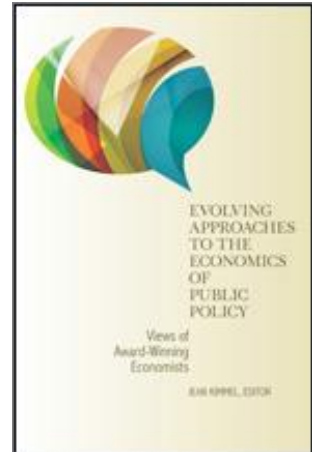




Upjohn Institute Press

The Once (But No Longer) Golden Age of Human Capital

Nancy Folbre
University of Massachusetts Amherst



Chapter 3 (pp. 33-56) in:
Evolving Approaches to the Economics of Public Policy: Views of Award-Winning Economists
Jean Kimmel, editor.
Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 2016
DOI:/ 10.17848/9780880995146.ch3

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**Evolving Approaches to the
Economics of Public Policy**

Views of Award-Winning Economists

Jean Kimmel
Editor

2016

W.E. Upjohn Institute for Employment Research
Kalamazoo, Michigan

Library of Congress Cataloging-in-Publication Data

Names: Kimmel, Jean, editor.

Title: Evolving approaches to the economics of public policy : views of award-winning economists / Jean Kimmel, editor.

Description: Kalamazoo : W.E. Upjohn Institute for Employment Research, 2016.
| Includes index.

Identifiers: LCCN 2016038681 | ISBN 9780880995122 (pbk. : alk. paper) | ISBN 0880995122 (pbk. : alk. paper) | ISBN 9780880995139 (hardcover : alk. paper) | ISBN 0880995130 (hardcover : alk. paper) | ISBN 9780880995146 (ebook) | ISBN 0880995149 (ebook)

Subjects: LCSH: Political planning. | Economic Policy. | Microfinance.

Classification: LCC JF51 .E86 2016 | DDC 320.6--dc23

LC record available at <https://lccn.loc.gov/2016038681>

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W.E. Upjohn Institute for Employment Research
300 S. Westnedge Avenue
Kalamazoo, Michigan 49007-4686

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Cover design by Carol A.S. Derks.
Index prepared by Diane Worden.
Printed in the United States of America.
Printed on recycled paper.

3

The Once (But No Longer) Golden Age of Human Capital

Nancy Folbre
University of Massachusetts Amherst

Human capital remains both a valuable concept and a valuable commodity. However, both its theoretical incarnation and its economic value are losing some of their shine. In this chapter, I will explain why, emphasizing recent reversals both in the way economists think about human capital and in the evidence that its accumulation will continue to deliver rich rewards. My account begins as an exercise in intellectual history, goes on to argue that the U.S. economy is shifting from a regime of excess demand for college-educated workers to a regime of excess supply, then speculates on how such trends might affect both patterns of and political responses to the resulting increased income inequality.

One could examine the history of human capital theory from many vantage points. I focus here on the way in which the theory complemented the view that markets operate in both efficient and equitable ways. This does not imply that the theory can be reduced to an ideology, nor that it was intended as an ideological construct, but simply that it conformed to a set of principles that have been described as “belief in a just world” (Lerner 1980). I use the past tense here for good reason: both the evolution of ideas about human capital theory and the market rewards for it have undermined its initial ideological impact. That is, many current interpretations of human capital theory—as well as current empirical trends—lead toward the conclusion that individuals are not necessarily fairly rewarded for their efforts.

One could examine returns to investments in human capital in a variety of ways. I focus here on rates of return to a college education, examining factors relevant to both the supply of and demand for college-educated workers on the national and the global level. Rather than mobilizing new data, I summarize existing research showing that

absolute rates of return to private investments in college degrees have declined, even though relative rates—expected earnings compared to those of workers without a college degree—have remained attractive. Neither private nor public investments in higher education have expanded as much in recent years as one might expect, given this persistent college premium. I offer an explanation based on shifts in both the demand for the skills that higher education develops and the global supply of college graduates. I also predict a significant constriction of opportunities for all but a relatively small subset of college-educated workers in the near future.

This constriction has probably already intensified inequality in the United States between those in the top decile of the earnings distribution and everyone else, though it seems unlikely that it has affected the relative earnings of the top 1 percent relative to others in the top tenth. A less explored but perhaps politically more important question is how it will affect earnings inequality between those with and those without college degrees, who are currently located at very different ends of the so-called “middle” class. If a declining rate of return on a college education diminishes the average economic distance between the median college graduate and the median high-school graduate, it could lead to the emergence of new political coalitions. Depending on how one defines the “working class,” that group may be increasing both in relative numbers and in relative credentials. Changes in returns to college could also complicate the impact of race and ethnicity, diminishing the advantage that young white non-Hispanics have accrued from their superior access to educational credentials. In general, diminishing rewards to higher education, combined with slow economic growth, may undermine the confidence in upward mobility through “self-investment” that characterized the golden age of human capital.

A BRIEF INTELLECTUAL HISTORY

In 1964, Gary Becker published a book with the simple title *Human Capital*. Neither the basic concept nor the phrase was novel (Folbre 2009). But the Beckerian version—complemented by the convergent insights of Jacob Mincer and Reuben Gronau—quickly gained adher-

ents for two reasons: it was 1) methodologically consistent with the mainstream emphasis on individual choice and 2) easily adaptable for detailed econometric analysis. Becker's book laid the foundation for the subsequent development of his *Treatise on the Family*, widely considered a masterpiece of modern microeconomics.

Placed in historical context, the rise of human capital theory represented an important new episode in an ongoing ideological drama. Classical political economy pointed to significant conflict between capital and labor. Both Ricardian and Marxian theories treated profits as a form of surplus essentially expropriated from workers. Even the neoclassical theories that emerged at the end of the nineteenth century treated profits above and beyond the cost of capital and entrepreneurship as a rent that would, under perfect competition, be competed away to zero. John Bates Clark and Philip Henry Wicksteed offered a more pointed justification for factor payments by developing a more specific theory of distribution, arguing that wages represented the marginal product of labor, just as profits represented the marginal product of capital. The normative implications were clear: each factor of production was remunerated according to its contribution.

Still, the theory of marginal productivity clearly shows that an individual worker's wages can be adversely affected by circumstances completely outside of her or his control. An increase in the supply of labor drives down the equilibrium wage. Firms will hire more workers, but the fact that the marginal worker is paid for her or his marginal product offers little consolation to the average worker who experiences a drop in living standards. The greater the prospect of labor market trends that may worsen the position of workers, the greater the incentive to collectively organize in ways that might prevent an overall increase in labor supply. One conspicuous manifestation of such collective efforts is strict limits on immigration (a subject to which this chapter will later return).

The theory of human capital offers a much stronger ethical justification for wages by emphasizing the link between the quality of labor supplied and the wage earned. Indeed, the notion that a worker's skills represent an animate form of capital elides the very distinction between capital and labor as factors of production. It also implies a far more egalitarian distribution of assets than one based on ownership of financial capital alone. As the journalist Noah Smith put it, "For most of

modern history, inequality has been a manageable problem. The reason is that no matter how unequal things get, most people are born with something valuable: the ability to work, to learn, and to earn money” (Smith 2013).

The first generation of human capital models designed for econometric analysis treated earnings as a function of education and experience, controlling for other factors. Under these models, everyone is a capitalist with the potential to make investments in her or his own productive skills that will pay off in increased future earnings. The theory effectively diverted attention from the earlier problem of class conflict by emphasizing differences among workers, rather than between workers and owners. In other words, it primarily offered an explanation of relative wages (why some earned more than others) rather than an explanation of the absolute level of wages. Changes in productivity drop out of the picture except insofar as technological change might affect the rate of return to specific skills.

This new emphasis was particularly well suited to an era in which higher education in the United States was rapidly expanding, along with opportunities for professional and managerial employment. In the 1960s, a college degree became a ticket to ride on a train that was rapidly gaining momentum. Nor were neoclassical economists the only ones turning their attention to differences among “workers.” Both journalists and sociologists influenced by Marxian political economy soon began to explore the meaning of a professional-managerial class occupying an intermediate position between labor and capital—similar, in that respect, to the older category of petite bourgeoisie or owners of small businesses (Ehrenreich and Ehrenreich 1979).

The human capital approach also provided a timely framework for understanding earnings inequalities based on race and gender, just as these inequalities were provoking new forms of political mobilization. The presumption that individual earnings are determined by education and experience invited consideration of “unexplained” variation as a measure of discrimination. In Becker’s authoritative formulation, such discrimination could be conceptualized as a taste or preference held by employers, fellow workers, or consumers that reduced the demand for workers with particular characteristics for reasons unrelated to their level of skill. Among employers, a taste for discrimination could prove costly, since firms that were more narrowly focused on profit maximiza-

tion and that were uninhibited by any concerns other than productivity should be able to deliver superior performance and outcompete discriminators in the long run.

Ironically, however, the vast empirical literature based on human capital assumptions that quickly proliferated seemed to document rather deep and persistent differences in earnings based on race and gender. In this sense, its internal logic led to an unintended—or at least unanticipated—direction, away from a tidy legitimization of wage inequality toward evidence of widespread irrationality (and, one might argue, dysfunctionality) in the form of discrimination that might (or might not) prove persistent. However, by emphasizing one particular form of potential injustice that linked the economic grievances of blacks and women, it deflected attention from wage inequality among white men, increasingly pictured as a relatively privileged—because “undiscriminated” against—component of the labor force.

In retrospect, the methodological naiveté of early efforts to measure discrimination is shocking. Researchers offered up simple regression models with earnings on the left-hand side and education and experience on the right-hand side, along with some standard demographic controls, referring to unexplained variance in wages as evidence of discrimination, as though no other significant variables could possibly have been omitted and no residual was to be expected. Such an estimate could be construed as a serious overestimate of discrimination. On the other hand, the standard approach also underestimated the effects of discrimination by ignoring problems of endogeneity: while earnings are clearly influenced by education and experience, expected earnings also influence decisions to invest in education and experience. Many women accumulated less experience on the job than men did, for the simple reason that they were paid significantly less; thus, they had less to gain from it. Had their wages been higher, they would have remained employed longer. It was rather disingenuous, then, to explain their lower earnings by their lack of experience. The same reasoning applies to education: discrimination has the indirect effect of lowering returns to education, and therefore reducing incentives to invest in education, as well as directly lowering earnings.

Still, the basic human capital-based earnings equation raised a kind of meritocratic standard, implying that earnings *should* be based on the individual worker’s own productive characteristics. In this sense, it was

politically consistent with efforts to outlaw explicit discrimination. It was also consistent with efforts to improve access to schooling, clearly revealed as a major determinant of earnings differences by race and ethnicity. Earnings differences by gender were more strongly explained by women's lower level of labor force experience, a finding that urged women to seek access to higher-paying occupations and improve their continuity on the job.

However simplistic the basic model, it directed economists' attention to an aspect of labor supply that had not, until then, received much attention: educational attainment. And while Becker's original theory concerned "self-investment" (i.e., the decision by young adults to forgo current earnings in order to continue their education beyond high school), Becker himself moved rather quickly to acknowledge that family decisions to invest in the schooling of young children represented an important antecedent. In this sense, his *Treatise on the Family* represented a logical extension of *Human Capital*, and in it he acknowledged a significant market failure: parents might lack access to sufficient capital to make the optimal investment in their children's education. In a "Supplement to Chapter 11" coauthored with Kevin Murphy on the relationship between the family and the state, he suggested that this market failure helped explain the emergence of public investment in education as part of an intergenerational contract in which the working-age population would repay their elders by helping finance public pensions (Becker 1993, pp. 362–379).

Looking back on this intellectual trajectory, it almost seems as though the internal logic of human capital theory directed it away from the utility-maximizing choices of autonomous adults (where it had initially pointed), in nearly the opposite direction: consideration of the consequences of public policies in determining children's income security and access to education. By the early twenty-first century, James Heckman, a colleague of Gary Becker at the University of Chicago, had begun to make the case that limited access to early childhood education means that many students from poor families are unlikely to achieve the academic success necessary to attend college, even if it is affordable for them. In his words,

Never has the accident of birth mattered more. If I am born to educated, supportive parents, my chances of doing well are totally different than if I were born to a single parent or abusive parents. I

am a University of Chicago libertarian, but this is a case of market failure: children don't get to 'buy' their parents, and so there has to be some kind of intervention to make up for these environmental differences. (Stille 2001, A:5)

This statement doesn't augur the end of the human capital paradigm, but it does signal a major inflection point, a new emphasis on social rather than personal choice. It also points to two theoretical issues that were largely undeveloped in the Chicago-school approach to human capital—1) externalities or positive spillovers from education and 2) distributional conflict over who would pay for them.

The notion that education generates positive externalities (even beyond solving the other market failures alluded to above) strengthens the supposition that the social benefits exceed the private ones, and that public investment yields a rich—if diffuse—payoff. Emphasis on such externalities was implicit in the early work of Theodore Schultz on the role of human capital in development. It received far more detailed theoretical elaboration in theories of endogenous growth developed by David Romer and in microeconomic models developed by Daron Acemoglu (1996), among others. It has been explored empirically by scholars including Acemoglu and Angrist (2000) and Moretti (2004).¹

The most important positive spillovers include increases in labor market productivity (suggested by the effect of the percentage of college graduates in an urban labor market on the earnings of individual graduates), reduced incidence of crime, and improved child health (Hout 2012).

Economic historians have also emphasized this positive macroeconomic perspective. Countries that developed successful public education systems in the nineteenth century, including the United States, enjoyed more sustained and rapid development than those that did not. Goldin and Katz (1999) refer to the years from 1900 to 2000 in the United States as the “human capital century” and note that the early expansion of secondary education was followed by a rapid expansion of postsecondary education after World War II, funded both by the expansion of the GI Bill, which provided subsidies for veterans, and by the development of a state-financed public higher education system.

Goldin and Katz (1999) rely largely on the “canonical” Beckerian model that emphasizes individual utility maximization, and they further assume that technological change has been and will continue to

be skill-intensive (Acemoglu and Autor 2012). They focus, as Becker himself did in *Treatise on the Family*, on the extent to which government intervention may be required to reduce the capital constraints that may prevent parents from making an optimal investment in their children's education. Indeed, they argue that a reduction in public efforts to improve educational opportunity helps account for a significant slowdown in the growth of U.S. high school and college graduate rates in the latter decades of the twentieth century. In other words, both individual and public choice play an important part in their story.

The public choice dimension emphasizes the social benefits or public gains from investments in human capital, and its political implications resemble those of Keynesian approaches that offered a macroeconomic rationale for redistributing resources from the affluent to the poor in order to increase aggregate demand. The "everybody benefits from investments in education" rubric suggests that the interests of both employers and society in general are closely aligned with the interests of forms of redistribution that might improve educational outcomes. From this perspective, distributional conflict is unlikely—or at least misplaced—because increased equity in access to education is so likely to yield increased economic efficiency. In ordinary language, taxpayers may see their slice of the economic pie reduced by their contributions to public provision, but in the long run the pie itself will grow so dramatically that these taxpayers will be more than compensated.

Less theoretical or empirical attention has been devoted to measurement of the actual or perceived costs to increased public investment in education, despite the obvious possibility that these costs are likely to be disproportionately borne by relatively affluent families or those whose children have already completed the most vital stages of their own human capital accumulation. A contemporary illustration is offered by the most famous campaign promise made by William de Blasio, the mayor of New York City elected in 2014: to impose additional taxes on families earning more than \$500,000 to finance universal early childhood education (Hernández 2013).

The historical literature is peppered with observations suggesting that fiscal distributional conflict comes into play. Those who have achieved relatively high levels of affluence in any form of capital are generally reluctant to help finance its acquisition by others. Those who lack adequate access to education for themselves or their children or

grandchildren are generally supportive of increased public investments. Cross-national studies show that, in the early twentieth century, the greater the percentage of men who voted—all else being equal—the higher the level of primary schooling (Lindert 2004, p. 106).

The extended, intense, and ongoing political controversies over efforts to equalize per-student spending in primary and secondary schools on the state level testify to a distinctly human capital-specific ingredient in the so-called tax revolt (Folbre 2001). In the United States, both primary and secondary schools funded by local taxes generally received more generous funding in communities where wealth was broadly distributed, with a more homogeneous population (Goldin and Katz 1999).

Largely as a result of financing based on local property taxes, the United States is one of the few countries that spends more on K–12 education for affluent than for poor children (Porter 2013). The historical trajectory of support for publicly funded state universities shows that it has been lowest in those states with privately endowed institutions already in place to provide a fine education to the affluent (Goldin and Katz 2008).

Racial or ethnic inequalities tend to shape political coalitions that determine public investments in human capital. Race-based collective action can take an implicit as well as an explicit form: the externalities generated by public education represent a public good, and, in general, racial and ethnic diversity tend to lower contributions to public-good provision (Alesina and La Ferrara 2005). As Poterba (1997) famously showed, government spending on K–12 education is negatively related to the fraction of the population aged 65 and above, especially when the fraction of the nonwhite population aged 5–17 and 65 and over is included among the controls. More recent research updates this finding, controlling for the possibility that elderly voters have simply relocated toward lower tax communities (Figlio and Fletcher 2012).

As Daniel Lichter emphasizes in his recent presidential address to the Population Association of America, recent demographic trends, including faster fertility decline among white non-Hispanic families, are increasing the minority share of children—especially compared to the predominantly white composition of the population over age 65. As of 2013, minorities accounted for the majority of the U.S. population under age 1 (Lichter 2013). While increased public investment in

education may promise large returns for the United States as a whole, it would offer particularly significant benefits for blacks and Hispanics, possibly undermining racial and ethnic earnings differences that have proved remarkably persistent and consistently advantageous for whites.

The distributional consequences of public investments in education are by no means limited to the incidence of taxation or the anticipated receipt of direct benefits to family members in the form of subsidized services. They also include effects of increases in the supply of highly educated labor on job opportunities and earnings, especially in circumstances where human capital “rents”—that is, premiums related to excess demand in the face of limited supply—are declining. They may also be affected by employers’ projections of the anticipated demand for specific skills, and the potential for expanded sources of labor supply outside the United States.

The human capital intellectual paradigm is sometimes mistakenly labeled a purely individualist approach. But while it does emphasize self-investment, it clearly acknowledges the role of market failures and the need for public provision. A more distinctive feature of the paradigm is its optimistic emphasis on convergent interests in which both private and public actors benefit from increased education, because technological change voraciously demands ever higher levels of skill. As the next section will show, this assumption is misplaced: evidence that we may be entering an era of relative oversupply of college-educated workers now looms large.

A BRIEF SUMMARY OF RECENT EMPIRICAL RESEARCH

In their magisterial history of the expansion of education in the United States, Goldin and Katz (2008) describe a race between education and technology that is, effectively, a race between shifts on the supply side and the demand side of the market for highly skilled workers. During most of the latter half of the twentieth century, demand grew faster than supply, generating significant earnings premiums for the college-educated in particular. Hence there arose the “golden age” of human capital, one in which individuals willing and able to invest in their own productive skills through higher education could be assured

of a generous reward, and countries willing and able to develop their public higher education systems could capture significant economic gains.

It is worth noting that educators—at every level and in every nook and cranny of the education system—stand to gain both psychologically and economically from the promise that human capital will always be a scarce commodity. Yet today that promise is beginning to seem quite shaky. Four stylized facts illustrate the problem:

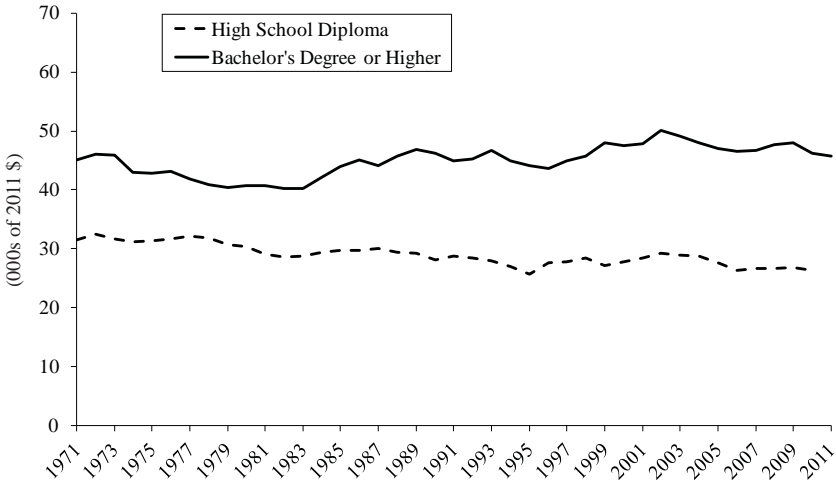
- 1) The absolute earnings of college graduates are declining.
- 2) The college premium—or the earnings of college graduates relative to high school graduates—has not increased in recent years.
- 3) College completion rates long ago leveled out for men (though not for women).
- 4) Evidence of mismatch between educational credentials and occupational requirements is growing.

As Figure 3.1, Panel A, indicates, college-educated women saw their median inflation-adjusted earnings fall after 2002, even though their advantage relative to women with only a high-school diploma increased. These figures understate the downward trend because (for the sake of historical continuity) the estimates for college graduates include all those with a college degree or higher, and postgraduate degrees were richly rewarded over much of this time period. College-educated men fared even worse in absolute terms, with a median in 2011 lower than that in 1971. College-educated men experienced a high relative premium only because the earnings of men with only high-school diplomas fell so drastically. The relative earnings premiums for both college-educated women and men changed most visibly between the early 1980s and the late 1990s and have since evened out. Figure 3.2 shows that the average annual earnings of all young college graduates aged 25–34 with a bachelor of arts degree (BA) but no other degree began to rise in 2013 but remained lower in 2016 than they were in 2002.

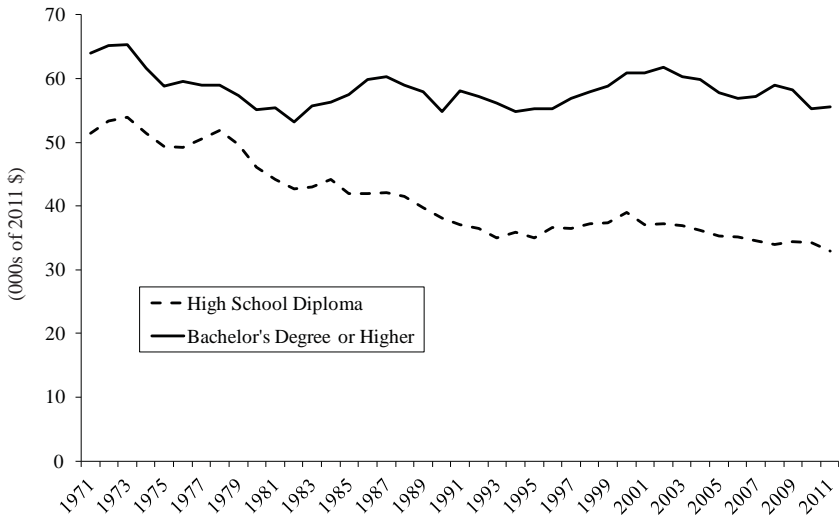
Many influential estimates of the college premium emphasize cumulative differences in lifetime earnings (Baum 2014; Baum, Ma, and Payea 2013; Carnevale, Rose, and Cheah 2011). But such estimates

Figure 3.1 Median Earnings by Education for Young Women and Men

Panel A: Young women’s median earnings by education, 1971–2011

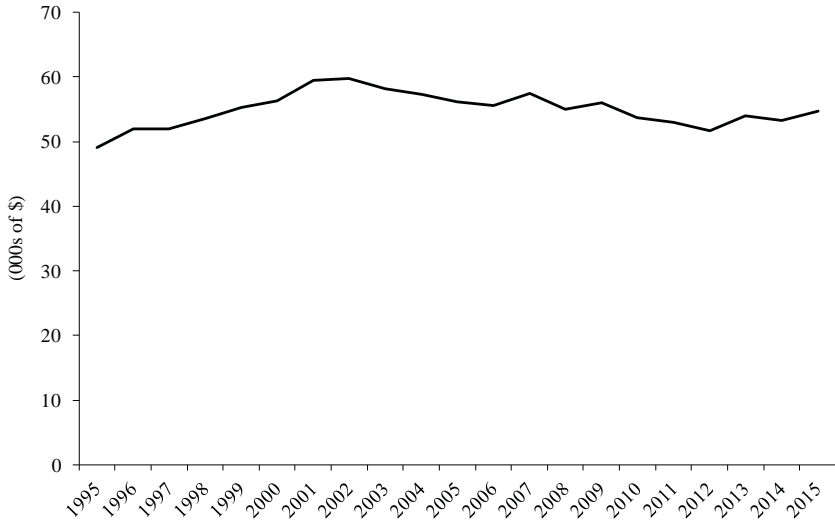


Panel B: Young men’s median earnings by education, 1971–2011



NOTE: Inflation-adjusted in 2011 \$; full-time year-round workers aged 25–34.
 SOURCE: Baum, Ma, and Payea (2013).

Figure 3.2 Average Annual Earnings of Individuals Aged 25–34 Working Full-Time with Bachelor’s Degree Only (in 2015 \$)



SOURCE: Author’s calculations from the Current Population Survey (CPS) Integrated Public Use Microdata Series (IPUMS), March Supplement of the Annual Social and Economic Supplement (ASEC).

are essentially projections based on the past relationship between education and earnings, which may or may not hold over years to come.

The stock of college-educated Americans is high, which makes it difficult to see differences in the flow over time unless attention is focused on the younger cohorts. As Figure 3.3 shows, the percentage of young men with a bachelor’s degree or higher leveled off in the late 1970s, but it began moving up again in about 2006; over the same period the percentage of young women attaining this degree or higher increased fairly steadily, albeit at a slower rate after the late 1970s. This trend may well reflect the problems on the supply side—a more heterogeneous population, school quality problems, and higher education costs—that Goldin and Katz (2008) emphasize. But this highlights the public choice problem: why didn’t the business community, or state and federal governments, take steps to solve the supply-side problem? Perhaps because the demand side was also sagging.

Figure 3.3 Percentage of Men and Women Aged 25–29 with a Bachelor’s Degree or Higher



SOURCE: U.S. Census Bureau (2016).

Evidence of mismatch between education credentials and job requirements became apparent even before the Great Recession of 2007. In 1970, only 1 in 100 taxi drivers and chauffeurs in the United States had a college degree, compared to about 15 out of 100 today; a similar trend is evident in other occupations such as bartending and firefighting (Vedder, Denhart, and Robe 2013). Andrew Sum and Paul Harrington of the Center for Labor Market Studies at Northeastern University estimate that in 2010, fewer than half of all BA holders aged 25 and below held a job requiring a college degree (Sum 2010).

Unemployment rates may be much lower among college graduates than others, but they remain high by historic standards. Nor is the United States the only country in which a once-privileged sector of the labor force finds itself at the mercy of the unemployment line. Youth unemployment is at record levels in southern Europe, where college graduates have been very hard hit. According to a recent article in the *New York Times*, “An estimated 100,000 university graduates have left Spain, and hundreds of thousands more from Europe’s crisis-hit coun-

tries have gone to Germany, Britain, and the Nordic states for jobs in engineering, science, and medicine” (Alderman 2013).

The rate of return to a college degree has always varied significantly by institution, choice of major, and personal characteristics. But a robust demand for the general college credential and for general rather than job-specific skills once overshadowed these differences, and it also reduced the risk to an individual college student of choosing the “wrong” major. Today, the variance in rates of return is so high that some economists widely regarded as advocates for public investments in human capital, such as Isabel Sawhill, warn that not everyone should go to college (Owen and Sawhill 2013).

The apparent mismatch between the credentials that colleges and universities are supplying and what the labor market is demanding could be explained by the poor performance of our institutions of higher learning or the self-indulgent choices of students who insist on majoring in English or philosophy despite the implications for both personal and social returns on investment. Some economists suggest that a college degree is simply not as good a measure of “skill” as it has been in the past (Cowen 2013). Others insist that students who major in science, technology, engineering, and math (the so-called STEM fields) are guaranteed a rosy economic future. On the other hand, a growing chorus of voices suggests that even homegrown STEM majors are in oversupply (Anft 2013).

One unfortunate legacy of the human capital literature is its tendency to refer to human capital, skill, and educational credentials as though they all represent one relatively undifferentiated substance that can be easily measured in quantitative terms such as years of education. Now it seems apparent that we need to pay more attention to specific differences in specific skill sets needed for specific tasks. Our changing technological environment has intensified our intellectual division of labor, increasing the need for specialization in some areas and decreasing it in others.

The title of a recent analysis of the impact of information technology by Brynjolfsson and McAfee (2011) is telling: *Race against the Machine* tells a story rather different from that told by Goldin and Katz in *The Race between Education and Technology*. Education is not racing to keep up with technology; rather, individuals are racing to cope with their own potential obsolescence. The digital revolution is not increas-

ing the demand for skill in general but rather offering bigger rewards for high skill and lower rewards for what might be termed medium skill, bringing about a polarization of demand. Polarization does not necessarily imply an overall decline in the demand for college-educated workers; one could imagine a scenario in which declining demand for medium skill is completely counterbalanced by increasing demand for high skill. That is not the scenario they describe. Rather, Brynjolfsson and McAfee argue that the overall demand for labor has declined, and will likely continue to decline, as a result of information technology.

The implications for job growth, earnings inequality, and the canonical human capital model are spelled out in more detail by Acemoglu and Autor (2012) in their gently critical review of Goldin and Katz. They point to overreliance on the assumption that technological change is always skill-intensive, and they emphasize that distinct forms of human capital realize their value only in the performance of specific tasks. In other words, technological change can lower the demand for certain types of human capital, which becomes far less productive when dissociated from those tasks. Furthermore, Acemoglu and Autor (here, and in other research) offer evidence of a declining demand for “mid-level” skills that is almost certainly affecting rates of return to a college degree.

Further evidence along these lines is offered by Beaudry, Green, and Sand (2013), who add a stock/flow analysis to the argument, suggesting that burgeoning information technology required large inputs of skilled labor but, once a stock of it was put in place, began to require far less to maintain itself. They also offer a simple and direct explanation for why the college premium remains high despite declining demand for college-educated workers, based on a queueing theory of the labor market. High-skilled workers go to the head of the employment line, accepting lower-level jobs and pushing less-credentialed workers down the line or out of the labor force.

The precise impact of declining demand for college-educated workers is difficult to measure because shifts in the supply of college-educated workers on the global level have also been momentous. Digital outsourcing, facilitated by the very trends in information technology that may have affected the demand side of the labor market, is one of three major avenues by which global educational trends affect the U.S. labor market. The other two are immigration and offshoring, or relocation of production facilities overseas.

The sheer pace of expansion in the global supply of college graduates—a process that economist Richard Freeman terms “human capital leapfrogging”—is astounding. In 2005, Chinese universities awarded five times as many bachelor’s degrees as they did in 1999 (Freeman 2006). Indeed, Freeman reports that the abrupt increase in supply created a domestic political crisis in China in 2008, when a large percentage of the graduating class—about 20 percent—was unable to find employment within a year. In 1970, the United States accounted for 29 percent of the world’s college students (despite representing only about 6 percent of the world’s population). By 2005–2006, the U.S. share had dropped to 12 percent. Almost 75 percent of global postsecondary education enrollments were in developing countries, including China, India, and Mexico.

Much of the expansion in higher education in China and elsewhere was driven by national political priorities rather than by individual decisions. The econometric link between private rates of return to education and both college graduation and higher degree completion rates is not very strong. This finding corroborates the Goldin and Katz (2008) argument that decreased public spending on higher education (and the unequal structure of education funding in general) may have constricted the supply of college graduates in the United States in recent years. Institutional factors, in other words, have proved quite influential compared to individual decisions to “self-invest.”

At the same time, the finding suggests that educational outcomes in the United States may matter less for businesses than increased access to college graduates and highly trained science and technology PhDs from other countries. Discussing trends in immigration to the United States, Freeman (2009, p. 21) notes that “the supply of highly able programmers from India and other developing countries willing to work at lower pay than Americans has dampened the growth of supply of programmers in the U.S.” Many other economists, including Blinder (2006), have emphasized the potential labor market impact of offshoring, noting that it may reduce the demand for highly educated labor and put a greater premium on jobs that require face-to-face contact and are therefore more difficult to relocate. Tonelson (2002, p. 100) argues persuasively that “a substantial share of outsourcing-produced job flight is high-tech job flight, and not even the most sophisticated U.S. industries—and workers—have been exempt.”

Increased access to global college graduates can influence U.S. labor market outcomes directly by contributing to slower employment and wage growth. But it may also have the indirect effect of reducing incentives for the business community to support increased spending on public higher education (Folbre 2010). Economists like Richard Vedder who are bearish on human capital are already warning of public overinvestment in education (Vedder, Denhart, and Robe 2013). As the prospect of a persistent oversupply of college-educated workers begins to loom large, the narrow economic rationale for greater collective investments in human capital begins to weaken. This is perhaps the most ominous signal that the golden age of human capital has come to an end.

A BRIEF CONSIDERATION OF POLITICAL IMPLICATIONS

So what? College professors will, of course, feel demoralized by lack of enthusiasm for the products they produce. But the potential political implications reach much deeper, into the very heart of beliefs in a just world and promises of upward mobility for the smart and hard-working. Getting a college education in the United States will no longer be a ticket to ride the train to economic prosperity—and certainly not in the first-class compartment. Much recent debate has focused on declining earnings and opportunities in the middle class, with Acemoglu and Autor emphasizing the role of technological change, and Bivens and Mishel (2013) placing more blame on political and institutional factors that have lowered the bargaining power of wage earners in general.² But the causes of increased earnings inequality are probably of less interest to most Americans than the consequences of diminished opportunity.

The golden age of human capital itself encouraged everyone to think more about climbing the ladder than studying its length or position. But if the ladder is lifted visibly out of reach, attention is likely to shift. One result could be heightened political conflict, with intensified competition for the fewer rungs remaining within reach. In general, periods of economic growth and increased opportunity have tended to reduce distributional conflict. The years between the end of World War II and 1970 are sometimes dubbed the golden age of American capital-

ism for that reason (Marglin and Schor 1990). Alba (2009) has written hopefully of a new age of declining racial and ethnic inequality as baby boomers retire and create more space for younger workers. However, the economic trends described above may outweigh the demographics of retirement. Slower economic growth and persistent unemployment in Western Europe have fostered a new populist politics there based on opposition to immigration and globalization.

On the other hand, the decline of the professional-managerial class concomitant with a reduced payoff to a college degree could lead to political realignment. Increased inequality between the top 10 percent and everyone else could be accompanied by decreased inequality between those at the 70th percentile and those at the 30th. The middle class is declining in size only if it is defined in terms of some absolute standard. Defined instead as the middle four deciles of the income distribution, its size is fixed, even if its relative income—and the variance of that income—declines.

Individuals who see no clear path to upward mobility through the labor market tend to become less enthusiastic about market forces. College-educated workers in the United States may begin to identify themselves as members of a working class that is collectively disadvantaged by technological change and globalization. As they begin to occupy an ever larger share of relatively low-wage jobs, the relative college premium may decline, a factor that could diminish racial and ethnic inequalities by bringing down the wages of many white workers.

So the golden age may be over. What comes next? Perhaps the classical succession of the Ages of Man in Greek mythology, from gold to silver to bronze to iron, as chronicled by the poet Hesiod, should be augmented by a new term: silicon. Perhaps, as Isaac Asimov envisioned, robots will come to the fore. Human capital will never entirely lose its value. In *Race against the Machine*, Brynjolfsson and McAfee cite a 1965 National Aeronautic and Space Administration report explaining why astronauts were so useful: “Man is the lowest-cost, 150 pound, nonlinear, all-purpose computer system that can be mass-produced by unskilled labor.” The big question is whether these nonlinear all-purpose computer systems can work together to configure an economic system that will treat them as valuable outputs rather than merely as useful inputs. That system would invest heavily in human capital whatever its private rate of return in the labor market.

Notes

The title of this chapter derives from a blog post I wrote for the *New York Times* Economix blog on June 10, 2013, which outlined some of the issues raised here.

1. Moretti (2005) provides an excellent summary of his research on this topic.
2. For a readable account of this debate, see Davidson (2013).

References

- Acemoglu, Daron. 1996. "A Microfoundation for Social Increasing Returns in Human Capital Accumulation." *Quarterly Journal of Economics* 111(3): 779–804.
- Acemoglu, Daron, and Joshua Angrist. 2000. "How Large Are Human-Capital Externalities? Evidence from Compulsory Schooling Laws." *NBER Macroeconomics Annual* 15(2000): 9–59.
- Acemoglu, Daron, and David Autor. 2012. "What Does Human Capital Do? A Review of Goldin and Katz's *The Race between Education and Technology*." *Journal of Economic Literature* 50(2): 426–463.
- Alba, Richard. 2009. *Blurring the Color Line: The New Chance for a More Integrated America*. Cambridge, MA: Harvard University Press.
- Alderman, Liz. 2013. "Young and Educated in Europe, but Desperate for Jobs." *New York Times*, November 15. <http://www.nytimes.com/2013/11/16/world/europe/youth-unemployment-in-europe.html> (accessed July 11, 2016).
- Alesina, Alberto, and Eliana La Ferrara. 2005. "Ethnic Diversity and Economic Performance." *Journal of Economic Literature* 43(3): 762–800.
- Anft, Michael. 2013. "The STEM Crisis: Reality or Myth?" *Chronicle of Higher Education*, November 11. <http://chronicle.com/article/The-STEM-Crisis-Reality-or/142879/> (accessed July 11, 2016).
- Baum, Sandy. 2014. *Higher Education Earnings Premium: Value, Variation, and Trends*. Washington, DC: Urban Institute.
- Baum, Sandy, Jennifer Ma, and Kathleen Payea. 2013. *Education Pays 2013: The Benefits of Higher Education for Individuals and Society*. Trends in Higher Education Series. New York: College Board.
- Beaudry, Paul, David A. Green, and Benjamin M. Sand. 2013. "The Great Reversal in the Demand for Skill and Cognitive Tasks." NBER Working Paper No. 18901. Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w18901> (accessed February 18, 2016).
- Becker, Gary S. 1975. *Human Capital: A Theoretical and Empirical Analysis*,

- with *Special Reference to Education*. 2nd ed. Chicago: University of Chicago Press.
- . 1993. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- Bivens, Josh, and Lawrence Mishel. 2013. “The Pay of Corporate Executives and Financial Professionals as Evidence of Rents in Top 1 Percent Incomes.” *Journal of Economic Perspectives* 27(3): 57–78.
- Blinder, Alan S. 2006. “Offshoring: The Next Industrial Revolution?” *Foreign Affairs* 85(2): 113–128. <http://www.foreignaffairs.com/articles/61514/alan-s-blinder/offshoring-the-next-industrial-revolution> (accessed February 18, 2016).
- Brynjolfsson, Erik, and Andrew McAfee. 2011. *Race against the Machine: How the Digital Revolution Is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy*. Lexington, MA: Digital Frontier Press.
- Carnevale, Anthony P., Stephen J. Rose, and Ban Cheah. 2011. *The College Payoff: Education, Occupations, Lifetime Earnings*. Washington, DC: Georgetown Center on Education and the Workforce.
- Cowen, Tyler. 2013. “Is the Labor Market Return to Higher Education Finally Falling?” *Marginal Revolution* (blog). <http://marginalrevolution.com/marginalrevolution/2013/06/is-the-labor-market-return-to-education-finally-falling.html> (accessed July 12, 2016).
- Davidson, Adam. 2013. “The Smartphone Have-Nots.” It’s the Economy, *New York Times Magazine*, January 15. http://www.nytimes.com/2013/01/20/magazine/income-inequality.html?_r=0 (accessed July 11, 2016).
- Ehrenreich, John, and Barbara Ehrenreich. 1979. “The Professional-Managerial Class.” In *Between Labor and Capital*, Pat Walker, ed. Boston: South End Press, pp. 5–45.
- Figlio, David N., and Deborah Fletcher. 2012. “Suburbanization, Demographic Change, and the Consequences for School Finance.” *Journal of Public Economics* 96(11–12): 1144–1153.
- Folbre, Nancy. 2001. *The Invisible Heart: Economics and Family Values*. New York: New Press.
- . 2009. *Greed, Lust, and Gender: A History of Economic Ideas*. New York: Oxford University Press.
- . 2010. *Saving State U: Why We Must Fix Public Higher Education*. New York: New Press.
- Freeman, Richard B. 2006. “The Great Doubling: The Challenge of the New Global Labor Market.” Unpublished manuscript, Berkeley, CA. http://emlab.berkeley.edu/users/webfac/eichengreen/e183_sp07/great_doub.pdf (accessed February 18, 2016).

- . 2009. “What Does Global Expansion of Higher Education Mean for the U.S.?” NBER Working Paper No. 14962. Cambridge, MA: National Bureau of Economic Research.
- Goldin, Claudia, and Lawrence F. Katz. 1999. “The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940.” *Journal of Economic Perspectives* 13(1): 37–62.
- . 2008. *The Race between Education and Technology*. Cambridge, MA: Harvard University Press.
- Hernández, Javier C. 2013. “Obstacles Seen for de Blasio’s Preschools Plan.” August 29, A:18. <http://www.nytimes.com/2013/08/29/education/obstacles-seen-for-de-blasios-preschools-plan.html> (accessed February 23, 2016).
- Hout, Michael. 2012. “Social and Economic Returns to College Education in the United States.” *Annual Review of Sociology* 38(1): 379–400.
- Lerner, Melvin J. 1980. *The Belief in a Just World: A Fundamental Delusion*. Perspectives in Social Psychology Series. New York: Plenum.
- Lichter, Daniel T. 2013. “Integration or Fragmentation? Racial Diversity and the American Future.” *Demography* 50(2): 359–391.
- Lindert, Peter H. 2004. *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*. Vol. 1, *The Story*. Cambridge: Cambridge University Press.
- Margin, Stephen A., and Juliet B. Schor. 1990. *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*. WIDER Studies in Development Economics. New York: Clarendon Press.
- Moretti, Enrico. 2004. “Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data.” *Journal of Econometrics* 121(1–2): 175–212.
- . 2005. “Social Returns to Human Capital.” NBER Reporter 2005(Spring): 22. <http://www.nber.org/reporter/spring05/moretti.html> (accessed July 12, 2016).
- Owen, Stephanie, and Isabel Sawhill. 2013. “Should Everyone Go to College?” Center on Children and Families Brief No. 50. Washington, DC: Brookings Institution. <https://www.brookings.edu/wp-content/uploads/2016/06/08-should-everyone-go-to-college-owen-sawhill.pdf> (accessed August 5, 2016).
- Porter, Eduardo. 2013. “In Public Education, Edge Still Goes to the Rich.” *New York Times*, November 5. <http://www.nytimes.com/2013/11/06/business/a-rich-childs-edge-in-public-education.html?hpw&rref=education> (accessed February 23, 2016).
- Poterba, James M. 1997. “Demographic Structure and the Political Economy of Public Education.” *Journal of Policy Analysis and Management* 16(1): 48–66.

- Smith, Noah. 2013. "The End of Labor: How to Protect Workers from the Rise of Robots." *Atlantic*, January 14. <http://www.theatlantic.com/business/archive/2013/01/the-end-of-labor-how-to-protect-workers-from-the-rise-of-robots/267135/> (accessed February 23, 2016).
- Stille, Alexander. 2001. "Grounded by an Income Gap." *New York Times*, December 15. <http://www.nytimes.com/2001/12/15/arts/grounded-by-an-income-gap.html?pagewanted=all> (accessed July 12, 2016).
- Sum, Andrew. 2010. "The Nation's Recent College Graduates Face Significant Labor Market Problems." *The Blog*. Huffington Post, October 19. http://www.huffingtonpost.com/andrew-sum/the-labor-market-problems_b_768617.html (accessed April 7, 2016).
- Tonelson, Alan. 2002. *The Race to the Bottom: Why a Worldwide Worker Surplus and Uncontrolled Free Trade Are Sinking American Living Standards*. Boulder, CO: Westview Press.
- U.S. Census Bureau. 2016. *Educational Attainment: CPS Historical Time Series Tables*. Washington, DC: U.S. Census Bureau. <http://www.census.gov/hhes/socdemo/education/data/cps/historical/index.html> (accessed July 12, 2016).
- Vedder, Richard, Christopher Denhart, and Jonathan Robe. 2013. *Why Are Recent College Graduates Underemployed? University Enrollments and Labor-Market Realities*. Washington, DC: Center for College Affordability and Productivity. <http://centerforcollegeaffordability.org/uploads/Underemployed%20Report%202.pdf> (accessed February 19, 2016).

