The Silent Divides in Education's Promise: Uneven Wealth Gains from College

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Abstract

This study examines the impact of tertiary education on wealth in the U.S. by gender, race, and generation, using multiple identification strategies. The findings reveal that males and White individuals gain more wealth from higher education, while females and Non-White groups see less benefit or even negative impacts. Generational analysis shows diminishing returns for younger cohorts, with those born after 1970 facing the least benefit. The effects are mediated by labor income and student loan burdens, highlighting the need to understand how these factors influence educational and wealth disparities across different demographics and generations.

Keywords: Wealth \cdot Education \cdot Race \cdot Gender \cdot College

JEL Codes: $I24 \cdot I26 \cdot J15 \cdot J16 \cdot J24$

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1 Introduction

Education has long been considered a cornerstone of economic success, frequently associated with increased earnings (Card, 1999) and even more so with college education (Cappelli, 2020). However, viewing education as a uniform pathway to economic success fails to capture the nuanced disparities in its outcomes. This complex relationship, marked by generational shifts, highlights that the wealth returns of education are distinctly shaped by gender, race, and evolving socio-economic contexts. This study investigates the causal effect of college education on wealth and examines how this effect varies by race, gender, and generational cohorts, challenging the notion that education universally enhances wealth accumulation. The hypothesis is that the wealth returns from college education are not uniform across demographic groups; instead, they are significantly influenced by gender, race, and generational factors, with some groups of individuals experiencing lesser benefits compared to others.

This analysis is grounded in several key economic theories that provide a framework for interpreting the empirical results. The human capital theory of Becker (2009) suggests that education enhances individual productivity and skills, leading to higher earnings and, consequently, greater wealth accumulation ((Heckman, Lochner, & Todd, 2006); (Card, 1999)). However, theories of gender inequality highlight how systemic gender biases, discrimination, and social norms impact economic outcomes for men and women differently ((Bergmann, 2005); (England, 2010); (Kleven, Landais, & Søgaard, 2019)). This integrated framework suggests that while education should theoretically increase wealth through higher earnings, women may face persistent wage gaps, occupational segregation, and additional barriers that hinder their ability to translate educational attainment into wealth (Goldin, 2014).

Additional theories, for example on social capital (Coleman, 1988) and cumulative disadvantage (DiPrete & Eirich, 2006) emphasize the role of social networks and relationships in accessing economic opportunities and resources, while also considering how disadvantages accumulate over time, leading to widening economic disparities and reducing social mobility (Chetty, Hendren, Kline, & Saez, 2014). These disparities are particularly pronounced among racial minorities, who often face systemic barriers that limit their access to beneficial social networks and economic resources. Racial minorities may experience cumulative disadvantages over their lifetimes, such as discrimination in education, employment, and housing, which compound to create significant wealth gaps. Furthermore, the prediction that education enhances productivity and earnings might not fully materialize for racial minorities due to these systemic barriers. Consequently, while education theoretically should lead to higher earnings and wealth, the accumulated disadvantages and restricted access to opportunities prevent racial minorities from fully realizing these benefits, further exacerbating economic disparities.

This study uses data from the Panel Study of Income Dynamics (PSID) from 1999 to 2019 to examine the causal effect of tertiary education on wealth accumulation. Employing ordinary least squares and addressing potential endogeneity through sibling com-

parisons and instrumental variables such as state variations in compulsory schooling laws and parental job loss, the analysis adjusts for personal skills and family background. The central focus of this paper is on how the impact of tertiary education on wealth accumulation varies across different demographic groups, specifically by race, gender, and over generations.

The related literature focuses on understanding and quantifying the gender (Lee, 2022) and race (Derenoncourt et al., 2023b) wealth gaps. Education is a crucial, yet partial, factor in understanding these gaps. Despite extensive research on the economic benefits of education, little has been explored about how these advantages are reflected in wealth accumulation and even less on how they evolve across generations or vary among gender and racial groups. Previous studies show that a causal effect of education on wealth only exists for college and postgraduate levels of education (Loaiza, 2021). However, the literature on the specific effects of higher education on wealth by race and gender still requires further exploration, especially considering generational changes and detailed parental background.

Controlling for parental wealth is essential for obtaining a clearer estimation of the effects of tertiary education on wealth accumulation. Parental wealth plays a pivotal role in shaping children's future outcomes, including their educational attainment and subsequent economic returns. Previous research has consistently demonstrated a strong intergenerational correlation in wealth. For instance, Charles and Hurst (2003) highlights the significant link between parents' wealth and their children's financial status, emphasizing the impact even before any inheritance is received. Other measures of socioeconomic parental background, such as parental education, occupation, or income, might overestimate the returns to college education by not fully accounting for the financial advantages provided by parental wealth. A novel contribution of this paper is the inclusion of parental wealth as a direct link in the analysis, offering a more precise understanding of how tertiary education affects wealth accumulation.

The study reveals significant gender and racial disparities in the wealth accumulation benefits of tertiary education. Males and White individuals consistently experience substantial wealth gains from higher education, while females and Non-White individuals often see less pronounced or negative impacts. Family financial background, such as inheritance and parental wealth, plays a critical role in wealth outcomes across all groups. Generational analysis indicates diminishing returns on education for younger cohorts, with structural inequalities further exacerbating racial and gender disparities. The positive wealth effects of higher education are largely driven by increased labor income, although rising education costs and student loan burdens notably offset these benefits, particularly for females and Non-White individuals.

The remainder of the paper is organized as follows. Section 2 presents a literature review. The econometric analysis is presented in Section 3 to explore a causal relationship between college education and wealth by the different demographic groups. The main results are presented in section 4 and the mechanisms driving the results in 5. Finally, Section 6 presents concluding remarks and further research ideas.

2 Literature Review

Recent literature extensively examines the determinants of racial and gender wealth and income inequalities, emphasizing the significant role of systemic factors in perpetuating these disparities. Pfeffer and Killewald (2019) highlights the role of intergenerational wealth transmission in maintaining racial disparities, illustrating how inherited wealth significantly influences economic outcomes. Derenoncourt et al. (2023b) trace the historical evolution of these disparities, attributing them to long-standing discrimination and unequal access to opportunities. This view is supported by Chetty, Hendren, Jones, and Porter (2020), who highlight how differences in neighborhood environments, school quality, and family resources largely drive racial disparities in economic opportunity.

Further research by Addo, Houle, and Simon (2016) and Zaw, Hamilton, and Darity (2016) explores the disproportionate effects of student loan debt and incarceration on Black Americans, exacerbating economic inequalities. Derenoncourt, Kim, Kuhn, and Schularick (2023a) provides a historical analysis showing that systemic economic policies have historically favored White wealth accumulation. Complementing these findings, Bayer and Charles (2018) identify labor market discrimination and occupational segregation as significant contributors to earnings differences between Black and White men. Additionally, Bartscher, Kuhn, and Schularick (2020) documents the emergence of a substantial college wealth premium since the 1980s, noting that systematic portfolio differences, financial literacy, and business ownership have increased wealth inequality between college-educated and non-college households. These studies collectively emphasize that racial and economic disparities are entrenched in systemic inequalities.

Parallel to racial disparities, gender wealth and income inequalities are also perpetuated by systemic factors. Blau and Kahn (2017) provides a comprehensive review of the gender wage gap, focusing on discrimination, occupational segregation, and labor market dynamics. Goldin (2014) discusses the convergence of gender roles in the labor market while highlighting the remaining barriers to full equality. Additionally, Olivetti and Petrongolo (2016) analyzes the evolution of gender gaps across industrialized countries, and Bertrand, Kamenica, and Pan (2015) investigates the influence of gender identity norms on labor supply and household income dynamics.

Examining birth cohorts reveals how the wealth returns from education have varied over time and across demographic groups. During periods of increased educational enrollment, such as those examined by Stephens Jr and Yang (2014), the wealth returns on education have fluctuated significantly. This analysis necessitates controlling for factors like parental wealth and inheritance due to the influence of dynastic wealth, as highlighted by Edlund and Kopczuk (2009). Understanding these dynamics is crucial for identifying barriers to college education in the U.S., such as high tuition fees (Archibald & Feldman, 2011) and the impact of parental socioeconomic status on college attendance (Chevalier et al., 2013). Studying these relationships across different socio-economic backgrounds and generations enhances our understanding of social stratification and opportunities for upward mobility.

3 Empirical Model

Different identification methods are implemented to explore the causal effect of tertiary education on wealth. The analysis initially implements ordinary least squares (OLS) by adjusting for variables like personal skills and family background. This detailed control of the variables addresses potential confounders and leads to more accurate estimates. The OLS specification is provided by:

Wealth_{it} =
$$\alpha_0 + \beta_1 \text{ Education}_i + \alpha_2 X_i + \epsilon_t + v_{it}$$
 (1)

where X includes personal ability, inheritances, and parental presence, education, and wealth. It also includes age, gender, and race. ϵ_t captures year-specific effects, and v is the error term. The approach also considers birth-cohort effects.

Despite controlling for the parental background and individual abilities, there might be unobservables in the error term v_{it} . A different approach is included to address endogeneity by examining the differences in wealth outcomes between biological siblings who made their schooling decisions independently. By comparing siblings, the approach controls for shared family backgrounds, socio-economic status, and genetics, assuming these factors contribute equally to each sibling's development. The main hypothesis is that any disparity in wealth observed post-education stems from their educational choices, not from other factors.

$$D.W_{jt} = \alpha_0 + \alpha_1 D.Educ_{jt} + \alpha_2 D.X_{jt} + \gamma_t + v_{jt}, \qquad (2)$$

 $D.W_{jt}$ represents the wealth difference between two siblings, $D.Educ_{jt}$ the difference in their education, and $D.X_{jt}$ includes differences in age, socioeconomic backgrounds and parental presence during upbringing, participation in gifted programs, and class repetition, as well as behavioral factors like breaking the law. γ_t accounts for time-fixed effects, and v_{jt} is the error term. This approach acknowledges potential limitations, such as unequal parental support or the influence of a more educated sibling on the other. To mitigate potential endogeneity and to address further concerns regarding the assumptions needed for causal inferences, the study employs instrumental variables. This approach leverages the natural variation in compulsory schooling lengths across U.S. states and parental job loss before college decisions to overcome these limitations.

The first instrument uses state variations in compulsory education laws (CSL) as a proxy to explore education's exogenous effects on individuals' schooling levels. This perspective shifts focus away from unmeasured individual traits, directly examining how external changes in education levels influence financial outcomes. The first stage equation 3 and the second stage equation 4 are presented to model schooling as a function of compulsory education:

$$Education_{it} = \beta_1 CSL_i + \gamma_t + \epsilon_{it}$$
 (3)

Wealth_{it} =
$$\alpha_0 + \alpha_1 \operatorname{Education}_{it} + \gamma_t + v_{it}$$
 (4)

where *Education* reflects the education an individual receives, and *CSL* indicates the mandated years of schooling in their state and period. However, some suggest that compulsory schooling laws predominantly influence high school completion and do not target college education.

To overcome this limitation and to complement the analysis, I introduce an additional instrument to enrich our analysis: parental job loss (PJL) during a child's high school years. Unlike compulsory schooling laws, this new instrument captures unexpected financial disruptions that can significantly alter a family's ability to support higher education pursuits. By focusing on the period when children are 15 to 18 years old, I leverage a critical time frame where financial instability directly impacts decisions regarding college attendance. This exogenous variation provided by parental job loss offers a robust means to specifically examine the relationship between tertiary education and wealth accumulation, thus complementing the insights gained from compulsory schooling laws. The first and second stages are presented by:

$$Education_{it} = \beta_1 PJL_i + \gamma_t + \epsilon_{it}$$
 (5)

Wealth_{it} =
$$\alpha_0 + \alpha_1 \text{ Education}_{it} + \gamma_t + v_{it}$$
 (6)

where Education reflects the education an individual receives, and PJL indicates parental unemployment during the years before college enrollment.

3.1 Data

This study focuses on parent-child and sibling relationships from 1999 to 2019, using data from the Panel Study of Income Dynamics (PSID) of individuals over 30 who lead their family units. Two different datasets are constructed, one for parent-child and a second for sibling relationships. To reduce variability, only biological relationships are included. The wealth variables are transformed using an inverse hyperbolic sine transformation to handle zero and negative values without distorting standard errors. The education variable, Tertiary, is categorized into a binary variable grouping college graduates and Postgraduate educational levels, under the assumption that further education is unlikely beyond a certain age.

In addition to Tertiary education, the analysis also considers inherited wealth, parental presence at age 16, parental education, and socio-demographic characteristics, such as race, sex, and age. Additional parental background includes their net worth when the child is young. The final variable is IQ test scores, which are used to control for individual ability. While there may be debate about the reliability of IQ tests for this purpose, this variable has been found to produce results similar to other more robust measures of ability.

Related to the instruments, the parental job loss information is also obtained from the PSID and accounts for the aggregation of hours of parental unemployment in the years before starting college. The data used for compulsory schooling laws as an instrumental variable was obtained from Acemoglu and Angrist (2000) and it can be summarized as the maximum between two options. The first is the minimum years required before leaving school, taking into account age requirements. The second is the difference between the minimum dropout age and the maximum enrollment age.

3.2 Descriptive Analysis

The descriptive analysis of wealth accumulation by education level is presented in table 1 and it reveals important disparities across gender and racial groups. The PSID Data indicates that individuals with tertiary education consistently accumulate more wealth than those without, with this trend evident across all demographic categories. Men with higher education levels exhibit significantly greater wealth accumulation than their non-tertiary educated counterparts, highlighting the substantial economic benefits of education for males. While women with tertiary education also experience increased wealth, the gains are less pronounced than for men. Similarly, White individuals with tertiary education show markedly higher wealth levels, highlighting the significant returns on education within this group. However, Non-White individuals see relatively smaller wealth gains despite also benefiting from higher education.

Table 1: Summary Statistics

	Se	Sex		Race
	Male	Female	White	Non-White
Non-Tertiary	92880	32446	107055	24050
	(10200)	(1600)	(11000)	(2400)
Tertiary	353723	104510	331853	59336
	(52000)	(5000)	(40500)	(2000)
Observations	21817	11157	21128	11846

Note: Source: Panel Study of Income Dynamics. The median value is in parentheses. Data in this analysis is used with sampling weights.

4 Results

Table 2 shows that tertiary education significantly increases wealth for males, while females do not experience a statistically significant wealth boost from tertiary education and face a negative impact. Racial differences are also evident, with White individuals benefiting more from tertiary education in wealth accumulation compared to their Non-White counterparts, who experience a negative impact from tertiary education. Table A1 shows that inheritance and parental wealth have a positive influence on wealth across all groups, emphasizing the significance of family financial background in wealth outcomes.

The within-sibling differences in Table 3 also show significant wealth advantages associated with tertiary education for males. This second analysis confirms that tertiary education leads to substantial wealth gains for this category. Females also see positive,

Table 2: OLS Regression

Dependent Variable: Wealth					
		Sex		Race	
	Male	Female	White	Non-White	
Tertiary	3822.99*** (825.62)	-2479.92^* (1099.20)	3123.94*** (800.82)	-3144.19^{**} (1182.20)	
Observations Adjusted R^2	$14141 \\ 0.23$	$6417 \\ 0.15$	13450 0.23	$7108 \\ 0.11$	

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, sociodemographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table 3: Within Variation Regression

Dependent Variable: Wealth					
	Sex Race				
	Male	Female	White	Non-White	
D.Tertiary	4355.02**	2668.71	4950.98***	-215.46	
	(1427.96)	(1882.85)	(1229.33)	(1091.37)	
Observations	3252	1212	3663	3215	
Adjusted \mathbb{R}^2	0.03	0.04	0.03	0.02	

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. The comparison base is high-school drop-outs. Control variables include the difference between siblings in age, socioeconomic conditions and parental presence when young, school performance, and instances of breaking the law. The constant term, time, and cohort effects are included but not reported for brevity.

though not statistically significant, wealth effects from tertiary education. The impact is more pronounced along racial lines, with White individuals experiencing significant wealth gains from tertiary education, whereas Non-White individuals do not show significant wealth increases.

Table 4 presents the instrumental variable regression results using compulsory schooling laws as the instrument for tertiary education. The findings indicate that tertiary education significantly increases wealth for males and females, however, the only high F-statistic is for males. This confirms the strength of the instrument only for that category. Racial differences are also evident: White individuals do not experience significant wealth gains from tertiary education, while Non-White individuals show a positive effect, although the F-statistic suggests potential concerns about instrument strength.

Table 5 presents the last regression results from the second instrument, parental job loss. The findings indicate that tertiary education significantly increases wealth for males and White individuals, with robust F-statistics confirming the strength of the instrument for these groups. For females, the results suggest a positive impact on wealth, though the F-statistic indicates that the instrument may be weaker and less reliable. For Non-White individuals, the effect of tertiary education on wealth is positive but not statistically

Table 4: I.V. Regression: Compulsory Schooling Laws

		Sex		Race		
	Male	Female	White	Non-White		
Tertiary	35571.00***	44271.03+	-2052.69	36977.36^{+}		
	(9759.11)	(26473.00)	(22310.81)	(18972.93)		
		I	First Stage			
CSL	0.02***	0.01**	0.01**	0.01***		
	(0.00)	(0.00)	(0.00)	(0.00)		
F-statistic	27.25	1.75	32.92	2.76		
Observations	8015.00	2738.00	7132.00	3621.00		

Note: Source: Panel Study of Income Dynamics. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. The instrument is the years of compulsory schooling by state. Year and birth cohort effects are included.

Table 5: I.V. Regression: Parental Job Loss

		Sex		Race		
	Male	Female	White	Non-White		
Tertiary	36712.53^*	22021.28	25550.82*	70073.13		
	(15340.74)	(22475.57)	(12714.51)	(183853.22)		
		I	First Stage			
PJL	-0.14***	-0.10**	-0.17^{***}	-0.02		
	(0.02)	(0.03)	(0.03)	(0.03)		
F-statistic	31.47	2.31	36.57	1.15		
Observations	7805	3837	7588	4054		

Note: Source: Panel Study of Income Dynamics. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. The instrument is the hours of parental unemployment before college decisions. Year and cohort effects are included. Parental wealth is included but not reported for brevity.

significant, and the F-statistic suggests a weak instrument, making these results less reliable. These findings complement the results from the OLS and previous IV analysis, reinforcing the significant wealth benefits of tertiary education for males and highlighting substantial gains for White individuals, while also pointing to potential limitations in the instrument for other groups.

4.1 Generational Effects

The decision to include birth cohorts reflects variations over time in the access, role, and economic value of education. Analysis by sex, detailed in Tables A2 and A3 for males, and A4 and A5 for females, shows differing trends. For males born between 1939 and 1988, early generations experienced significant wealth increases with higher education levels, particularly at the college level, which diminished over time, with the youngest cohort experiencing decreased wealth associated with tertiary education. Females exhibited a contrasting trajectory. Early cohorts, 1939-48, saw substantial economic mobility through higher education. However, from the 1949-58 cohort onwards, the relationship between education and wealth began to diverge from male counterparts, with a significant decline

in the economic returns from higher education in later cohorts.

The economic trajectory for White individuals, detailed in Tables A6 and A7, mirrors the male trend, with early cohorts benefiting from higher education. However, this advantage diminished over time, particularly for those born post-1968, leading to decreased wealth in the youngest cohort (1979-88). Conversely, Non-White individuals, as shown in Tables A8 and A9, initially viewed postgraduate education as a key to economic advancement in the 1939-48 cohort. Subsequent generations, however, saw a gradual reduction in these benefits, with the latest cohort experiencing lower wealth associated with higher education.

Several interesting insights can be drawn from these generational effects. First, the diminishing returns on higher education for younger cohorts suggest that the economic value of education has evolved (Emmons et al., 2019). Factors such as changes in the labor market, increased cost of living, and rising education costs may have contributed to these shifts. This trend indicates that younger generations face different economic landscapes compared to earlier cohorts. Second, gender disparities in wealth accumulation reveal the persistent wage gap and occupational segregation. Despite educational gains, females, particularly in later cohorts, experience less economic return from higher education (Blau & Kahn, 2017).

Third, racial disparities in wealth accumulation underscore the impact of structural inequalities. While early cohorts of White individuals benefited significantly from higher education, this advantage diminished over time (Derenoncourt et al., 2023a; Derenoncourt & Montialoux, 2021). Non-White individuals, despite initial gains from tertiary education, saw a reduction in benefits in later cohorts. Systemic racism and restricted access to high-paying opportunities likely contribute to these disparities.

5 Mechanisms

The primary observed effect of education on wealth appears to be driven by the income effect, as detailed in Table 6. For males, accounting for labor income shows a diminished but still significant positive impact of higher education on wealth, suggesting that a substantial portion of this effect is mediated through higher earnings associated with tertiary education. Similarly, for White individuals, the impact of tertiary education on wealth remains positive and significant, even when labor income is included, indicating that higher earnings play a crucial role in wealth accumulation for this group.

For females, the coefficient on tertiary education remains positive but not statistically significant, and the impact of labor income itself is also not significant. This suggests a more complex relationship between college education and wealth for females, possibly influenced by persistent gender disparities in earnings and labor market opportunities. For Non-White individuals, while the coefficient on tertiary education is positive, it is not statistically significant, and the effect of labor income is also not significant. These results indicate that racial disparities may limit the wealth accumulation benefits of higher education for Non-White individuals, despite similar educational achievements.

Table 6: I.V. Regression Mechanism: Income Effect

		Sex		Race		
	Male	Female	White	Non-White		
Tertiary	34677.08*	21373.21	24166.40^{+}	68648.49		
	(16120.96)	(23135.74)	(12779.50)	(193586.51)		
Labor Income	0.13^{+}	0.14	0.17^{**}	0.06		
	(0.07)	(0.13)	(0.06)	(0.34)		
		F	First Stage			
PJL	-0.13***	-0.09***	-0.16***	-0.01		
	(0.02)	(0.02)	(0.02)	(0.01)		
F-statistic	38.36	5.89	43.58	2.37		
Observations	7805.00	3837.00	7588.00	4054.00		

Note: Source: Panel Study of Income Dynamics. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. The instrument is the hours of parental unemployment before college decisions. Year and cohort effects are included. Parental wealth is included but not reported for brevity.

The analysis, shown in tables A10, A12, A14, and A16, reveals how income influences wealth accumulation across different demographics over time. For males and Whites, there's a positive correlation between labor income and education, reflecting historical labor market advantages. Conversely, Non-White groups show a 'catch-up' effect with slightly higher positive coefficients, pointing to efforts in overcoming barriers to wealth accumulation. For females, notable gains from labor income on wealth are evident in recent generations, underscoring their ongoing battle for equality in the labor market. Economic returns from education have evolved due to socioeconomic changes and policies in the U.S. The post-WWII GI Bill notably increased male college enrollment (Zhang, 2018), while policies like Title IX and the need for dual incomes have enhanced educational opportunities for women, integrating them more into the workforce (Rim, 2021). By the late 20th and early 21st centuries, the relationship between education and wealth had significantly shifted.

Table 7: I.V. Regression Mechanism: Student Loan

		Sex		Race		
	Male	Female	White	Non-White		
Tertiary	53071.68^{+}	-5872.33	31434.77*	39341.36		
	(28424.09)	(23384.85)	(15952.51)	(322359.46)		
Student Loan	-0.44***	-0.39***	-0.45***	-0.45		
	(0.05)	(0.08)	(0.05)	(0.31)		
		F	First Stage			
PJL	-0.13^{***}	-0.09**	-0.17^{***}	0.02		
	(0.03)	(0.03)	(0.03)	(0.07)		
F-statistic	28.06	21.57	27.47	22.41		
Observations	3294.00	1751.00	3172.00	1873.00		

Note: Source: Panel Study of Income Dynamics. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. The instrument is the hours of parental unemployment before college decisions. Year and cohort effects are included. Parental wealth is included but not reported for brevity.

Rising education costs have weakened the strong link between higher education and wealth accumulation, particularly affecting Non-White groups who face ongoing societal and economic challenges despite educational gains (Hurtado et al., 1997). The increase in university fees and the deepening student debt crisis have further complicated the benefits of higher education for recent generations (Lochner & Monge-Naranjo, 2016). The primary observed effect of student loans on wealth is detailed in Table 7. For males, accounting for student loans shows a positive impact of tertiary education on wealth, although the high cost of student loans significantly offsets these gains. For White individuals, the effect remains positive and significant, but again, student loans substantially reduce the net benefit of higher education.

For females, the coefficient on tertiary education is negative and not statistically significant, suggesting that the burden of student loans may outweigh the financial benefits of higher education. Similarly, for Non-White individuals, the positive impact of tertiary education on wealth is not statistically significant, and student loans further exacerbate the financial strain, although the coefficient on student loans is not significant. Tables A13, A11, A15, and A17 for generational effects. While student loans reduce net wealth, higher education still provides significant intrinsic value for wealth enhancement, highlighting its dual role as both a valuable asset and a potential financial burden.

6 Conclusions

This study explores the relationship between tertiary education and wealth accumulation. The analysis of data from the Panel Study of Income Dynamics from 1999 to 2019 reveals critical insights into the impact of college on wealth accumulation by gender, race, and over generations. By employing different identification strategies, the study indicates that the causal effect of education on wealth is clear only for males and White individuals meanwhile no effect for females and non-White individuals. These results challenge the notion that education universally enhances wealth, highlighting the need for targeted policies to address these inequities.

The income effect, where men typically outearn women (Blau & Kahn, 2017), plays a crucial role in explaining differences in wealth accumulation (Killewald et al., 2017). For Non-White individuals, the findings suggest that systemic inequalities and restricted access to lucrative opportunities further exacerbate wealth gaps, despite educational advances (Pager & Shepherd, 2008). Overall, these results highlight that labor income disparities are a key mechanism driving wealth inequality across demographic groups. Additionally, the findings highlight the important role of student loans in shaping wealth accumulation outcomes. The significant negative coefficients on student loans across most demographic groups indicate that rising education costs and student debt significantly undermine the wealth accumulation potential associated with tertiary education. These results underscore the importance of addressing the student debt crisis to mitigate its impact on wealth inequality.

The study acknowledges certain limitations: First, it relies on survey data from the

PSID, which may be subject to reporting biases. Future research could complement these findings with administrative data to validate the results. Second, despite the use of IV and sibling comparison methods, there may still be unobserved factors that influence both education and wealth accumulation. Future research could benefit from examining the long-term effects of education on wealth accumulation across different stages of the life cycle. Exploring the role of financial literacy and wealth management practices in mediating the relationship between education and wealth could reveal important mechanisms. This can help design interventions that enhance the financial outcomes of educational investments.

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Online Appendix

Ordinary Least Squares Regression: Details

Table A1: OLS Regression: Effects of Education on Wealth

Dependent Variable: Wealth						
		Sex		Race		
	Male	Female	White	Non-White		
Tertiary	3822.99***	-2479.92^*	3123.94***	-3144.19**		
	(825.62)	(1099.20)	(800.82)	(1182.20)		
Inheritance	0.13***	0.24***	0.14***	0.18***		
	(0.02)	(0.04)	(0.02)	(0.05)		
Parental Wealth	0.30***	0.24***	0.29***	0.15***		
	(0.03)	(0.04)	(0.03)	(0.04)		
Par.Education W.	657.64^{*}	-200.18	377.02	321.38		
	(325.39)	(409.16)	(324.60)	(392.29)		
Par.Education H.	33.41	1434.66***	505.42	840.35+		
	(336.34)	(403.25)	(331.67)	(446.12)		
Ability	381.61*	121.66	309.54	204.03		
	(167.99)	(188.52)	(217.85)	(142.04)		
Par.Presence	1836.72*	216.67	1009.07	535.58		
	(875.78)	(1027.47)	(1059.99)	(745.29)		
Observations	14141	6417	13450	7108		
Adjusted \mathbb{R}^2	0.23	0.15	0.23	0.11		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+$ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are heteroskedastic robust. The data uses sampling weights. Year, socio-demographic, and cohort effects are included. Socio-demographic variables include age, sex, and race of individuals. The constant term is included but not reported for brevity.

Birth Cohorts: Male

Table A2: OLS Regression: Male

Dependent Variable: Wealth					
	1939-48	1949-58	1959-68	1969-78	1979-88
Tertiary	$5468.62 \\ (3732.30)$	6933.14*** (1429.34)	2641.20 (1734.93)	4961.34** (1622.21)	-1368.05 (1713.45)
Observations Adjusted R^2	$751 \\ 0.26$	3866 0.28	4363 0.19	3299 0.13	1800 0.08

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A3: Within-Siblings Variation Regression: Male

Dependent Variable: Wealth							
	1949-58 1959-68 1969-78 1979-88						
D.Tertiary	-753.57	9112.94***	-2430.61	-13137.73^{+}			
	(4117.89)	(2019.76)	(2386.69)	(7329.63)			
Observations	871	1575	739	67			
Adjusted \mathbb{R}^2	0.05	0.05	0.04	0.25			

Birth Cohorts: Female

Table A4: OLS Regression: Female

Dependent Variable: Wealth					
	1939-48	1949-5	8 1959-6	8 1969-78	3 1979-88
Tertiary	$15831.54 \\ (12974.27)$	$2446.22 \\ (2693.43)$	-1698.07 (2045.65)	-1596.49 (1883.04)	-9286.13*** (2021.44)
Observations Adjusted R^2	$ \begin{array}{r} 295 \\ 0.29 \end{array} $	$1649 \\ 0.25$	$2230 \\ 0.08$	$1378 \\ 0.05$	801 0.13

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A5: Within-Siblings Variation Regression: Female

Dependent Variable: Wealth							
	1949-58 1959-68 1969-78 1979-88						
D.Tertiary	20484.72***	1310.43	-5225.30^{+}	22973.56*			
	(3512.42)	(2765.61)	(2827.65)	(6955.70)			
Observations	337	654	205	16			
Adjusted \mathbb{R}^2	0.16	0.03	0.10	0.87			

Birth Cohorts: White

Table A6: OLS Regression: White

Dependent Variable: Wealth						
	1939-48	1949-58	1959-68	1969-78	3 1979-88	
Tertiary	7854.84* (3977.79)	5585.45*** (1387.85)	1628.59 (1638.17)	4181.00** (1479.25)	-1020.91 (1821.69)	
Observations Adjusted R^2	$807 \\ 0.28$	$3760 \\ 0.23$	$4025 \\ 0.17$	$3215 \\ 0.15$	1583 0.11	

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A7: Within-Siblings Variation Regression: White

Dependent Variable: Wealth							
1949-58 1959-68 1969-78 1979-88							
D.Tertiary	8977.74**	7863.76***	-2462.81	-15585.98*			
	(2746.14)	(1864.59)	(2079.61)	(6696.93)			
Observations	972	1694	927	70			
Adjusted \mathbb{R}^2	0.05	0.04	0.03	0.14			

Birth Cohorts: Non-White

Table A8: OLS Regression: Non-White

Dependent Variable: Wealth							
	1939-48	1949-5	8 1959-6	8 1969-78	3 1979-88		
Tertiary	$2217.92 \\ (4921.38)$	$4434.80 \\ (2862.74)$	$ \begin{array}{c} -1112.26 \\ (2508.04) \end{array} $	$ \begin{array}{c} -2376.98 \\ (2237.88) \end{array} $	-8869.29*** (1966.20)		
Observations Adjusted R^2	239 0.08	$1755 \\ 0.19$	$2568 \\ 0.12$	$1462 \\ 0.07$	1018 0.11		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A9: Within-Siblings Variation Regression: Non-White

Dependent Variable: Wealth							
1949-58 1959-68 1969-78 1979-88							
D.Tertiary	8465.33***	3447.92*	-8699.55***	-14820.65^*			
	(2291.98)	(1747.83)	(1559.49)	(6337.78)			
Observations	908	1612	616	79			
Adjusted \mathbb{R}^2	0.02	0.04	0.05	0.33			

Birth Cohorts Mechanisms: Male

Table A10: OLS Regression: Income Effect for Male

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	5570.31 (3807.19)	6860.59*** (1400.59)	1959.68 (1646.04)	3833.21* (1609.40)	-2855.67 (1736.67)		
Labor Income	-0.02 (0.06)	0.12*** (0.03)	0.21*** (0.04)	0.23*** (0.05)	0.30^{***} (0.08)		
Observations Adjusted R^2	751 0.26	3866 0.30	4363 0.23	3299 0.16	1800 0.10		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A11: OLS Regression: Student Loans for Male

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	14532.30***	11051.84***	6516.17**	6819.31***	5564.26***		
	(4318.61)	(2070.23)	(2013.56)	(1780.41)	(1540.24)		
Student Loan	0.16	-0.23**	-0.40^{***}	-0.52***	-0.81***		
	(0.17)	(0.07)	(0.10)	(0.09)	(0.09)		
Observations	305	1573	1797	2083	1800		
Adjusted R^2	0.33	0.34	0.28	0.28	0.31		

Birth Cohorts Mechanisms: Female

Table A12: OLS Regression: Income Effect for Female

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	17894.56	2380.37	-2799.55	-2303.31	-9500.13***		
	(13393.13)	(2615.08)	(2035.73)	(1921.21)	(2061.31)		
Labor Income	0.16	0.03	0.28***	0.21**	0.04		
	(0.13)	(0.05)	(0.05)	(0.08)	(0.10)		
Observations	295	1649	2230	1378	801		
Adjusted R^2	0.32	0.25	0.13	0.07	0.14		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A13: OLS Regression: Student Loans for Female

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	48025.52***	6353.13*	2509.04	-108.27	-945.77		
	(4462.10)	(3001.40)	(3082.03)	(2011.71)	(2244.81)		
Student Loan	0.03	-0.23^*	-0.46^{***}	-0.41^{***}	-0.78***		
	(0.08)	(0.09)	(0.09)	(0.08)	(0.15)		
Observations	139	775	1055	904	801		
Adjusted R^2	0.39	0.33	0.20	0.24	0.50		

Birth Cohorts Mechanisms: White

Table A14: OLS Regression: Income Effect for White

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	7965.31*	5505.71***	937.07	3120.58*	-2133.37		
	(4063.27)	(1374.52)	(1592.55)	(1484.35)	(1895.23)		
Labor Income	-0.03	0.08*	0.20^{***}	0.23***	0.20^{*}		
	(0.06)	(0.03)	(0.05)	(0.05)	(0.09)		
Observations	807	3760	4025	3215	1583		
Adjusted \mathbb{R}^2	0.28	0.24	0.20	0.17	0.13		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: ${}^+p < 0.1$, ${}^*p < 0.05$, ${}^{**}p < 0.01$, ${}^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A15: OLS Regression: Student Loans for White

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	18013.53***	10343.75***	6553.82**	5025.91**	6017.10***		
Student Loan	(4305.62) 0.01	$(1974.07) \\ -0.16*$	(2106.48) $-0.46***$	(1678.13) $-0.49***$	(1665.60) $-0.92***$		
	(0.20)	(0.08)	(0.10)	(0.09)	(0.09)		
Observations Adjusted R^2	$352 \\ 0.39$	$1567 \\ 0.29$	$1693 \\ 0.27$	$2000 \\ 0.30$	$1583 \\ 0.38$		

Birth Cohorts Mechanisms: Non-White

Table A16: OLS Regression: Income Effect for Non-White

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	8 1979-88		
Tertiary	2276.86	3986.35	-2128.40		-10092.93***		
Labor Income	$(5024.57) \\ -0.05$	(2780.63) 0.15^{**}	(2420.62) $0.29***$	$ \begin{array}{c} (2171.21) \\ 0.23^{***} \end{array} $	(1970.01) $0.25***$		
	(0.12)	(0.05)	(0.04)	(0.07)	(0.07)		
Observations Adjusted \mathbb{R}^2	$239 \\ 0.07$	$1755 \\ 0.22$	$2568 \\ 0.20$	$1462 \\ 0.11$	$1018 \\ 0.12$		

Note: Source: PSID. Standard errors in parentheses. Significance levels are denoted as follows: $^+p < 0.1$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. Standard errors are heteroskedastic robust. The data uses sampling weights. Inheritance, parental presence, education and wealth, and individual ability are included. Year, socio-demographic, and cohort effects are also included. Socio-demographic variables include age, sex, and race of individuals. These variables and the constant term are included but not reported for brevity.

Table A17: OLS Regression: Student Loans for Non-White

Dependent Variable: Wealth							
	1939-48	1949-58	1959-68	1969-78	1979-88		
Tertiary	-175032.20***	6123.83^{+}	1069.59	2231.15	-1038.94		
	(16325.23)	(3382.69)	(3150.67)	(2352.45)	(2019.99)		
Student Loan	0.02	-0.34***	-0.39***	-0.46***	-0.66***		
	(0.10)	(0.07)	(0.09)	(0.08)	(0.12)		
Observations	92	781	1159	987	1018		
Adjusted R^2	0.26	0.25	0.19	0.22	0.35		