Economic Brief

How Does Family Structure during Childhood Affect College Preparedness and Completion?

By Adam Blandin, Christopher Herrington, and Aaron Steelman

From 1996 through 2015, the share of twenty-eight-year-olds in the United States who attended college grew 8 percentage points while the share who completed college also grew 8 percentage points. But college attainment trends varied significantly by family structure. In particular, completion grew much faster for children from "high-resource" households (two parents with at least one holding a four-year degree) compared with children from "low-resource" households (one parent and no degree). New research suggests that this attainment gap expanded because high-resource households increased precollege investment relative to low-resource households in response to a rising college wage premium.

From 1975 through 1995, the share of twenty-eight-year-olds in the United States who had attended college grew 13 percentage points, while the share who had completed a four-year degree grew only 3 percentage points. During the next two decades, from 1996 through 2015, the attendance share grew 8 percentage points, and the completion share also grew 8 percentage points.[1]

Trends in college completion are important because people who attend and complete college can, on average, expect to earn substantially more over the course of their careers than those who do not attend college or those who do attend but do not complete their degrees. Indeed, Lutz Hendricks of the University of North Carolina at Chapel Hill and Oksana Leukhina of the St. Louis Fed found that, for individuals born from 1957–65, college graduates earned an average

of $340,000 more over their lifetimes than high school graduates, while college dropouts earned only $40,000 more (measured in 2000 dollars).[2]

Since the financial incentive to complete college has been clear for many years, why have college completion rates grown more rapidly in the United States after 1995? Two authors of this *Economic Brief* (Blandin and Herrington of Virginia Commonwealth University) have attempted to answer this question.[3] A key feature of their analysis is to show that college-attainment trends have differed by family structure. Specifically, they use the University of Michigan's Panel Study of Income Dynamics (PSID) 1968–2015 to follow children from birth to age twenty-eight. They classify households with children as "high resource" if there are two parents and at least one has a four-year degree. They classify households as "low resource" if only one parent

is present and he or she lacks a four-year degree. This language reflects the idea that high-resource families will tend to have more time and money at their disposal to invest in their children.[4]

For children from high-resource families, college attendance increased by only 1 percentage point from 1996–2015, but completion increased by 13 percentage points. In contrast, for children from low-resource families, college attendance increased by 7 percentage points, but completion grew by only 4 percentage points. The attendance gap between low- and high-resource children, then, *shrank* by 6 percentage points, while the completion gap *grew* by 9 percentage points. Importantly, the authors verify that family structure remains an important predictor of college completion even after controlling for family earnings, number of siblings, race, sex, and the family's geographic region.

Figure 1 provides details of these trends. It displays three-year moving averages of college attendance and completion rates by family type from 1996

through 2015.[5] Individuals are assigned to the year they turned twenty-eight. For example, the aggregate attendance rate of 53 percent in 1996 corresponds to individuals who turned twenty-eight from 1995 to 1997. Children from the lowest-resource households are designated 1L (one parent, no degree); children from households with two parents, neither of whom has a degree are designated 2L; and children from households with two parents with at least one degree between them are designated 2H, the highest-resource category in the study.[6]

Precollege Investment and Preparedness

Why did college completion grow more rapidly for children from high-resource households compared with children from low-resource households? Blandin and Herrington propose that, conditional on attending college, an individual's chance of completing depends primarily on how prepared the individual is for college. They suggest that a rising college wage premium since the 1980s induced an increase in attendance among children from all family structures, but that high-resource households increased precol-

Figure 1: U.S. College Attendance and Completion Rates by Age Twenty-Eight
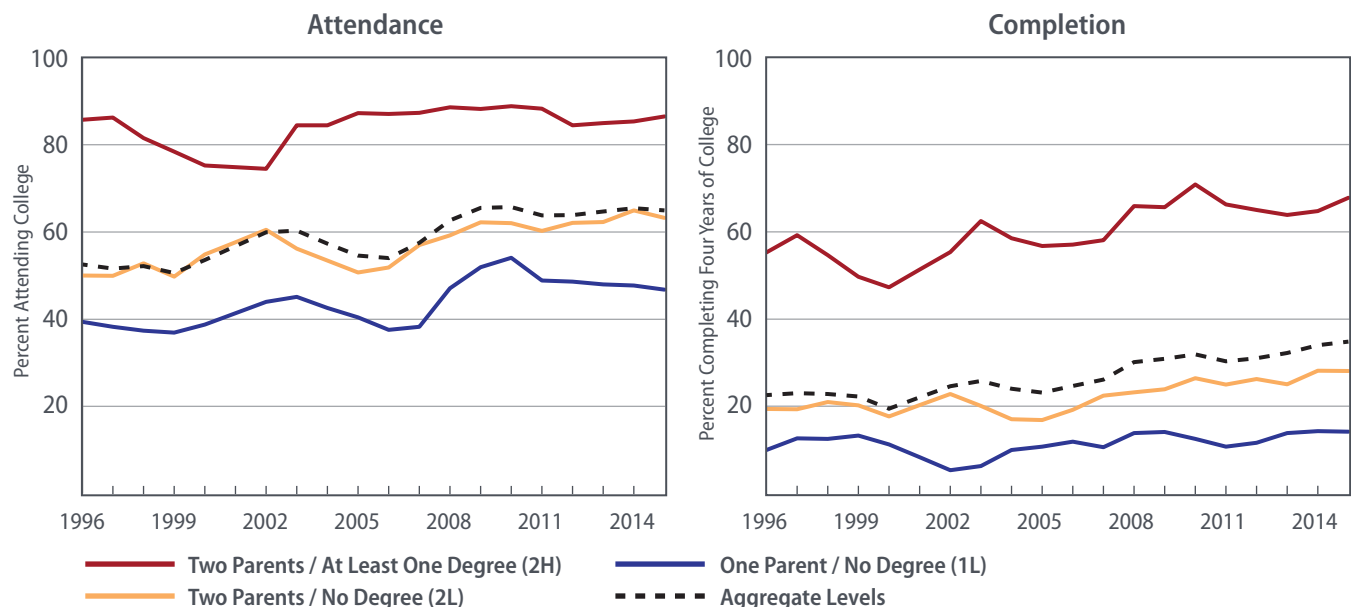
Source: Authors' analysis of data from the Panel Study of Income Dynamics, Institute for Social Research, University of Michigan
Notes: Curves are three-year moving averages. Values for 2001 are generated by linear interpolation. The years correspond to the years when individuals turned twenty-eight. College attendance is defined as attaining more than twelve years of education. College completion is defined as attaining at least sixteen years of education. The number of parents includes cohabitants. Individuals are assigned to the lowest-resource "family type" they experienced from birth to age seventeen. Attainment rates for children from families with one parent who has a degree (1H) are not included due to small sample size.

lege investment more than low-resource households. This led to a larger increase in college preparedness and college completion among high-resource children compared with low-resource children.

Blandin and Herrington provide several pieces of evidence that are consistent with this explanation. First, they document trends in earnings by family type, which has implications for the family's capacity to invest money in children's human capital accumulation. From 1968, the year the 1996 cohort was born, until 2015, the year the final cohort turned twenty-eight, aggregate median parental earnings increased roughly 10 percent, from $60,900 to $66,200 (in 2015 dollars). The increase did not occur proportionately across types, however. Median earnings fell 12 percent for 1L households, grew by 7 percent for 2L households, and grew by 29 percent for 2H households. These patterns suggest that earnings alone cannot account for the observed trends in college attendance and completion. For example, attendance and completion rose among 1L households despite the drop in median earnings. And completion rates increased by comparable amounts among children from 2L and 2H households, even though median earnings growth was significantly larger among the latter.

Next, Blandin and Herrington point to work by Sabino Kornrich of the Center for Advanced Studies in the Social Sciences at the Juan March Institute in Madrid and Frank Furstenberg of the University of Pennsylvania that documents growing gaps in expenditures on children based on family income, parental education, and number of parents.[7] This analysis is based on the Bureau of Labor Statistics' Consumer Expenditure Survey from the early 1970s through the late 2000s. For example, the gap in annual spending per child between the second and ninth deciles of the income distribution increased from $1,200 in 1972 to $2,800 in 2006, measured in constant 2008 dollars.[8] Similarly, the gap in spending per child between households with high school-educated parents and college-educated parents increased from roughly $700 in 1972 to $1,500 in 2006. Interestingly, single mothers in 1972 spent about $500 more per child than dual-parent households, but by 2006 that difference had essentially disappeared. It is possible

that the initial gap was largely due to higher child-care expenses in single-parent households, and this difference declined as more married women entered the labor force, resulting in higher care expenses for dual-parent households.

Blandin and Herrington also document that the amount of time parents spend with their children has increased across all households, according to data from the Bureau of Labor Statistics' American Time Use Survey and the Centre for Time Use Research's American Heritage Time Use Study. But college-educated parents have increased time with their children more than non-college-educated parents.[9] Moreover, two-parent households have increased time with their children more than single-parent households. As a result, the gap in weekly hours spent with children between 2H and 1L households more than doubled in recent decades, from about seven hours per week to more than fifteen hours per week. This growing disparity is important because parental time has been widely credited as a crucial input in the production of a child's human capital.[10]

Finally, Blandin and Herrington argue that these growing gaps in parental investments between 2H and 1L households translated into growing gaps in college preparedness. To test this idea, they look at changes over time in SAT scores by family type, using the Bureau of Labor Statistics' National Longitudinal Surveys. They first document that, conditional on attending college, SAT scores strongly predict a child's chances of completing a four-year college degree.[11] Next, they show that among children who turned twenty-eight around 1990, there already existed small test-score gaps between 2L and 1L children and large test-score gaps between 2H and 1L children. Finally, they show that those gaps increased from the 1990 cohort to the 2010 cohort. For example, the median SAT score for 2H children (averaging math and verbal scores) grew twenty points (512 to 532) while the median score for 1L children fell by one point (448 to 447). As a result, the median score gap between 2H and 1L children grew by twenty-one points, an increase of one-fifth of a standard deviation.

Why Did High-Resource Parents Invest Relatively More in Their Children?

The evidence above is consistent with the idea that high-resource households increased precollege investments in their children relative to low-resource households, and that this investment gap generated stronger growth in college completion among high-resource children. However, this evidence does not directly explain why high-resource households increased their precollege investment, and why they did so to a greater extent than low-resource households.

Blandin and Herrington's explanation for "why" comes in three parts: (i) the college wage premium increased substantially from the early 1980s to the mid-2000s; (ii) high-resource parents responded to the rising college wage premium by investing more time and money in their children; and (iii) low-resource parents, facing tight time and budget constraints, responded less to the rising college wage premium. To test whether this story is quantitatively powerful enough to generate the observed trends in college completion, Blandin and Herrington build a

structural model of intergenerational human capital investment and college attainment with heterogeneous households.

Within this model, they simulate an increase in the college wage premium from 43 percent to 75 percent, as observed in the U.S. data between 1986 and 2005. The increase in the college wage premium increases attendance and completion among children from all family types. But attendance and completion do not increase proportionately across all family types. Attendance increases most, 24 percentage points, for children from 1L households, while it increases least, 19 percentage points, for children from 2H households. Completion increases least, 11 percentage points, for children from 1L households, while it increases most, 16 percentage points, for children from 2H households.

As a result, the attendance gap between 2H and 1L children *decreases* 5 percentage points in response to the increased college wage premium, while the completion gap between 2H and 1L children *increases* by 5 percentage points. Qualitatively, these pat-

Figure 2: Population Shares by Family Type among Households with Children
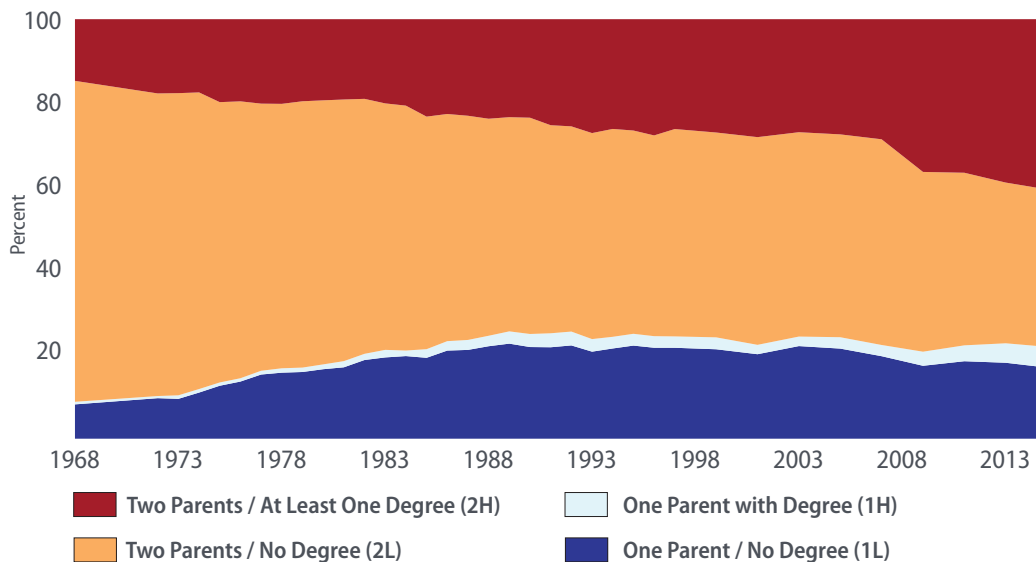
Source: Authors' analysis of data from the Panel Study of Income Dynamics, Institute for Social Research, University of Michigan

Notes: Parents are considered to be college graduates if they report completing at least sixteen years of education. Number of parents includes cohabitants. Individuals are assigned to the lowest-resource "family type" they experienced from birth to age seventeen. The authors exclude years 1969–71 because the education of the "spouse" was not reported for those years. Values in this chart for 1969–71 (and for even years beginning with 1998) are generated by linear interpolation.

terns are in line with the empirical findings described earlier. Quantitatively, the model is able to account for most of the 6 percentage point decrease in the 2H-1L attendance gap observed in the data and about half of the 9 percentage point increase in the observed 2H-1L completion gap.

Conclusion

College attendance and completion rates have been increasing among children from both low-resource households and high-resource households. The rates of attendance and completion differ between those groups, however. Attendance rates have been growing more quickly among low-resource families, while completion rates have been growing more quickly among high-resource families. Moreover, for children from low-resource families, college attendance has been increasing more than completion. The opposite is true for children from high-resource families: completion among them has been increasing more than attendance. As a result, the attendance gap between low-resource and high-resource children has *shrunk* while the completion gap has *grown*.

These findings have important implications for income inequality. As Figure 2 shows, the share of families classified as high resource has increased sharply from 1968 through 2015, from 15 percent to 40 percent. The share of families classified as low resource has grown also during this period, from 8 percent to 17 percent. The growth of high-resource families in recent years suggests that the aggregate share of children who complete college, and therefore earn the associated college premium, will continue to increase throughout the next decade. At the same time, the remaining large share of low-resource families means that many children still will face low probabilities of completing college, despite the large and growing rewards to doing so.[12] ■

Adam Blandin is an assistant professor of economics at Virginia Commonwealth University and a visiting scholar at the Federal Reserve Bank of Richmond; Christopher Herrington is an assistant professor of economics at Virginia Commonwealth University; and Aaron Steelman is director of publications at the Federal Reserve Bank of Richmond.

Endnotes

1   Aggregate attendance and completion rates are computed using data from the March Current Population Survey for individuals who turned twenty-eight from 1975 through 2015.

2   Lutz Hendricks and Oksana Leukhina, "The Return to College: Selection and Dropout Risk," *International Economic Review*, forthcoming. A working paper version is available.

3   Adam Blandin and Christopher Herrington, "Family Structure, Human Capital Investment, and Aggregate College Attainment," Manuscript, January 29, 2018.

4   Some children experience multiple family types during childhood. Children are assigned to a single family type using two procedures. The first assigns individuals to the "lowest-resource" type they experienced during childhood (from age zero to seventeen). The second assigns individuals to the modal family type: the family type they experienced most often during childhood. The results are very similar across both methods. The "lowest-resource" results are presented because they seem to present the least noisy estimates.

5   Due to data issues that make it difficult to measure college completion consistently over the time period they examine, Blandin and Herrington use sixteen years of education as a proxy for college completion.

6   Children from households with one parent who has a four-year degree (1H) are not included due to small sample size.

7   Sabino Kornrich and Frank Furstenberg, "Investing in Children: Changes in Parental Spending on Children, 1972–2007," *Demography*, February 2013, vol. 50, no. 1, pp. 1–23.

8   The spending gaps and the increase in the gaps over time between the lowest and top deciles were even larger and are not mentioned to minimize the effects at the tails of the income distribution.

9   This fact has been noted previously by others, including Garey Ramey and Valerie A. Ramey in "The Rug Rat Race," *Brookings Papers on Economic Activity*, Spring 2010, pp. 129–176.

10 See Daniela Del Boca, Christopher Flinn, and Matthew Wiswall, "Household Choices and Child Development," *Review of Economic Studies*, January 2014, vol. 81, no. 1, pp. 137–185.

11 See Nancy W. Burton and Leonard Ramist, "Predicting Success in College: SAT Studies of Classes Graduating since 1980," Research Report No. 2001-2, The College Board, 2001. There are other factors that seem to predict whether a child will complete college, such as teacher quality and noncognitive skills. See Raj Chetty, John N. Friedman, and Jonah E. Rockoff, "Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood," *American Economic Review*, September 2014, vol. 104, no. 9, pp. 2633–2679; and David T. Conley, "Understanding University Success: A Report from Standards for Success," Center for Education Policy Research, University of Oregon, 2003.

12 In a paper related to Blandin and Herrington's work, Kartik Athreya of the Richmond Fed and Janice Eberly of Northwestern University show that if the distribution of college readiness among high school completers does not improve over time,

aggregate college attainment is likely to remain stagnant even if the demand for college-educated labor, and hence the payoff to completing college, rises. This is because a higher enrollment rate will, in that setting, disproportionately draw from the ranks of poorly prepared students. Blandin and Herrington find evidence, however, that college preparedness differs by family structure and has led to increased college attainment, both in the aggregate and particularly among children from high-resource households. Nevertheless, even if college attainment remains stagnant, Athreya and Eberly argue that under current conditions in the United States, increases in the college premium can be expected to increase earnings inequality and income inequality. See Kartik Athreya and Janice Eberly, "Risk, the College Premium, and Aggregate Human Capital Investment," Federal Reserve Bank of Richmond Working Paper No. 13-02R, November 27, 2016.

This article may be photocopied or reprinted in its entirety. Please credit the authors, source, and the Federal Reserve Bank of Richmond and include the italicized statement below.

Views expressed in this article are those of the authors and not necessarily those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

FEDERAL RESERVE BANK OF RICHMOND®