates between those in the top quartile of household income and bottom quartile of household income is almost 50 percentage points. Lochner and Monge-Naranjo (forthcoming) use data from the NLSY79 and NLSY97 to show that in the past few decades that attendance in college increases with family

²⁹ This is also supported by research from Caucutt and Lochner (2006) and Cunha, Heckman and Schennach (2010)

income independent of ability. This relationship between income and college-going behavior was not exhibited with the same strength in earlier decades. Bailey and Dynarski (2011) also demonstrate a strong relationship between college enrollment, persistence and graduation with family income.

One of the methods by which the federal government attempts to relax credit constraints is by offering financial aid for students in the form of: grant aid, student loans, work-study programs and tax credits. In the 2011-2012 academic year, the federal financial aid system represented 73 percent of all financial aid distributed to students.³⁰ Students must file the Free Application for Federal Student Aid (FAFSA) from the Department of Education in order to qualify for grants, student loans, and work-study. The FAFSA has been criticized for being complicated and this may limit the effectiveness of federal financial aid at relaxing credit constraints.³¹ The Department of the Treasury handles financial aid offered in the form of tax credits. All funds received through the tax system are necessarily delayed as they are only distributed after the individual has filed their taxes in the following year. Therefore, the disbursement of aid through the tax system may occur 18 months after the payment of funds for education.³² This delay and complexity limit the effectiveness of the aid at resolving credit constraints for individuals.

³⁰ Baum and Payea (2012) provides this statistic. Other sources of financial aid could be private corporations, the higher education institutions themselves as well as state governments.

³¹ Dynarski and Scott-Clayton (2006, 2012) both provide constructive criticism as to how the FAFSA could potentially be changed so as to promote transparency and ease of use without sacrificing too much in terms of the targeting of financial aid. They point out that currently the FAFSA is more complicated than federal tax returns.

³² Long (2004a) demonstrates that the effects of the HOPE credit were minimal in the early years of the program. She mentions that this may be due to the fact that the funds are released so long after the expenditures are made on education. She also mentions that it may be due to a lack of information about the credit.

State governments also offer some financial aid to students. One of the methods that they offer financial aid is through the reduced prices students pay for public universities in the state.³³ They also, though, offer financial aid in the form of grants. In recent years, state governments have been moving away from need-based financial aid to merit aid. Merit aid, rather than being based on financial-need, is based on academic accomplishments. Baum and Payea (2012) report that between 1985 and 2005 merit aid as a percent of state grant aid grew from 9% to 29%. While merit aid does have the advantage of helping universities to recruit talent, it may be diverting limited funds for financial aid to students who do not need it. Cornwell and Mustard (2007) demonstrate that car sales increased after the elimination of an income cap for merit aid in Georgia.³⁴ Their results suggest that merit aid may be helping families who do not need financial aid. Merit aid does have its' benefits in recruiting and enrolling well qualified students but it also has costs. As shown in Cornwell et. al (2005), students may respond in undesirable ways to scholarship rules. They may, for example, be more likely to withdraw from courses so as to maintain the necessary grade point average to retain the merit aid. Merit aid may be diverting funds from individuals who most need financial aid and thus may not be helping to resolve credit constraints for individuals.

One of the concerns with the growing expenses of higher education is that it may no longer be accessible for individuals from low family incomes. Since higher education is known to increase earnings, there is the concern that without measures to help individuals afford higher education that higher education will serve to increase inequality in society rather than decrease it.

³³ Long (2004b) provides an analysis of in-state tuition and how it affects students' decisions of where to attend college. In the article, it is suggested that lower in-state tuition at public universities may cause individuals to attend a lower quality college than the one they would have chosen absent the tuition decrease.

³⁴ Cornwell and Mustard (2007) and Cornwell et. al (2005) both investigate the effects of the Help for Outstanding Pupils Educationally (HOPE) scholarship in Georgia.

Concerns over credit constraints and equal access to education provides a rationale for government subsidies for education.

C. Imperfect Information and Accountability

George Akerlof, A. Michael Spence, and Joseph Stiglitz won the Nobel Prize in Economics in 2001 for their work that demonstrated that imperfect and asymmetric information can cause market failure. In education, there is the possibility of imperfect information on both sides of the market. Individuals who are deciding whether to invest in education face imperfect information about the benefits from schooling, the costs of schooling and even potentially their own ability. On the supply side of the market, producers may be uncertain as to what factors matter most for student achievement and may also be uncertain as to the quality of teachers prior to hiring them. In an effort to reduce information problems in the market for education, the government actively promotes both transparency and accountability in education.

Individuals may not have perfect information in regards to the returns to education. Several researchers have demonstrated that individuals do not know the average earnings for degree recipients.³⁵ For individuals who can accurately predict earnings differences, there is still uncertainty in regards to their benefits from investing in education. Market conditions may differ at the time of graduation from the current time period and this can affect earnings. Oreopoulos, von Wachter and Heisz (2012) demonstrate that macroeconomic conditions at the time the individual graduates from college has long lasting impacts on the individuals' earnings. Imperfect information may also arise as the individual may not know their own ability and may not be able to accurately predict whether they will graduate from college. Kane and Rouse

³⁵ A few examples of studies that demonstrate individuals do not accurately assess benefits of education are: Dominitz and Manski (1996); Betts (1996); Blau and Feber (1991); Nicholson and Souleles (2001); Stock and Siegfried (2001).

(1999) show that individual expectations of whether they will obtain a degree often differ from actual degree obtainment.

Individuals may be unable to accurately predict the costs of college as well.³⁶ In part, this may be due to the pricing structure in education. The costs of college, for example, are often reported in terms of the listed prices. Yet, very few students actually pay the listed price due to financial aid. The lack of transparency in regards to actual costs may discourage students from applying to college. Recently in an effort to increase applications from low-income students, some universities have advertised completely transparent financial aid packages such as the “no-loans” program available at Princeton and other selective universities for individuals below a certain household income threshold.³⁷ Pallais and Turner (2007) provide a review of financial aid policies at selective private and public universities geared at increasing applications from low-income students and they find these programs do increase student applications.

One of the potential problems with financial aid in the United States is that the process for applying for aid is complicated. Individuals only receive their full amount of financial aid if they file complete paperwork with both the Department of Education and their taxes with the Department of the Treasury. When filing their taxes, the individual must choose what type of credit to claim for educational expenses. The Government Accountability Office (GAO, 2005) recently conducted a study to evaluate whether parents and families are choosing the optimal deductions for education expenses. The 2005 report found that many did not and that many individuals who are eligible for tax credits do not appear to claim them. Bettinger et. al (2012) demonstrate that individuals who are randomly assigned coaching through the financial aid

³⁶ Avery and Kane (2004) find some students and parents overestimate the costs of college substantially. Notably, even if individuals can accurately list the tuition and fees for a college this may still be an overestimate of the cost of college as only about one-third of students pay listed tuition and fee prices (Baum and Ma, 2009).

³⁷ Linsenmeier et. al (2003) provide an analysis of a no loans program on enrollment yields.

process are more likely to apply to college and enroll in college than are individuals who do not receive coaching. Both the Bettinger et. al (2012) and the GAO (2005) report suggest information problems that may be limiting the effectiveness of federal financial aid.

The quality of schools and colleges are difficult to ascertain immediately. For primary and secondary education, the quality of schools is often measured by the average test scores of previous cohorts of students. These earlier test scores, however, may not accurately reflect the quality of the teachers as they may be due in part to the characteristics of the cohort of students. In addition, peers and teachers play a large role in the production of education. Peers change over time so there may be deviations in the quality of education due to this. Teacher turnover may also affect quality levels. The quality of education may also vary over classrooms and for colleges over fields of study so that the average quality of the school may not accurately represent the quality the student actually will encounter upon matriculating.

Imperfect information may also affect the supply of education. Administrators, for example, may be unable to determine whether an individual will be effective in the classroom until he / she starts teaching. Administrators may also be uncertain as to what factors are most important to improving student success and this leads to uncertainty as to what investments to make so as to improve school quality. In order to do research into what factors matter most for education, it is necessary to obtain high quality data on educational outcomes and schools. The federal government does seek to remedy the information problem by gathering data on schools so as to promote transparency, offering competitive grants for studies on education production, and by evaluating educational programs.

IV. Current Government Involvement in Education

In 2009, the federal government spent over 163 billion on education with almost half (\$88 billion) of it going to primary and secondary schooling in the United States.³⁸ In the same year, the federal government spent approximately \$36 billion on higher education and almost \$30 billion on research for education. The expenditures from the federal government on education do not account for the subsidies it offers for education through the federal tax code. In 2010-2011, approximately 14.8 billion was given in subsidies through tax-based financial aid.³⁹ Tax breaks are available for individuals saving for education, individuals currently paying for education, and for individuals who are paying back student loans.

Several departments and agencies are involved in the market for education including: the Department of Education, the Department of the Treasury, the Department of Health and Human Services, and the Department of Agriculture. The Department of Education oversees the disbursement of federal financial aid, collects data on education, and evaluates educational programs. The Department of Treasury is involved in the market for education by offering tax credits for individuals with educational expenditures. The Department of Health and Human Services is responsible for Head Start and the Department of Agriculture maintains the free and reduced-price lunch program offered at schools throughout the country.

Government involvement in education starts from early childhood. Investments in a child's education at an early age are directly related to early childcare. Blau and Currie (2006) provide an overview of issues surrounding childcare from two different strands of research. The first strand is related to maternal employment. The second strand, more related to this chapter, is

³⁸ The Census Bureau's Statistical Abstract of the United States provides this statistic here: <http://www.census.gov/compendia/statab/2012/tables/12s0222.pdf>

³⁹ US Department of Treasury (2012) "The Economics of Higher Education" Retrieved online at: http://www.treasury.gov/connect/blog/Documents/20121212_Economics%20of%20Higher%20Ed_vFINAL.pdf

the government's efforts to improve educational outcomes of children from disadvantaged families. Head Start is an example of a program funded by the federal government that is designed with the purpose of increasing the well-being of children from low-income families from birth to age 5. The federal government collects data on Head Start families using the Head Start Family and Child Experiences Surveys (FACES). Currie (2005) provides a review of the literature evaluating the effectiveness of Head Start and summarizes that the program does positively affect children.

The federal government is involved in primary and secondary school in several ways. First, it provides substantial funds for education. These funds are given to help offset the costs of educating students. Some of the funds are set aside for students with certain characteristics: students with disabilities, students who are learning English as a second language, American Indians, and students with low-income.⁴⁰ A second means by which the government affects primary and secondary school is by legislation. In 2001, Congress passed the No Child Left Behind (NCLB) Act, or the reauthorization of the Elementary and Secondary Education Act. The purpose of NCLB was to promote accountability and to help insure that all students are provided with an adequate education. NCLB has been criticized for several reasons including the lack of a uniform standard by which to measure success across states. The lack of guidelines as to how to measure adequate yearly progress have also been criticized. Despite the criticisms, there is some evidence that NCLB positively affected student test scores as demonstrated by Dee and Jacob (2011). Another piece of legislation recently passed that is affecting primary and secondary education in the United States is the American Recovery and Reinvestment Act of 2009. With the passage of the Act, the federal government implemented a new competitive

⁴⁰ Duncan (2010) provides an overview of the Department of Education and its role here: <http://www2.ed.gov/about/overview/focus/what.pdf>

grants program for states called Race to the Top (RTTT).⁴¹ The program offers funds for states who submit a competitive proposal on how they can improve education in their state. Under RTTT, the federal government has committed 4 billion dollars to 19 states. All of the proposals as well as progress reports are available for viewing for the general public on the Department of Education website.⁴²

With higher education, the federal government is involved by the granting of federal funds for research as well as the granting of financial aid for students to obtain a degree. Despite the complications in applying for financial aid from the federal government discussed earlier, the volume of financial aid received by students has risen in real terms over the past decade. The volume of money adjusted for inflation given in the form of federal loans has doubled over the past decade as noted by Baum and Payea (2012). As noted earlier, the federal government is the largest source of financial aid for students.

V. Goals and Challenges Facing Higher Education in the United States

The United States is falling behind other countries in terms of test scores as well as the number of students graduating from college.⁴³ This has led to concerns that the United States will no longer be academically competitive with other countries and that economic growth in the United States will slow down. In order to meet the goal of increasing US academic competitiveness, several challenges must be met. First, large differences in educational

⁴¹ A summary of Race to the Top can found here: <http://www2.ed.gov/programs/racetothetop/executive-summary.pdf>

⁴² The website is here: <http://www2.ed.gov/programs/racetothetop/index.html>.

⁴³ Hanushek and Kimko (2000) shows how the United States test scores have evolved over time as compared to other countries. Hanushek (2002) shows how educational attainment in the United States compares to educational attainment in other countries.

attainment persist by race and ethnicity as well as by family income.⁴⁴ Second, half of all students who enter post-secondary education do not graduate.⁴⁵ Given that the majority of the returns to a college education only accrue to individuals who complete college, it is troubling that students are dropping out of college.⁴⁶

Chart 1 shows the educational attainment of individuals in the United States for individuals of different races and ethnicities. African Americans are 3 percentage points less likely to have a high school diploma than whites. African Americans are also approximately 10 percentage points less likely to have a college degree. Hispanics maintain much lower educational levels than individuals of other ethnicities. For both high school graduation and above and college graduation and above, Hispanics are approximately 25 percentage points less likely to have a degree than are whites. The low degree attainment for Hispanics may be due in part to individuals migrating as adults.

A large and growing number of individuals in the United States are undocumented. These individuals who are not in the United States legally still participate in the workforce and face numerous barriers to education. One of these barriers is that in the majority of states they are not eligible for in-state resident tuition. Only thirteen states have passed laws guaranteeing undocumented students in-state resident tuition.⁴⁷ Non-citizens are not eligible for federal financial aid so the discount offered for in-state tuition may be the only financial aid they receive for college.

⁴⁴ The large differences in educational attainment by race and ethnicity are shown in Chart 1 that follows. The large differences in educational attainment by family income are discussed earlier and some references include: Haveman and Wilson (2007). Bailey and Dynarski (2011) also show large differences in educational attainment by family income.

⁴⁵ Dynarski (2008) provides this statistic.

⁴⁶ The large returns to degree attainment are shown in Table 1. Jaeger and Page (1996) also provide evidence on disproportionate returns to degree attainment or as they are known in the literature “sheepskin effects.”

⁴⁷ These states and the years they passed the law are: Texas (2001), California (2002), Utah (2002), New York (2003), Washington (2003), Oklahoma (2003), Illinois (2003), Kansas (2004), New Mexico (2005), Nebraska (2006), Wisconsin (2009), Maryland (2011), and Connecticut (2011).

President Obama's recent executive order stating that his administration will not deport individuals who came to the US as children and allows for legal employment helps to provide incentives for undocumented students to obtain an education.⁴⁸ Yet, there are no guidelines from his executive order as to whether these individuals should qualify for in-state resident tuition rates. Kaushal (2008) and Flores (2010) both demonstrate that passing in-state resident tuition laws for non-citizens could help to boost college enrollment of non-citizens. Dickson and Pender (2012) also show that the effects may be largest at Hispanic-serving institutions.

Dynarski (2008) notes that almost half of all students who enter college do not finish. One explanation for why individuals are not graduating from college is that they are inadequately prepared for the course work. Several solutions exist for this problem including: aligning high school curricula with college curricula, offer interventions in high school and offer remedial courses in college. Kirst (2007) notes several inconsistencies between the material emphasized in K-12 and material required for college success. By aligning the curricula, Kirst (2007) argues we will better prepare students for college. Howell, Kurlaeder, and Grodsky (2010) show that the early assessment program in California appears to reduce the need for remediation in college by letting high school juniors know that they are inadequately prepared for college. These students then work towards becoming more adequately prepared while still in high school. This suggests that early interventions could potentially help to reduce the need for college remediation. Several studies have documented that colleges are now expending a large amount of resources offering remediation for students who are under-prepared for college. Bettinger and Long (2009) find that students who are required to take college remediation courses are more

⁴⁸ Details on the executive order are available from the Department of Homeland Security: <http://www.dhs.gov/ynews/releases/20120612-napolitano-announces-deferred-action-process-for-young-people.shtm>.

likely to graduate from college than students with equal test scores who are not required to take college remediation courses.

One of the challenges facing the United States today is how best to provide financial aid to college for students who wish to attend college. Congress has been evaluating the method in which the federal government determines the amount of need of families and is considering how best to reform the process so that students can be notified early and clearly about the types of aid that they qualify for. Dynarski and Scott-Clayton (2006, 2012) have argued for simplification of the financial aid process and have made some progress in shortening the forms necessary to apply for financial aid. The online FAFSA form now allows for skip logic so that unnecessary questions are skipped. In addition, some students can import IRS data into the form and this helps to reduce the time needed to fill out the FAFSA. Dynarski and Scott-Clayton (2012) argue that more could be done to improve the efficiency of the federal financial aid system including possibly allowing students to input data from an earlier tax return so as to allow students to file for financial aid prior to filling out the taxes for that year.

The loosening of the labor market in recent years has led to some concerns as to whether college graduates will be able to repay their student loans. More than half of college graduates (57% in 2011-2012) graduate with student loan debt and the average amount of debt is almost \$24,000.⁴⁹ Student concerns over possibly defaulting and concern over repaying debt may affect where students decide to work and how much they decide to work. Rothstein and Rouse (2011) demonstrate that student loan debt does appear to affect student decisions of where to work post college graduation. In 2011, approximately 9 percent of students who started repayment in the

⁴⁹ Statistics are from Baum and Payea (2012).

previous year had defaulted.⁵⁰ Students who attend for-profit institutions are substantially more likely to default on their loans and this led to a congressional inquiry into these institutions.⁵¹

VI. Conclusions

President Obama recently called upon the United States to once again lead the world in the production of college graduates. If the United States is to meet this goal, then more will need to be invested in education. The investments will likely need to occur at all levels of education. The large dropout rates for college students suggest that either the students are under-prepared. One method to improve the preparation of students is to increase the quality of education these students obtain in primary and secondary school. The increasing trend towards individuals with higher family income entering college leads to questions about the accessibility of higher education in the United States. One method to improve the accessibility of higher education may be to improve the ease by which individuals can apply for and receive financial aid. The methods that the United States ultimately adopts to improve and increase education will have large consequences for individuals as well as for society as a whole.

⁵⁰ Baum and Payea (2012) provide the statistics on default rates.

⁵¹ The senate reports are available here:

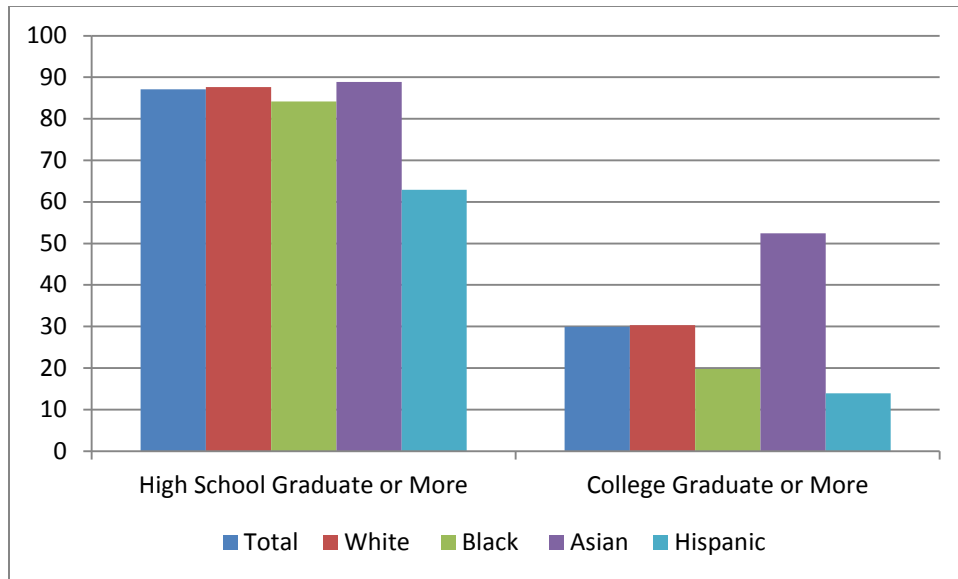
<http://www.gpo.gov/fdsys/browse/committeecong.action?collection=CPRT&committee=health&chamber=senate&congressplus=112&ycord=0>

Table 1: Earnings and Unemployment Rates in 2011 by Educational Attainment

Education attained	Median weekly earnings (\$2011 dollars)	Unemployment Rate
Doctoral degree	1551	2.50%
Professional degree	1665	2.40%
Master's degree	1263	3.60%
Bachelor's degree	1053	4.90%
Associate degree	768	6.80%
Some college, no degree	719	8.70%
High-school diploma	638	9.40%
Less than high school diploma	451	14.10%
All Workers	797	7.60%

Source: Education Pays by the Bureau of Labor Statistics. The data are from the Current Population Survey for individuals 25 and over. The earnings levels are for individuals who are working full-time. http://www.bls.gov/emp/ep_chart_001.txt.

Chart 1: Educational Attainment by Race and Ethnicity



Source: Information is provided for individuals 25 and over in the year 2010. The data is from Table 529 in the Statistical Abstract of the United States 2012. The data come from the Current Population Survey.

Guide to Internet Resources:

The Department of Education: <http://www.ed.gov/>

National Center for Education Statistics: <http://nces.ed.gov/>

Race to the Top (RTTT): <http://www2.ed.gov/programs/racetothetop/executive-summary.pdf>

Department of Education and Department of Treasury report on higher education:
http://www.treasury.gov/connect/blog/Documents/20121212_Economics%20of%20Higher%20Ed_vFINAL.pdf

Bureau of Labor Statistics: <http://www.bls.gov/bls/infohome.htm>

Office of Head Start: <http://www.acf.hhs.gov/programs/ohs/>

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