

Age Patterns in Perceived Returns to Post-Secondary Education: Subjective Confirmation of Human Capital Theory

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Research Domains

Employability, enterprise and graduate careers (EE)

Abstract

This paper tests predictions from human capital theory by analysing subjective perceptions of financial returns to college between ages 25 and 75. While objective returns to college are well-documented, less is known about whether individuals internalise gains from their degrees over time. Using ten years (2014–2023) of cross-sectional data from the Federal Reserve’s Survey of Household Economics and Decisionmaking, the study examines how the perceived value of postsecondary credentials evolves with age. A selection-on-observables approach reveals patterns broadly consistent with human capital theory. Associate, bachelor’s, and master’s degree holders report increasing value with age, while professional/doctoral holders exhibit rapid growth early in their careers before plateauing. Earlier completers (aged 18–23) report higher perceived returns. Robustness checks using propensity score matching and age–period–cohort analysis support the findings; pseudo-panel estimates confirm the robustness of the bachelor’s degree results. Heterogeneity analyses reveal significant between-group differences.

Full paper

Introduction

Public confidence in the financial value of higher education has eroded in recent years. A majority of Americans now believe that a four-year college degree is not worth the cost (Belkin, 2023). This shift in public sentiment is perplexing given a large body of economic research showing that the earnings premium associated with postsecondary degrees remains substantial—and increases over the career (Altonji et al., 2016; Altonji et al., 2012; Lovenheim & Smith, 2023).

According to human capital theory, the financial return to education is not immediate but accumulates over time through enhanced productivity and labour market progression (Becker, 2009). Simulation-based estimates suggest that the breakeven age for recouping college costs ranges from 32 to 41 (Webber, 2016), indicating that financial benefits may

not become apparent until well into the mid-career. If individuals internalise these returns, then subjective assessments of value should rise with age.

The disconnect between observed earnings patterns and subjective perceptions raises a central empirical question about whether individuals perceive greater financial returns to college as they age, as human capital theory suggests. While much existing research focuses on early-career earnings or ex ante beliefs that shape enrolment decisions (Arcidiacono et al., 2012; Boneva et al., 2022; Jensen, 2010; Wiswall & Zafar, 2018), ex post perceptions—how people evaluate the financial payoff of their degrees after the fact—remain poorly understood (Shafiq & Toutkoushian, 2024).

This study addresses that gap by analysing ten years (2014–2023) of pooled cross-sectional data from the Federal Reserve Board’s Survey of Household Economics and Decisionmaking (SHED) to provide the first empirical estimates of how perceived financial value of college varies with age and credential type. It addresses three core research questions (RQ):

1. Do perceived financial returns to college rise with age, as human capital theory predicts, and does this pattern differ by degree type?
2. How robust are these age-related patterns to observable selection effects and alternative explanations, including cohort and period differences?
3. To what extent do age–education patterns in perceived value differ by gender, race, prior ability, field of study, and student loan history?

Methodology

The main empirical analysis estimates the relationship between perceived financial returns, age, and degree level using seven nested logit specifications. Covariates are added sequentially to examine how robust the age–education interaction effects are to observable heterogeneity, including gender, race, prior ability, field of study, student loan history, and institutional selectivity.

Robustness tests include addressing functional form misspecification using linear probability models; addressing selection using propensity score matching with inverse probability weighting (Wooldridge, 2007) and control function methods (Wooldridge, 2015); age–period–cohort (APC) models to disentangle lifecycle effects (Yang & Land, 2013); and pseudo-panel techniques (Moffitt, 1993) to account for cohort composition.

Results, Discussion and Conclusions

The analysis yields three main findings. First, addressing RQ1, perceived financial returns to postsecondary education generally increase with age across most degree types. Perceived value rises steadily for associate and bachelor’s degrees, while certificate holders show little change over the life course. Master’s, professional, and doctoral degree holders exhibit more rapid growth in perceived value at younger ages, followed by plateauing at

older ages. These patterns are broadly consistent with human capital theory, which predicts that returns to educational investments accumulate across the working life.

The timing of degree completion also matters. Completing a qualification earlier in life increases the rate of return by extending the period over which gains can accrue. Subjective data support this prediction: earlier completers (aged 18–23) report higher perceived value than later completers (24–29 and 30–39), though the gap narrows over time—except among professional degree holders.

Second, addressing RQ2, robustness checks offer mixed evidence. Propensity score matching and APC models confirm the stability of age–education profiles across all education levels, suggesting that observable selection bias, cohort effects, and functional form assumptions do not substantively alter the findings. Control function estimates suggest that education level is likely endogenous in the main models, though weak instruments limit causal identification. Pseudo-panel estimates confirm the robustness of the bachelor's degree findings but are unstable for other credentials.

Third, addressing RQ3, subgroup analyses show that the positive association between age and perceived financial value holds across gender, race, prior ability, field of study, and student loan history. However, important between-group differences are revealed.

Taken together, these findings suggest that perceived financial returns to education evolve systematically with age in cross-sectional data, broadly consistent with lifecycle models of human capital accumulation.