

POSTSECONDARY
VALUE COMMISSION

RECONSIDERING THE RELATIONSHIP BETWEEN HIGHER EDUCATION, EARNINGS, AND PRODUCTIVITY

William A. Darity, Jr. and Miles Underwood
Duke University

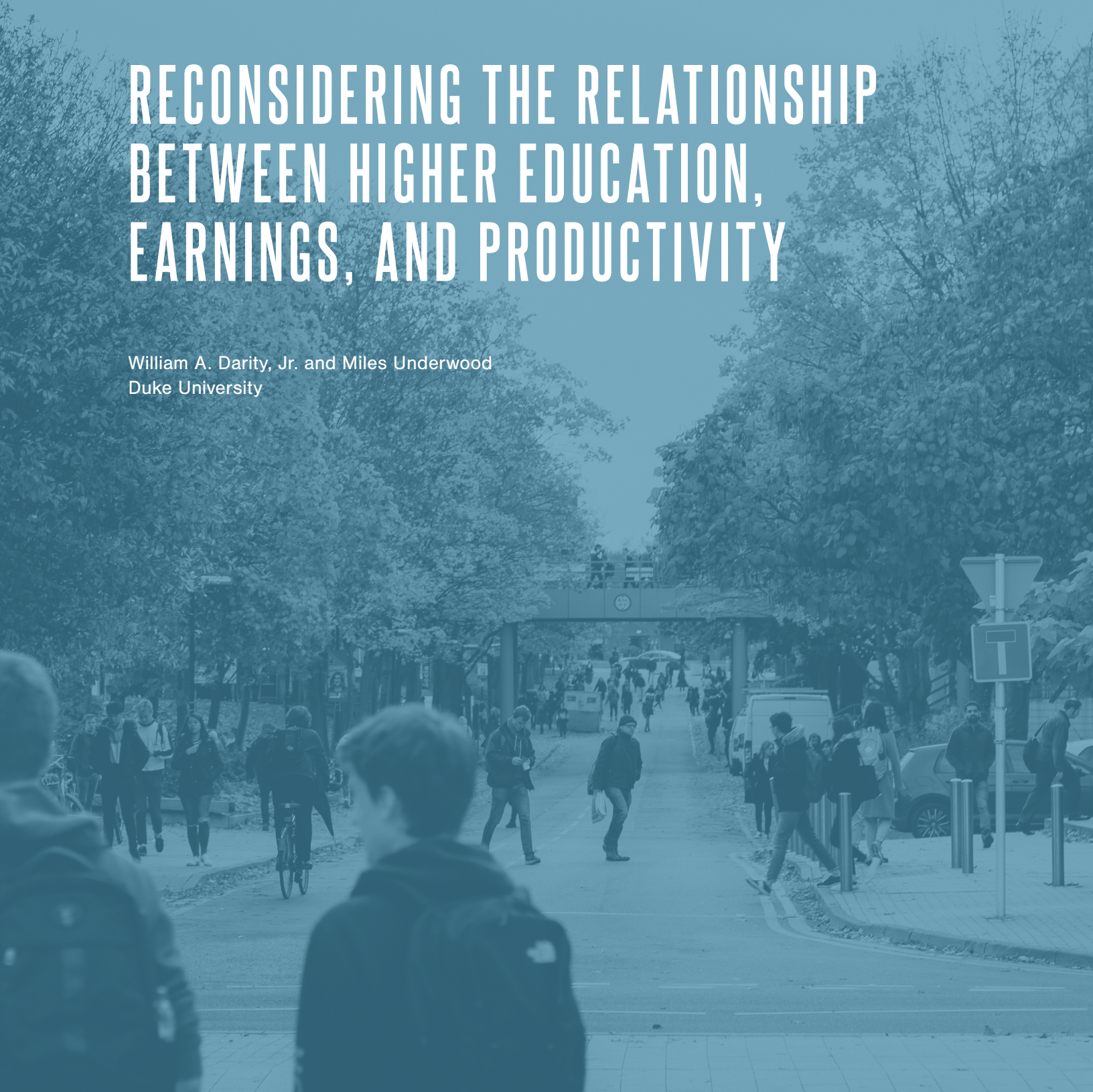


TABLE OF CONTENTS

Introduction	2
The Relationship Between Education and Individual Productivity is Far from Absolute	3
CEO “Super-Salaries” Raise Questions about Measuring Productivity Separately from Earnings	4
Labor Market Discrimination Directly Contradicts Human Capital Theory.	5
Conclusion	8
References	9

This paper is one in a foundational research series for the Postsecondary Value Commission authored in summer 2019 by scholars with diverse backgrounds and expertise. The research presented in these papers applies an equity lens to the philosophical, measurement, and policy considerations and assumptions underlying key components of postsecondary value to students and society, including investment, economic and non-economic returns, mobility, and racial and socioeconomic justice.

The Postsecondary Value Commission consulted this foundational research as it developed a conceptual definition of postsecondary value, a framework for measuring how institutions and programs create value and ensure equitable outcomes, and an action agenda with recommendations for applying the definition and framework to change policies and practices. Through this breadth of scholarship, the commission was better able to define the value of postsecondary education and the role institutions can play in creating a more equitable and fair United States.

Following the May 2021 release of the commission’s findings, these foundational papers were prepared for publication. The views and opinions expressed in these papers do not necessarily reflect the positions of individual members of the Postsecondary Value Commission or the organizations they represent.

The Postsecondary Value Commission along with the Bill & Melinda Gates Foundation and Institute for Higher Education Policy are deeply grateful to the authors of this series. The authors’ extensive expertise and thoughtful engagement in this work provided the foundation for the commission to develop an informed, innovative, and equity-driven framework. They also thank Deborah Seymour for editing the written products and the team at GMMB for their creative design and layout.

Suggested citation: Darity, W.A., Jr. & Underwood, M. (2021). Reconsidering the Relationship Between Higher Education, Earnings, and Productivity. Postsecondary Value Commission.

INTRODUCTION

21st century research, to date, indicates that the private and social returns from higher education are substantial. For example, the Georgetown University Center on Education and the Workforce (GUCEW) estimates that those with higher educational attainment will earn more over the course of their lives than those with lower attainment. Relative to the median worker with only a high school degree, associate’s degree holders earn 1.3 times more, workers with a bachelor’s degree earn 1.7 times more, and workers with a graduate degree earn more than two times more (Carnevale, Rose, Cheah 2011). Likewise, Hill, Hoffman, and Rex (2005) estimated individuals’ inflation-adjusted return on investment in higher education at about 12 percent at the turn of the century. They also emphasized that the monetary value of a college degree increased sharply between the 1980s and the early 2000s (Hill, Hoffman, and Rex, 2005). This association between schooling and earnings leads to a vocational imperative for education—the view that the purpose of education, at all levels, is preparing people for the workforce and the more education they attain, the greater their earnings.

In the same way, the positive association between years of schooling and degree completion and indicators like increased tax revenue, improved health outcomes and lower medical expenses, and reduced crime and incarceration rates, have often been used to measure the social returns to higher education. (Hill, Hoffman, and Rex 2005; Blagg and Blom 2018; Carnevale et al. 2021). These social benefits, ostensibly, are generated, in part, through higher earnings associated with higher levels of schooling.

However, these findings are confounded by the classic tension between causation and correlation. It is not clear whether the higher incomes associated with higher levels of education are a consequence of completing a degree itself or of the characteristics of persons who do so, independent of their educational experience. Is the relationship between higher education and higher incomes a matter of value-added from college and/or university schooling, or is it the product of who goes to college and university in the first place?

“ **Is the relationship between higher education and higher incomes a matter of value-added from college and/or university schooling, or is it the product of who goes to college and university in the first place?** ”

Take crime, for example. Suppose lower crime rates among the college educated are due to persons who complete college being less likely to have negative encounters with the criminal justice system, for whatever reason, regardless of their degree attainment. Similarly, suppose the superior health outcomes of the college educated are due to being persons who are more likely to have better health outcomes, in the first place. Under these conditions, acquisition of a college degree would not be the cause of the wider social benefits, and we would confuse a mere association with a causal relationship.

Despite this well-known statistical issue, economists have often treated higher education as the cause of higher income by the near automatic invocation of the human capital theory of wages. The vast majority of economists accept the productivity-earnings nexus as an article of faith. Human capital theory posits that higher levels of education increase individual productivity (or “efficiency”) leading, in turn, to higher compensation. Education is treated as a source of skill accumulation, which translates into greater productivity and higher remuneration.

Alternatively, the attainment of a credential can also be thought of as a signaling mechanism, because it communicates information to potential employers about an individual's intrinsic, unobserved characteristics that can affect the quality of their work performance. To the extent that those characteristics are, in fact, connected to productivity, the signaling model is essentially consistent with the human capital approach. It is not clear if college completion is a cost-effective signaling device (Weiss, 1995). However, under the signaling model, individual compensation still, ultimately, is determined by individual productivity.

The subtext of both human capital theory and the signaling model is a belief that higher earnings are an indicator of “earned merit;” an assumption we call into question, challenging the meritocratic basis for earnings inequality. We argue that the relationship between individual efficiency or productivity and wages is considerably weaker than economists frequently assume. If this relationship is in fact weaker, then the underlying mechanism behind the correlation between educational attainment and individual wages is also less certain. There are three primary issues with interpreting higher wages among those with higher educational attainment as evidence of increased personal productivity:

1. The relationship between education and individual productivity is far from absolute.
2. CEO “super-salaries” raise questions about measuring productivity separately from earnings because these “super-salaries” do not necessarily equate to a CEO’s productivity output.
3. Labor market discrimination directly contradicts human capital theory.

We explore each of these issues in more detail below, with particular attention to their implications for the relationship between higher education, productivity, and earnings. Collectively, these issues suggest that using earnings as a marker of the quality of higher education may be problematic.

THE RELATIONSHIP BETWEEN EDUCATION AND INDIVIDUAL PRODUCTIVITY IS FAR FROM ABSOLUTE

More formal education does not always lead to greater capacity to perform the work for all jobs. In fact, there are some jobs where more education is associated with *lower* productivity, particularly if the employee perceives themselves to be overeducated for the position. For example, there is evidence that some employer-ratings on productivity of employees are similar across levels of educational attainment; in some instances employer ratings on productivity are actually lower for employees with higher educational attainment (Berg, 1970).

Credential inflation—a virtual arms race to push up the educational standards for employment across multiple occupations without analogous changes in job content—leads to increases in credential attainment that do not improve the quality of the workforce. Also, the centrality of on-the-job training to gaining technical skills obviates claims that these higher educational standards for employment in many jobs are due to new technological demands (Collins, 2019).

“**Credential inflation—a virtual arms race to push up the educational standards for employment across multiple occupations without analogous changes in job content—leads to increases in credential attainment that do not improve the quality of the workforce.**”

Even beyond credential inflation, there is evidence that suggests many workers are over-educated based on the requirements of their current job. According to a Deloitte study (Schleeter, 2019) using 2015 data from the National Longitudinal Survey of Youth, while 36 percent of millennials obtained four-year degrees, only 19 percent held jobs that required a bachelor's degree or higher. The report speculates that there might not be enough jobs available that require college degrees, indicating that the number of college-educated workers is growing faster than the number of jobs available that require such a degree.

However, note that the Deloitte study does not interrogate whether the jobs requiring a BA should require a college degree. In a 2013 article, CNN reports that many individuals who are overqualified for their jobs worked as firefighters, taxi drivers, and sales clerks. There is no compelling evidence that the college graduates perform better (or worse) at these jobs than those employees who have not graduated from college.

What's more, while higher education may increase productivity in some cases, it is far from the only path to doing so. For example, while fields such as computer engineering do require high levels of skill and those skills are often developed in traditional academic environments, it is not clear that they must be obtained through a university education. Indeed, one may conceive of alternative certification schemes—such as coding and other “bootcamp” programs, apprenticeships and other forms of on the job training, or massive open online courses—that could be used to indicate that the individual has acquired specific skills. Informal routes to skill accumulation are also possible. For instance, respected professional historians who do not hold doctorates in history may still receive recognition of the quality of their work by their peers (who often do hold advanced degrees).

CEO “SUPER-SALARIES” RAISE QUESTIONS ABOUT MEASURING PRODUCTIVITY SEPARATELY FROM EARNINGS

In 2018 the average CEO at a S&P 500 company “earned” 287 times the typical employee in those firms (\$14.5 million versus \$39,888), constituting an increase of \$500,000 for CEOs and \$1,000 for employees from 2017 (Campbell, 2019).

The human capital theory would imply that the average CEO is 287 times as productive as the typical line worker. Given that this is unlikely, this

claim raises the question whether wages can be used as proxies for productivity. The mere existence of corporate “super salaries” represents a fundamental puzzle for human capital theory. Indeed, a charitable interpretation might be that “super salaries” are not “salaries” at all, but primarily forms of profit-sharing. Nonetheless, this example suggests that measuring productivity through earnings is fraught, but it should also be noted that alternative productivity measures are rare and suffer from issues of their own.

“ Measuring productivity through earnings can be fraught, but it should also be noted that alternative productivity measures are rare and suffer from issues of their own.”

Other common measures of employee productivity include annual performance reviews and key performance indicators (KPIs) used by employers to internally measure employee productivity. The former tends to be more subjective and therefore may be influenced by factors out of an employee's

control like personal bias. KPIs tend to be more objective and based on finite criteria such as number of sales for a salesperson, the number of transactions completed by a cashier, or the number of patients billed by a doctor. While such KPIs may be more reliable as proxies for employee productivity because their outputs are completely determined by an employee's inputs, KPIs will vary by job and by industry. And some KPIs will be more successful at determining productivity than others, leaving no universal tool of measurement (Saueremann, 2016).

All this suggests that the widely held belief in the role of higher education in increasing skills/productivity must be tempered, at least, by a case-by-case analysis. The mere observation that higher wages and earnings are associated with undergraduate and postgraduate degrees does not mean that higher education causes higher wages and earnings via the productivity path. Unfortunately, there is a lack of systematic evidence to judge which types of jobs require the particular skills uniquely provided by higher education. There is no study of which we are aware that, even at the least granular level of 23 major job groups under the Standard Occupation Classification, has examined whether higher education has been or should be the route toward acquiring the specific skills relevant to the job.

Moreover, one need not consider the extreme cases of corporate executives' huge compensation packages to recognize the difficulty of our lack of criteria for measuring productivity apart from comparative earnings. The Georgetown Center's standard for a good job is median earnings within the occupational category of \$65,000 (Carnevale et al. 2019). That is consistent with the average annual compensation for tractor-trailer drivers. Is an investment banker who earns \$250,000 in the same year necessarily close to four times as productive? Furthermore, if we did have a reliable independent standard for measuring productivity and found that the investment banker truly is about four times as productive, would that higher level of productivity be attributable to the banker having had a university education?

LABOR MARKET DISCRIMINATION DIRECTLY CONTRADICTS HUMAN CAPITAL THEORY

The third challenge to human capital theory is labor market discrimination. It is well-known that workers with similar education and experience—factors that should predict “productivity” in the conventional sense—are compensated differently based on social characteristics like race and gender, yet these characteristics should not affect productivity. In the context of higher education, ascriptively distinct groups with similar advanced degrees get different rewards. Equivalently productive workers receive unequal pay. Discrimination drives a wedge between any ostensibly consistent relationship between wages and productivity.

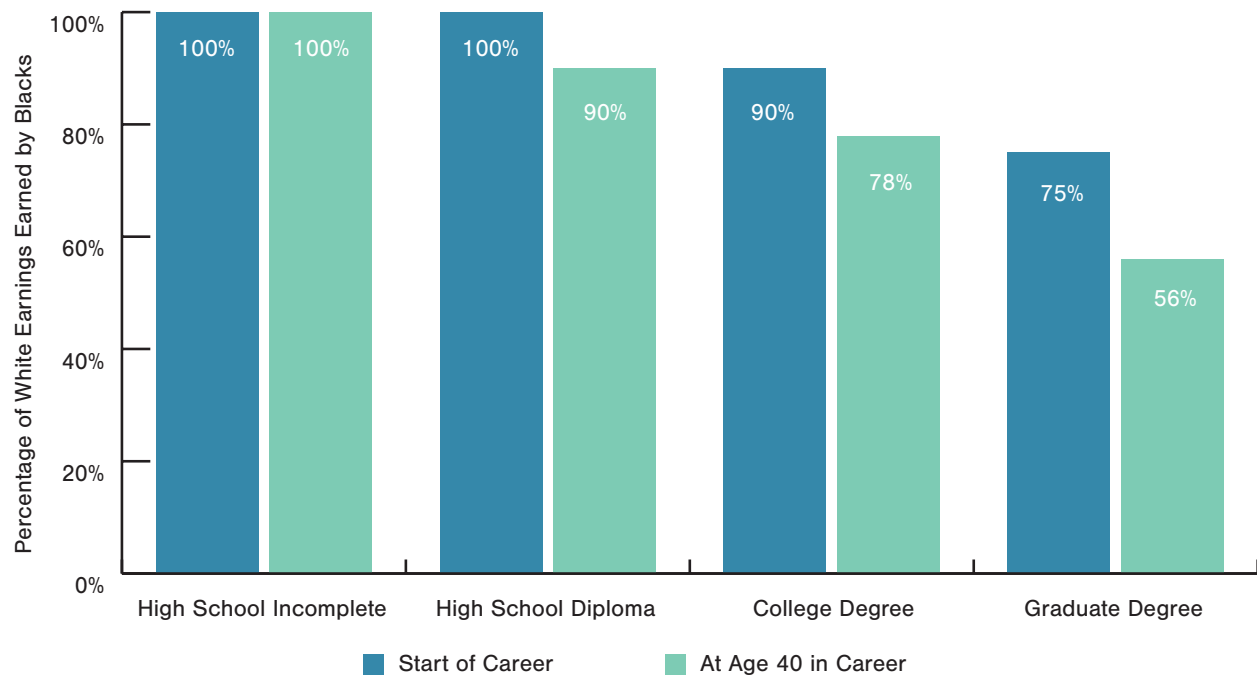
With respect to gender, Blau and Kahn (2016) find that as the specification of data and strategies for capturing previously unobservable productivity-linked characteristics are absorbed into wage equations, a significant discriminatory differential persists. Wage gaps are evident even when men and women have similar degrees in the same fields from comparable institutions. However, women collectively experience a decline in the discriminatory differential with the acquisition of more advanced degrees (Dougherty, 2005).

The opposite holds with respect to racial differences in educational attainment; evidence for both the United States and Brazil shows that the degree of wage discrimination increases with higher levels of educational attainment for Black individuals in both countries (Arias, Yamada, and Tejerina 2004; Tomaskovic-Devey, Thomas, and Johnson 2005; Arias, 2005). While higher levels of education are associated with higher wages for Black workers relative to less educated Black workers, the rise in wage disparities with more advanced credentials means additional education does little to close the racial income gap.

“ While higher levels of education are associated with higher wages for Black workers relative to less educated Black workers, the rise in wage disparities with more advanced credentials means additional education does little to close the racial income gap.

Figure 1 below shows differences in earnings across Black and White workers, at the time workers enter the labor force and at age forty. Among high school graduates, Black workers’ earnings at the time of entering the workforce were similar to those of their White counterparts, but by age forty they are 10 percent less. Among college graduates, Black workers initially earned slightly less than White workers, but by age forty earned 22 percent less. For graduate degree earners, Black workers started out earning about 25 percent less than their White counterparts, but by age forty earned 44 percent less (Tomaskovic-Devey et al, 2005). Together, the figure shows how discrimination against Black workers increases with both educational attainment and with age. Those who drop out of high school see the smallest disparities in earnings, while those with graduate degrees experience the largest earnings gaps. It is important to note that the net effect at the intersection of race and gender, for Black women, is not established as of yet.

Figure 1. Racial Earnings Gap by Educational Attainment



Source: This figure was developed by the authors using statistical information from “Race and the Accumulation of Human Capital across the Career: A Theoretical Model and Fixed-Effects Application” (Tomaskovic-Devey et al, 2005).

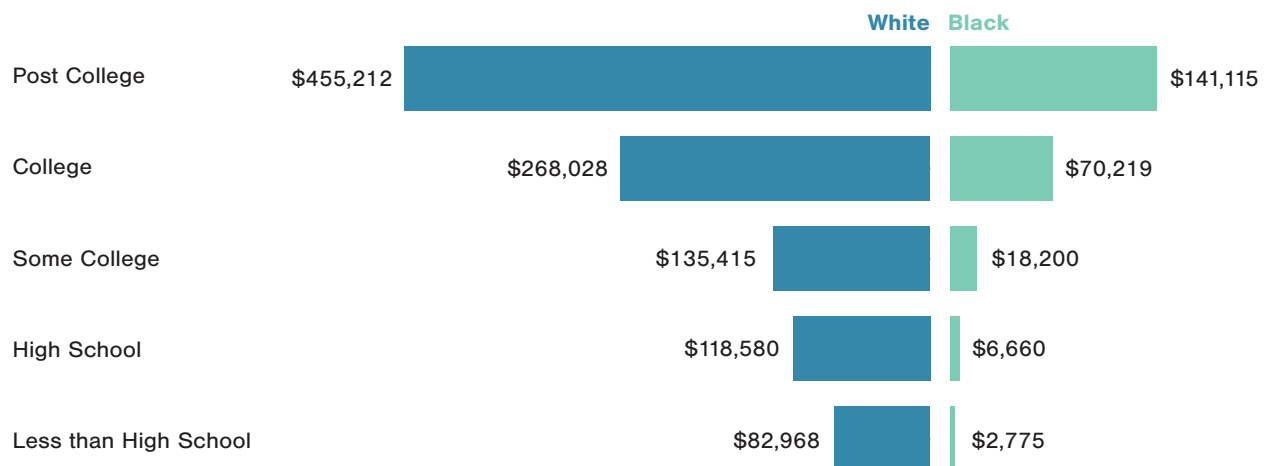
The degree of discrimination confronting Black workers, leading to a significant wage penalty—and a corresponding wage boost for White workers—is a consequence of differential treatment at multiple stages of the employment process. Two examples are highly illustrative. First, consider S. Michael Gaddis’ (2015) field experiment where he assigned Black sounding names to letters of inquiry and resumes for jobs with manufactured candidates who had completed degrees at high cachet private universities and White sounding names to letters of inquiry and resumes for jobs with manufactured candidates who held degrees from major state universities (e.g. Harvard versus the University of Massachusetts at Amherst, Duke versus the University of North Carolina at Chapel Hill). Gaddis found that the applicants with the White-sounding names were significantly more likely to receive call-backs for jobs than the applicants with the Black-sounding names, although the latter, presumably, had attended the higher ranked (and more selective) institutions.

In another study conducted by Bloomberg News, Black Harvard MBAs earned \$5,000 less than their White classmates upon finishing their programs. But six to eight years afterward, Black Harvard MBAs were earning \$100,000 less (Kitroef, 2016). Despite starting with the same caliber of degree—and presumably a similar signal of quality and talent—earnings trajectories diverged sharply by race within a decade of degree completion.

Differences in executive level pay by race are a consequence of internal racism within major corporations and also may be associated with the disproportionate assignment of Black MBAs, generally, to personnel and human resources divisions of major corporations—where compensation is lower than in other divisions—although the latter has not been studied adequately. Black MBAs are more likely than White MBAs to indicate that they want to run their own business; but this may be due, in part, to their expectation of differential treatment in the corporate world (Collins, 1997 on the “corporate ghetto” effect; McGirt, 2016; Graduate Management Admission Council, 2018).

Higher education has an even weaker effect on the accumulation of Black wealth (rather than income). Black household heads with a college degree have two-thirds of the net worth of White household heads who never finished high school (Hamilton et al., 2015) (See Figure 2).

Figure 2. Median Household Net Worth by Race and Education (2014)



Source: Authors’ calculations, Survey on Income and Program Participation (SIPP) 2014.

Note: This figure was updated from a prior report entitled *Umbrellas Don’t Make it Rain: Why Studying Hard and Working Hard Isn’t Enough for Black Americans* (Hamilton et al., 2015).

CONCLUSION

To the extent that the human capital theory fails to explain wages, productivity, and educational attainment satisfactorily, it requires deeper thinking on the links between these phenomena. It also means that using earnings as a proxy for individual productivity is inherently flawed. This necessitates the construction of an alternative vision of education, jobs, and income. In particular, future research should consider the extent to which higher earnings among those with college degrees are driven by credentials as artificial barriers to certain jobs and careers, rather than indicators of higher levels of job appropriate skills.

More specifically, the correlation between higher wages and earnings and undergraduate and postgraduate degrees does not indicate causation. A lack of systematic evidence for disentangling this relationship leads to the fundamental issue of whether, and under what circumstances, higher education imparts skills that enhance productivity and knowledge, or whether credentials function as artificial entry barriers to certain occupations. There may be professions in which both factors are at play in determining earnings.

“ **The correlation between higher wages and earnings and undergraduate and postgraduate degrees does not indicate causation.** ”

More broadly, we must ask whether the vocational imperative should play a central role in measuring the value of higher education. Instead, exploring how higher education leads to the development of stronger critical thinking skills and a deeper knowledge base for each student may be of substantial value and may not necessarily correlate with earnings-based measures. In the first place, why should any individual's access to decent employment be contingent on their level of education? It is high time to think outside the box created by traditional economic theory.

REFERENCES

- Arias, Omar, Gustavo Yamada, and Luis Tejerina. "Education, Family Background and Racial Earnings Inequality in Brazil." *International Journal of Manpower*, vol. 25, no.3/4, 2004, pp. 355-374.
- Berg, Ivar. *Education and Jobs: The Great Training Robber*. Praeger, 1970.
- Bertrand, Marianne. "Are Emily and Greg More Employable than Lakisha and Jamal?" *American Economic Review*, vol. 94, no.4, 2004, pp.991-1003.
- Blagg, Kristen and Erica Blom. "Evaluating the Return on Investment in Higher Education: An Assessment of Individual and State-Level Returns." *Urban Institute*, 2018, https://www.urban.org/sites/default/files/publication/99078/evaluating_the_return_on_investment_in_higher_education.pdf.
- Blau, Francine and Lawrence M. Kahn. "The Gender Wage Gap: Extent, Trends, and Explanations" *NBER Working Paper* 21913, 2016, <https://www.nber.org/papers/w21913.pdf>.
- Brown, E. Richard. *Rockefeller Medicine Men: Medicine and Capitalism in America*. University of California Press, 1979.
- Campbell, Alexia Fernández. "CEOs Made 287 Times More Money Last Year Than Their Workers Did." *Vox*, 2019, <https://www.vox.com/policy-and-politics/2019/6/26/18744304/ceo-pay-ratio-disclosure-2018>.
- Carnevale, Anthony P., Jeff Strohl, Artem Gulish, Martin Van Der Werf, and Kathryn Peltier Campbell. "The Unequal Race for Good Jobs: How Whites Made Outsized Gains in Education and Good Jobs Compared to Blacks and Latinos." Georgetown University Center on Education and the Workforce, 2019, <https://cew.georgetown.edu/cew-reports/raceandgoodjobs/>.
- Carnevale, Anthony P., Kathryn Peltier Campbell, Ban Cheah, Megan L. Fasules, Artem Gulish, Michael C. Quinn, Jenna R. Sablan, Nicole Smith, Jeff Strohl, and Sarah Barrese. "The Monetary Value of Economic and Racial Justice in Postsecondary Education: Quantifying the Potential for Public Good." Postsecondary Value Commission, 2021, <https://www.postsecondaryvalue.org/wp-content/uploads/2021/05/PVC-GUCEW-FINAL.pdf>.
- Carnevale, Anthony P., Stephen J. Rose, and Ban Cheah. "The College Payoff: Education, Occupations, Lifetime Earnings." Georgetown University Center on Education and the Workforce, 2011, <https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/collegepayoff-completed.pdf>.
- Collins, Randall. *The Credential Society: An Historical Sociology of Education and Stratification*. Columbia University Press, 2019.
- Collins, Sharon. *Black Corporate Executives: The Making and Breaking of a Black Middle Class*. Temple University Press, 1997.
- Dougherty, Christopher. "Why Are the Returns to Schooling Higher for Women than Men?" *Journal of Human Resources*, vol. 40, no. 4, 2005, pp. 969-988.
- Gaddis, S. Michael. "Discrimination in the Credential Society: An Audit Study of Race and College Selectivity in the Labor Market." *Social Forces*, vol. 93, no. 4, 2015, pp. 1451-1479.
- Graduate Admission Management Council. *Understanding Underrepresented Populations in the Business School Pipeline*, 2018, <https://www.gmac.com/~/media/Files/gmac/Research/research-report-series/rr-16-02-underrepresented-populations-v2.pdf>.
- Hamilton, Darrick, William Darity Jr., Anne E. Price, Vishnu Shridharan, and Rebecca Tippet. *Umbrellas Don't Make It Rain* The New School, Duke University, and the Insight Center, 2015.
- Hill, Kent, Dennis Hoffman, and Tom Rex. "The Value of Higher Education: Individual and Societal Benefits," Productivity and Prosperity Project, Arizona State University, 2005 https://www.researchgate.net/publication/240343282_The_Value_of_Higher_Education_Individual_and_Societal_Benefits.
- Kitroef, Natalie. "Business School is Worth \$22,000 More if You are White or Asian," *Bloomberg News*, 2016 <https://www.bloomberg.com/news/articles/2016-01-07/business-school-is-worth-22-000-more-if-you-re-white-or-asian>.
- Lao, Tian and Richard J. Holden. "Investment in Higher Education by Race and Ethnicity," *Monthly Labor Review*, 2014, <https://www.bls.gov/opub/mlr/2014/article/investment-in-higher-education-by-race-and-ethnicity.htm>.
- Mangino, William. "Why Do Whites and the Rich Have Less Need for Education?" *American Journal of Economics and Sociology*, vol. 71, no. 3, 2012, pp. 562-602.
- McGirt, Ellen. "An Inside Look at What's Keeping Black Men Out of the Executive Suite," *Fortune*, 2016, <https://fortune.com/longform/black-executives-men-c-suite/>.
- Sauermann, Jan. "Performance Measures and Worker Productivity." *IZA World of Labor*, May 1, 2016. <https://wol.iza.org/articles/performance-measures-and-worker-productivity/long>.
- Schleeter, Tiffany. "Millennials: The Overqualified Workforce," *Deloitte Insights*, 2019, www2.deloitte.com/us/en/insights/economy/spotlight/economics-insights-analysis-01-2019.html.
- Stainburn, Samatha "US College Graduates: Almost Half Are Overqualified for Their Jobs," *Public Radio International*, 2013, www.pri.org/stories/2013-01-28/us-college-graduates-almost-half-are-overqualified-their-jobs.
- Tomaskovic-Devey, Donald, Melvin Thomas, and Kecia Johnson. "Race and the Accumulation of Human Capital Across the Career: A Theoretical Model and Fixed Effects." *American Journal of Sociology*, vol. 111, no. 1, (2005), pp. 58-89.
- Weiss, Andrew. "Human Capital vs. Signalling Explanations of Wages." *Journal of Economic Perspectives*, vol. 9, no. 4, 1995, pp. 133-154.