

Get Divorced for the Kids:
Does the FAFSA incentivize divorce for parents of
college-bound children?

Alaina Barca
Drexel University

Christopher A. Laincz
Drexel University

Mark Stehr
Drexel University

Nicole Torskiy
PwC

Leigh-Ann Wilkins
Federal Reserve Bank of Philadelphia

April 6, 2018

Proposed Title Abbreviation: **FAFSA Divorce**

Christopher Laincz (Contact Author)

Drexel University
LeBow College of Business School of Economics
Philadelphia, PA 19104

Abstract

The government-sponsored college financial aid application system in the United States utilizes the Free Application for Federal Student Aid (FAFSA) form to make decisions on how to allocate financial aid. The FAFSA form is submitted by college attendees and/or their families. The allocation of financial aid is determined based on need accounting for a number of family characteristics including whether the applicant is the child of a single or pair of parents. Moreover, the need-based financial aid award depends heavily on the household's income. The algorithm determining the award implies that a student would obtain more financial aid as a dependent of a poor single parent household as opposed to a higher income household with two working parents. That creates an incentive for parents to "separate" or divorce in letter, but not necessarily spirit, in order to increase financial aid for their children's college education. We refer to these decisions as strategic divorces. This paper utilizes data from the NELS survey to examine the divorce patterns among the parents of high school students. We attempt to identify separations caused by the incentive to obtain college financial aid from other reasons for divorce. We find statistically significant evidence consistent with strategic divorces for parents of college-bound kids to improve financial aid access. Strikingly, we find evidence of strategic divorce for male college-bound children, but not for females, suggesting gender bias in parents' willingness to invest in college education.

JEL Classifications: D13, I22, I24

Keywords: Education, FAFSA, Divorce, College, Gender Bias

This paper is based on work originated at Drexel University. The opinions expressed in this paper are the authors' own views and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia, or the Federal Reserve System. Furthermore, the views expressed do not necessarily represent the views of PwC.

1 Introduction

College is really expensive. Over the past 40 years tuition rates at 4-year institutions in the US have risen far faster than the median household income (see Figure 1). From 1975 to 2015, median household real income rose 20% while college attendance costs rose 148%. As a fraction of the median income, the average annual cost of college education went from 18.9% to over 40% in the same period.

In an effort to make college more affordable, particularly to low income households, the federal government employs a number of financial aid programs. The most prominent among them is the Federal Student Loan Program (FLSP) which provides subsidized or unsubsidized government loans to college students. In order to apply for and obtain this aid, students and their families must file the Free Application for Federal Student Aid (FAFSA) form. Based on the information entered, the government determines the amount of funding it will make available to the student through various programs. Furthermore, colleges use the calculated “expected family contribution” (EFC) from the FAFSA to determine, at least in part, the discount rate to apply to the list price tuition.

One of the key questions on the FAFSA form is the parental marital status. Children of separated or divorced parents are able to obtain more aid. Thus, the FAFSA algorithm for financial aid embeds an incentive for parents of a college-bound child to divorce and/or separate to increase the aid obtained from both the government and universities. Anecdotally, in discussions with students, we have been told of parents who separated for precisely this reason. Moreover, a quick internet search reveals financial advisors not only suggesting that parents do so, but also providing information on the optimal timing and arrangements between the parents of college-bound children for a financially strategic divorce.

We investigate these incentives to estimate the magnitude of the impact on divorce rates. We utilize publically available data from the National Educational Longitudal Survery (NELS). The data begin in 1988 with a survey of eighth graders and their

parents. Follow-up surveys conducted in 1990, 1992, 1994, and 2000 allow us to track the student through high school and college if they choose to go. The data include financial information, educational attainment and status, and information on marital status of the parents. We are thus able to exploit these data to see if there is any evidence of parents undertaking strategic divorces.

In this preliminary work, we find some evidence that they are indeed doing so. We also uncover a puzzle. We use logit regressions where parents obtained a divorce while the child was in high school is the dependent variable. It is widely known in the sociological literature that divorce is negatively related to income and that there exists significant differences in divorce patterns across subgroups (e.g. race, religion). We are able to control for income and condition on subgroups. We also control for whether the respondent entered college or not. Our key results are as follows. We find that a child going to college and income are negatively related to the probability of divorce. Those two measures are positively correlated, so the result is fully expected. However, when we interact college and income quartile measures, we see that probability of divorce actually increases for families in the second income quartile, likely the group that stands to gain the most in terms of financial aid. Furthermore, we see this effect quite strongly for male children, but not for female children. On the surface that indicates a strong gender bias, but we believe other forces are at work, though it is unclear what forces and therein lies the puzzle.

The rest of this paper takes the reader through an exercise to illustrate the magnitude of gains from a strategic divorce, a brief literature review in Section 3, then explains the data and methodology in Section 4, and presents the results in Section 5. Section 6 concludes.

2 Motivation

How large are the benefits from a strategic divorce?

To illustrate the incentives for pursuing a strategic divorce, we conduct a simulation using the freely available, on-line Expected Family Contribution (EFC) formula published by Federal Student Aid, an office of the US Department of Education. The EFC is the calculated amount of college costs a student's family is estimated to be able to pay. Both the government and higher education institutions use the EFC in determining financial need and aid by subtracting the student's EFC from the expected cost of attendance. Thus, the lower the EFC, the more likely it is that a household will receive financial aid and the larger the expected aid from both government and colleges.

The simulation looks at six different family structures and five different household income levels. The family structures are: 1) Married Parents, one parent working; 2) Married Parents, each earns exactly half of the household income; 3) Divorced and child lives with parent earning all income; 4) Divorced and child lives with parent who earns exactly half of married household income; 5) Divorced and child lives with parent who earns no income but receives alimony; and 6) Divorced and child lives with parent who earns no income and receives no alimony. It should be noted that in all cases, the EFC is \$0 for the structure in which parents are divorced and the child lives with the parent who earns no income and receives no alimony. This scenario assumes the child lives with the parent who earned nothing when married, is given no alimony, and therefore has an income of \$0.

We derived a range of household income levels based on the 1988 income quintiles for comparison to the income distribution that correspond to the data in the NELS used in the empirical analysis of section 5. However, the EFC calculator is in current 2017 dollars. Our data on college costs from the National Center for Education Statistics end in 2015, so instead of current 1988 dollar amounts we used 2015 dollars presented in the US Census Bureau's report, assuming that 2015 dollars will be a reasonable approxi-

mation fo 2017 dollars for the purposes of this simulation. The income points include the upper limit of the lowest quintile, upper limit of the second quintile, upper limit of the third quintile, upper limit of the fourth quintile, and lower limit of the top five percent. In other words, the incomes correspond to households at the 20th, 40th, 60th, 80th, and 95th percentiles. Specifically, in 2015 dollars, these incomes are respectively \$21,920, \$41,407, \$64,529, \$97,436, and \$164,933. To complete the simulation, we estimated the Federal income tax using an online income tax calculator by SmartAsset (found at <https://smartasset.com/taxes/income-taxes#uB5t0iZVq2>), state of residence was assumed Pennsylvania, age of both parents was assumed 45 years old, all families were assumed to have one child and no assets, and alimony was estimated using an online alimony calculator (found at <http://alimonycalculator.us/>).

Figure 2 displays the results of the simulation. The chart shows the estimated amount a family is expected to contribute given their household income and other characteristics. The upper limit of the lowest fifth shows zeros for all situations, meaning any family who makes less than \$21,920 with the given specifications is expected to contribute nothing to the student's cost of attendance and would therefore likely receive maximum need-based aid. For this quintile, divorcing to receive more federal student aid would not be beneficial, as maximum aid is given even if parents are married.

As income rises, the benefits from strategic divorce increase, which is evident in the increasingly larger drops in EFC. When a married couple with one working parent gets divorced and the child lives with the parent not working but receiving alimony, the middle three household income levels see a substantial decrease in EFC. The EFC for the 40th percentile drops from \$2,576.66 to \$173.55, a 93% decrease. The 60th percentile sees a change from \$7,084.27 to \$2,289.58 in EFC, a 68% decrease. For the 80th percentile, the drop is from \$16,585.32 to \$5,617.68, a 66% decrease. Comparatively, the 95th percentile household shows a 55% decrease in EFC here, which is, in absolute terms, around \$20,000.

The EFC for households in the highest bracket is around \$35,000 when married. This bracket is so high when married that even when divorced and splitting income in half, the EFC is still over \$11,000. If the parent with custody receives alimony but has no other income, the EFC is \$15,000. The middle three income levels also show incentives for strategic divorce for married parents who split the household income evenly. The EFC for the 40th percentile changes from \$1,484.58 to \$0, the 60th percentile EFC drops 85 percent from \$5,725.70 to \$838.79, and the 80th percentile EFC declines 76 percent from \$14,705.32 to \$3,493.90. Again, the lower limit of the top 5 percent decreases 68%. Thus, the EFC and potential financial aid gain are not just a product of income, but household structure as well.

Consider for a moment that most students who acquire a bachelor's degree take four or more years. Thus, if only half of these EFC declines is covered by additional financial aid (tuition discounts, grants or scholarships), the gains range from about \$6,000 to \$45,000 while a student acquires a 4-year college degree. Comparing that to the average cost of an uncontested divorce (according to Forbes.com) of about \$3,000 or even as low as \$500 for on-line "do-it-yourself" divorces, the net gains could potentially be quite substantial.

The simulation also illustrates that we might expect differences based on institution. For perspective, the 2015 average 4-year undergraduate annual cost of tuition, room and board was \$26,000 for public institutions and \$39,000 for private 4-year institutions. For wealthier parents sending children to state institutions with significantly lower tuition rates, the benefits may be small compared to the high-priced private institutions.

3 Literature Review

There is a large body of literature on both the increase in college attendance and the rising costs. More American students are going to college and they are also borrowing more to do so. The proportion of undergraduates taking out student loans has risen,

while the returns to college versus returns to less advanced degrees and high school diplomas has drastically increased since the 1970's. By age 64 lifetime earnings of the college graduate will be almost double that of the high school graduate (Avery and Turner, 2012). This growing gap contributes to the increasing attractiveness of obtaining a college degree.

Even though returns to college are increasing, low borrowing limits stifle demand causing an under investment in human capital (Lochner and Monge-Naranjo, 2011). In turn that creates a further incentive for parents to seek alternative financial strategies. From 1989 to 2008 the proportion of undergraduate students from total undergraduates taking out federal loans increased from 19 to 35 percent. Although the total cost of college rose rapidly, the average federal loan levels per student remain largely the same (Avery and Turner, 2012).

The incentives to attend college extend beyond expected monetary returns. Arcidicono, Bayer and Gizmo (2008) show that college provides a significantly more precise signal of ability than a high school diploma. The nonpecuniary returns are also substantial. Attending college allows you to gain better social and critical thinking skills along with a better performance in the marriage market and being generally happier (Oreopoulos and Salvanes, 2011). Given that parents recognize value these aspects of college, it is another incentive to ensure their children attend college.

A number of other papers looked at issues with the FAFSA and the financial aid process for higher education in the US. Dynarski and Scott-Clayton (2006) argue that the costs of complexity endured by completing the FAFSA cause an undue weight on low-income individuals. Bettinger et. al (2009) utilize experimental treatment designs through H&R Block to help low and moderate income families complete the FAFSA. This study shows that individuals who were given help to complete the FAFSA and information about aid were 15.7 percentage points more likely to submit the application and enroll in college in the following fall. The complexity of the form is, in principal,

a mechanism to withhold money from families that have the ability to pay more out of pocket; however, many of these questions inquire about sources of income that are quite rare. Dynarski and Scott-Clayton (2006) simulate FASFA simplifications which indicate miniscule mean changes in loan distribution with a large simplification of the form. They conclude that the money saved from complexity is not proportional to the barriers of entry it creates for low-income applicants. Dynarski and Scott-Clayton (2013) point out that at 116 questions, the FAFSA is almost as long as the Form 1040, the longest of all US tax return forms. Additionally, applicants now must work with both the Department of Education and the IRS. The authors argue the FAFSA application should be retired and we should instead use IRS tax return data to calculate aid eligibility.

Our paper looks at the incentives to strategically divorce to pay for the increasing costs of attending college as described above. We now turn the sociology literature on divorce to help us separate a “true” divorce from a strategic divorce for financial purposes. There is a strong negative relationship between income and divorce. Amato (2010) summarizes previous findings of economic risk factors to include being unemployed as well as being poor. Kim (2011) also found that divorced families tend to have a slightly lower socioeconomic status.

One hypothesis that coincides with the time period we study relates to the “independence” effect wherein as women’s economic resources increase, the risk of divorce increases as well making it the root of rising divorce trends. However, Sayer and Bianchi (2002) found that the relationship between wives’ relative income on divorce does not remain significant when controlling for other risk factors.

The financially strategic divorces of interest in our study in principle improve children’s educational attainment by increasing resources or lowering costs of college. However, the effect of a “true” divorce in general has been shown quite clearly to have negative consequence for children and their educational outcomes. Furstenberg (1990) cites two studies to show the economic consequences of divorce. The negative effects are

quite visible especially among women with children, who experience the most drastic drop of income after divorce. Controlling for race, socioeconomic status, and religion, Krein and Beller (1988) found significant differences in educational attainment between children who grew up in intact versus non-intact families. Kim (2011) found a negative impact on math test scores both in- and post-divorce, negative effects on interpersonal skills during divorce as well as a combined negative effect during and after divorce, and a negative effect on internalizing behavior during divorce. Generally, according to Furstenberg (1990), marital disruption is linked to problems in school, grade failure, higher dropout rates, poorer attendance, and poorer college completion rates.

4 Data & Methodology

We use the National Education Longitudinal Study (NELS) of 1988 from the National Center for Education Statistics for data analysis. The study followed a nationally representative sample of 8th grade students from 1988 through 2000. Its waves include Base Year (1988), First Follow-Up (1990), Second Follow-Up (1992), Third Follow-Up (1994), and Fourth Follow-Up (2000). Each follow-up asked questions of students, and most waves included information from the students' school, two teachers, and a parent.

The base-year study was a clustered, stratified national probability sample of roughly 1,000 public and private schools. The data contain information on close to 25,000 individual students in the eighth grade in 1988. Over the course of the study, through questionnaires, personal interviews and computer-assisted telephone interviews, data were collected on academic progress and outcomes, family details, social relationships, dropout predictors, school details, postsecondary education, and employment.

Our hypothesis is that having a college-bound child creates an incentive to get a strategic divorce to benefit from more financial aid. Thus, the parents of students who do not intend to go to college would not face this incentive. Therefore, we extract two measures of college attendance from the follow-up surveys in the NELs. Our two

measures look for college attendance by December 1993 or whether the students attended college according to the second follow-up survey in 1994. Students on a normal path should have graduated high school around June of 1992. The two measures account for some small differences in the timing of college attendance.

The first indicator variable, “CollegebyDec93” was created based on the month-by-month enrollment status variables (ENRL0692-ENRL1293). A value of one represents students who reported some type of enrollment at a public/private two or four year higher education institution during at least one of the months between June 1992 and December 1993, and zero otherwise. The second measure, “CollegebyF3” takes a value of one for those who indicated attendance at a higher education institution in the third follow-up survey (mostly conducted during the spring of 1994).

We focus on those students whose parents were married as of the initial survey. Students without married parents in 1988 largely do not fit our household profile for facing the incentive to obtain a strategic divorce.¹ That gives us approximately 9,000 total observations. In the follow-up surveys in 1990 and 1992 we also observe the parental marital status. We create our key dependent variable, *Divorce*, from this information. Divorce equals one if the student responded that his parents were divorce in either 1990 or 1992. Those years would correspond to the student, assuming they follow the standard academic path, being in 10th grade and 12th grade, respectively.²

The NELS dataset does not report exact incomes for households. However, it does report a categorical income level for each household that responded to the question and there are 15 of these income categories. To reduce the number of dummy variables in the regressions that follow, we separate these into approximate income “quartiles” which are not exact but close to actual quartiles. We also ran the regressions below using all

¹However, we plan to explore the following hypothesis consistent with our main one. Single parents of a college-bound child would have a disincentive to get married because of the lost financial aid. We suspect that will be harder to identify in the data since there does exist the incentive to get married if the potential spouse has significant financial resources.

²We could also look for changes in marital status in later follow-up surveys, but we are concerned that divorce after the child has gone to college might reflect a potential “empty-nest” effect.

15 categories with little difference in results.

One of the nice features of the NELS data is that it includes information on students' expectations of their future educational attainment. We use this information to demonstrate that the expected relationships between college attendance, income, and divorce are largely evident in our data. Figure 3 shows the correlation between the student's self-evaluated chances of going to college and income. Each row in figure 3 is a different income quartile with the highest at the top. Across the bar, percentages of each quartile show the student responses on expectations of going to college. Looking at the right-hand side and the "High" and "Very High" categories for going to college, the correlation with income is apparent. 65% of the highest income students expect to go to college with strong certainty, whereas only 29% of the lowest income students do.

Figure 4 shows the relationship between the student's expectations for going to college and whether or not their parents obtained a divorce by their senior year in high school. Note the declining divorce rates with expectations for college which, again, given the correlation between higher education attendance and income is not surprising. However, the relationship is not monotonically decreasing. Students reporting a "High" but not "Very High" chance of going to college experience parents divorcing more frequently than students who say their chances of going to college are only "50/50." That non-monotonicity would be consistent with middle income parents divorcing strategically to support a college-bound student.

Moving beyond the simple correlations, we use a logistic regression with heteroskedastic robust errors to look for evidence of strategic divorce. We employ variations on the following set up throughout the rest of the analysis:

$$Divorce_i = \alpha + \beta_{Col}(College_i) + \beta_{Inc,j}(Income_{ijt}) + \gamma_j(College_i \times Income_{ijt}) + \epsilon_i \quad (1)$$

The dependent variable, $Divorce_i$, is one if student i 's parents obtained a divorce by 1992, the high school senior year for most respondents. $College_i$ is one if either of our

went-to-college measures is one for student i . $Income_{ijt}$ is the reported income quartile $j \in [1, 4]$ of the household for student i in year $t \in [1988, 1991]$. Thus, the estimated coefficients of interest to us are the γ_j 's on the set of interaction terms between the household income quartile and whether the student went to college or not. If there is no incentive or only a weak one to obtain a divorce (i.e. the costs of divorce outweigh the benefits), the college measure should pick up any correlation between a child going to college and divorce rates. One would expect the college variable alone to be negatively related to divorce since it is positively correlated with income. However, if there is a financial incentive then college attendance would increase the divorce probability for households with income levels where they stand to gain sufficiently from increased financial aid.

Table 1 summarizes all of our variables and includes the fractions for the subgroups we will analyze below. The data, unfortunately, do not provide information on which college was attended or the geographic location other than whether the student resided in a rural, suburban, or urban area.

5 Results

5.1 Key Variables and Divorce

We begin by showing some simple regressions with our key variables. Table 2 presents results with divorce as the dependent variable. The two *went-to-college* measures and income levels are the regressors without interactions to provide a baseline for the effects. Column 1 shows the relationship between college according to the third follow up survey and the second column shows the same but for the college measure for any month through December 1993. As expected the relationship is negative and significantly so. In the two samples, the divorce rates when the student does not go to college are 4.64% and 5.86% respectively. Having a child go to college reduces the likelihood of divorce by 34% and

57%. These basic going to college measures are highly correlated with income and thus the result is fully expected.

When we conduct the regressions on income only and omit the college measures in column 3 none of the rough income quartiles show up as significant which is a little surprising.³ These income measures are taken from the initial survey in 1988 when the students were in the 8th grade and thus four years away from college attendance. However, when we use the income measure in 1991, column 4, when the students were in their junior year, the income variables are all highly significant and negative. Moreover, the absolute value of the effect is increasing in income as would be expected based on the sociological studies of the correlates with divorce. The lowest income quartile is the omitted variable, so the results might be interpreted as higher income reduces the likelihood of divorce. The problem with that interpretation is there is a clear endogeneity problem. Divorce changes income. Moreover, our hypothesis is that is precisely why the parents are getting divorced. That is, they divorce in order to lower income such that more college aid will be available. If one turns the relationship around, it would read that getting divorced makes the parent more likely to be in the lower income quartiles. Because of the clear endogeneity, the only take away we are comfortable with here is that there is a strong relationship between divorce and income, not surprising, but also that something is changing in that relationship during the period of time the student enters high school.

Columns 5 and 6 combine the college measures with the 1988 income measures only. The results here are consistent with columns 1 through 3. Going to college is significant and negatively related to getting a divorce, but the income measures appear not to contribute to the likelihood of divorce.

³It is worth noting that our sample is not representative of the married population at large as it consists of married couples with children in 8th grade. If the majority of them were married before the birth of the first child or even shortly thereafter, they would have been married for at least ten years. The rate of divorce is declining in the longevity of the marriage.

5.2 Main Results

Turning to the results with the interaction terms in Table 3, the first two columns report the results using the 1988 (8th grade) income quartile measures. The baseline estimates of the likelihood of divorce are 5.86% and 5.81% chance for parents falling in income quartile one whose child did not go to college. In both columns, going to college remains negatively related to the likelihood of divorce and significantly so. The two going to college measures reduce the likelihood of divorce by 1.83 and 1.97 percentage points. That translates into a 43% and a 46% decrease in the probability of divorce. The income categories themselves, however, are never significant. Furthermore, the interaction terms are not significant either.

In columns 3 and 4 of Table 3, we use the 1991 income measures again, even in light of the endogeneity issue. Now, we see a significant relationship across all the income measures and the probability of divorce. Higher income household are less likely to experience divorce. However, the interaction terms as well as the going to college measures are not significant. So again there is a relationship between income and divorce, though the causal direction is running both ways. More importantly, we are not seeing any real relationship with going to college. It just appears that going to college and income are likely correlated, which is hardly surprising.

In Table 4, however, we find some evidence consistent with the notion that parents may be choosing strategic divorce related to college attendance and financial aid, but we also find a new question. Table 4 separates our sample by gender of the student respondents. Columns 1 and 2 use the 1988 household income measure and the college by Follow-up 3 variable and run the regression with interactions on males and females separately. In column 1 for males the interaction term between going to college and the 2nd income quartile measure is significant at the 10% level. For females the same variable is not significant and actually takes the opposite sign. In terms of magnitudes, here's what column 1 says. An income quartile 1 household with a student not going

to college has a 4.18% chance of divorce. That falls to 1.44% if the student does go to college. If the household is in the 2nd income quartile the divorce rate is 2.83% and that falls to 0.96% if the child goes to college, but ignoring the interaction. Once one includes the interaction, the rate rises to 3.00%. The interaction terms on income quartiles 3 and 4 are also positive, but not significant. Columns 3 and 4 repeat the exercise using 1991 income measures. Here again we do see a relationship between the income quartiles and divorce, but none of the interaction terms are significant regardless of whether we examine the male or female subgroup.

Table 5 reinforces and strengthens the results in Table 4 but now using the College by December 1993. The results are quite similar when one looks at column 1, but the second-income-quartile-going-to-college interaction is now significant at the 5% level. Furthermore the interaction for the fourth (highest) income quartile is also significant (10% level) and the third quartile is close to being significant. The magnitudes are even more striking. An income quartile 1 household with a student not going to college has a 4.42% chance of divorce. That falls to 0.76% if the student does go to college. If the household is in the 2nd income quartile the divorce rate is 2.84% and that falls to a meager 0.48% if the child goes to college, but ignoring the interaction. Once one includes the interaction, the rate rises to 2.94%. For males students not going to college in the third and fourth quartiles, the rates at which their parents divorce are 4.68% and 3.10%, respectively. If the son goes to college, but we ignore the interaction, the divorce rates fall to 0.81% and 0.53%. With the interaction terms, the rates go back up to 2.43% and 2.96%.

When we look at the results for female students we have a different effect. All of the interaction terms have the opposite sign of that for male students, but none of the interactions are significant. Yet, the level effect of being in the 2nd income quarter is an increase in the divorce rate at the 10% significant level.

5.3 Additional Subgroup Analysis

We also looked at other subgroups, besides male and female, and discuss a few interesting results here briefly. The subgroups we considered include: 1) race; 2) whether the student lived in a rural, suburban, or urban area; 3) oldest or second oldest child; and 4) a series of questions asked including whether the student considers the financial aid important, how far the parents expect the student to go in education, and whether they applied for financial aid. In most regressions few results were significant. However, Table 6 presents a few results with some interesting features.

Column 1 shows the basic logit regression, but only for the subgroup that indicates they live in a rural area. These results are similar to the male only results in Table 3. The interaction on the second income quartile is positive and significant. Column 2 is perhaps even stronger, because it isolates males who are the eldest child. The second quartile interaction term is highly significant. The last column only looks at the subgroup of males whose parents expected their son, as per the initial survey, to go to college. Now, the highest income quartile has a significant interaction with going to college.

6 Conclusions

We investigate whether there is a relationship between having a child going to college and the likelihood of divorce conditional on income within a wide variety of subgroups. The evidence is not overwhelming convincing that the FAFSA divorce incentive is large and prevalent. However, we believe there is enough evidence consistent with the idea of strategic divorce to warrant further investigation. In particular, the data set started with its initial survey in 1988 so that most respondents who did go to college, did so starting in 1993 or 1994. At that time college costs were rising, but as college costs continued to rise faster than incomes throughout the 1990s and 2000s, the incentives

for strategic divorces should have grown simultaneously. Thus, we believe the 1997 National Longitudinal Study of Youth (NLSY 97) where students would have begun college between 1998 and 2004 may show stronger evidence and we plan on investigating this further. In addition, our initial evidence appears to suggest a gender bias in terms of parental behavior in supporting children going to college. There are a number of avenues to explore here if this pattern proves to be robust. Much work remains for this paper, but the initial evidence is intriguing.

References

- [1] Amato, P.R. (2010). Research on Divorce: Continuing Trends and New Developments. *Journal of Marriage and Family* 72(3): 650-666.
- [2] Arcidiacono, P., P. Bayer, A. Hizmo (2010). Beyond Signalling and Human Capital: Education and the Revelation of Ability. *American Economics Journal: Applied Economics* 2(4): 76-104.
- [3] Avery, C. and S. Turner (2012). Student loans: Do College Students Borrow Too Much – Or Not Enough? *Journal of Economic Perspectives* 26(1): 165-192.
- [4] Bettinger, E.P., B.T. Long, P. Oreopoulos, L. Sanbonmatsu (2009). The Role of Simplification and Information in College Decisions: Results from the H&R Block FAFSA Experiment. NBER Working Paper #15361
- [5] Dynarski, S.M. and J.E. Scott-Clayton (2006) The Cost of Complexity in Federal Student Aid: Lessons from Optimal Tax Theory and Behavioral Economics. NBER Working Paper #12227.
- [6] Dynarski, S.M., J.E. Scott-Clayton, and M. Wiederspan (2013) Simplifying Tax Incentives and Aid for College: Progress and Prospects. NBER Working Paper #18707.
- [7] Furstenberg, F.F. (1990). Divorce and the American Family. *Annual Review of Sociology* 16: 379-403.
- [8] Kim, H.S. (2011) Consequences of Parental Divorce for Child Development. *American Sociological Review* 76(3): 487-511.
- [9] Krein, S.F. and K.H. Beller (1988). Educational attainment of children from single-parent families: Differences by exposure, gender, and race. *Demography* 25(2): 221-234.
- [10] Lochner, L. A. and Monge-Naranjo (2011). Credit Constraints in Education. NBER Working Paper #17435.

- [11] Oreopoulos, P. and K. Salvanes (2011). Priceless: The Non-pecuniary Benefits of Schooling. *Journal of Economic Perspectives* 25(1): 159-184.
- [12] Sayer, L. and S. Bianchi (2002). Womens Economic Independence and the Probability of Divorce. *Journal of Family Issues* 21(7): 906-943.
- [13] United States Department of Education, Federal Student Aid. The EFC Formula, 20172018. Retrieved from <https://studentaid.ed.gov/sa/sites/default/files/2017-18-efc-formula.pdf>
- [14] U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS: 1988/92). Available from <https://nces.ed.gov/surveys/nels88/index.asp>
- [15] US Census Bureau. Data. Retrieved from <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html>

Figure 1: Rising Real Cost of College

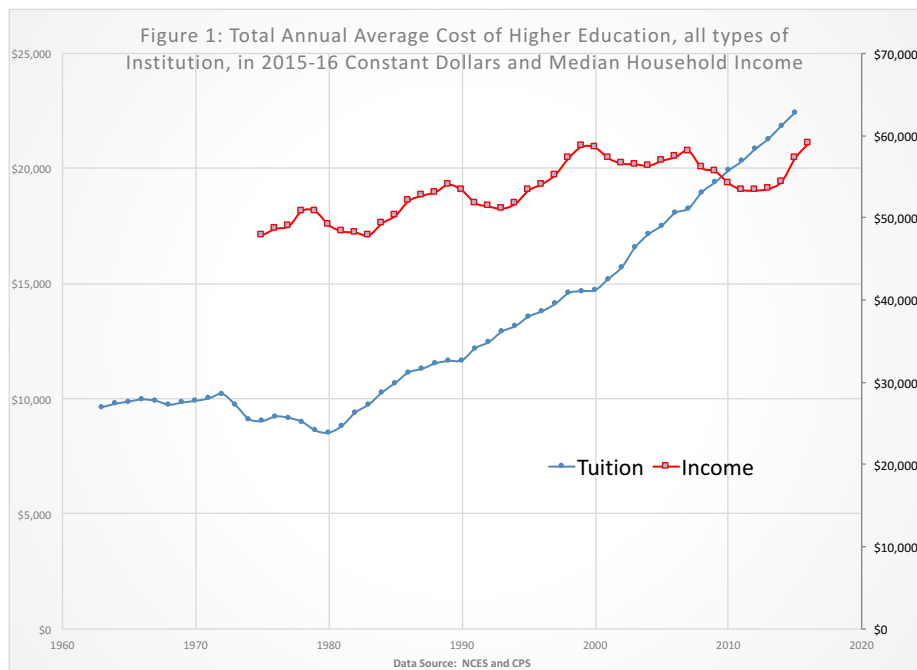


Figure 1: Real median household income from the current population survey and real annual cost of college attendance. From 1975 to 2015, household real income rose 20% while college attendance costs rose 148%.

Figure 2: Expected Family Contribution

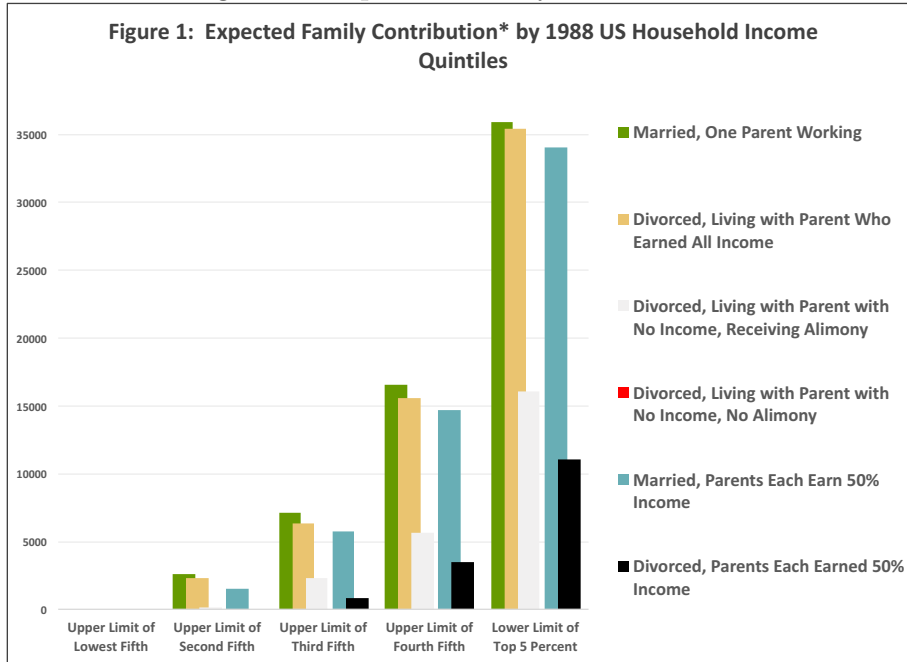


Figure 2: Incomes are in 2015 dollars for household income quintiles, respectively \$21,920, \$41,407, \$64,529, \$97,436, and \$164,933. Note that for all quintiles, EFC for “Divorced, Living with Parent with No Income, No Alimony” is 0. The specifications of the formula were standardized throughout each estimated formula. State of residence was Pennsylvania, which was applied in calculating federal income tax and state and other tax allowance. Federal income tax was estimated using an online income tax calculator (found at <https://smartasset.com/taxes/income-taxes#uB5t0iZVq2>). Two dependents were entered when married and one when divorced. The age of both parents was standardized at 45 years old, which was needed to calculate alimony and parents education savings and asset protection allowance. All families have one child, no assets, and the child does not work or have assets. Alimony was estimated using an online alimony calculator (found at <http://alimonycalculator.us/>). Length of marriage was standardized to 18 years. Paying spouses physical and emotional health and dependent spouses ability to maintain standard of living were average at 3. The bracket in which the paying spouses income fell was chosen for earning capacity for dependent spouse per each scenario. All dependent spouses length of absence from the job market was over 5 years, and parental responsibilities of dependent spouse was 3 for all spouses. Annual expense necessary to acquire sufficient education or training to enable the dependent spouse to find appropriate employment was a 3 for all spouses. Annual Income available to paying spouse through investment of any assets held by that party was 0 for all.

Figure 3: Correlation Between Divorce and College Expectations

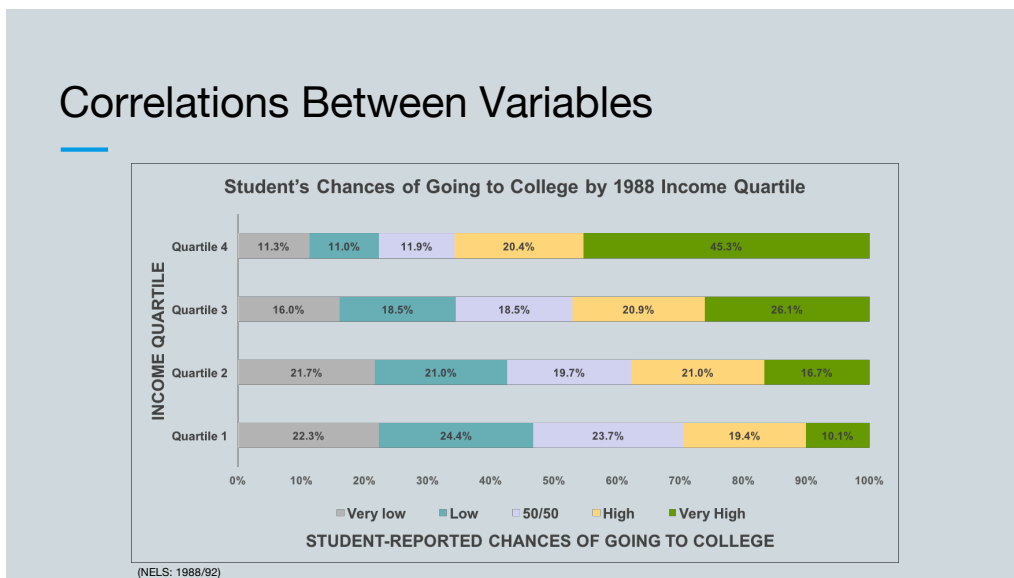


Figure 3: Data Source: NELS. Data here only include students whose parents were married as of 1988. Student reported chances of going to college is from initial 1988 survey when students was in eighth grade. Income categories are restructured into rough quartiles and also based on 1988 reported household income.

Figure 4: Correlation Between Income and College Expectations

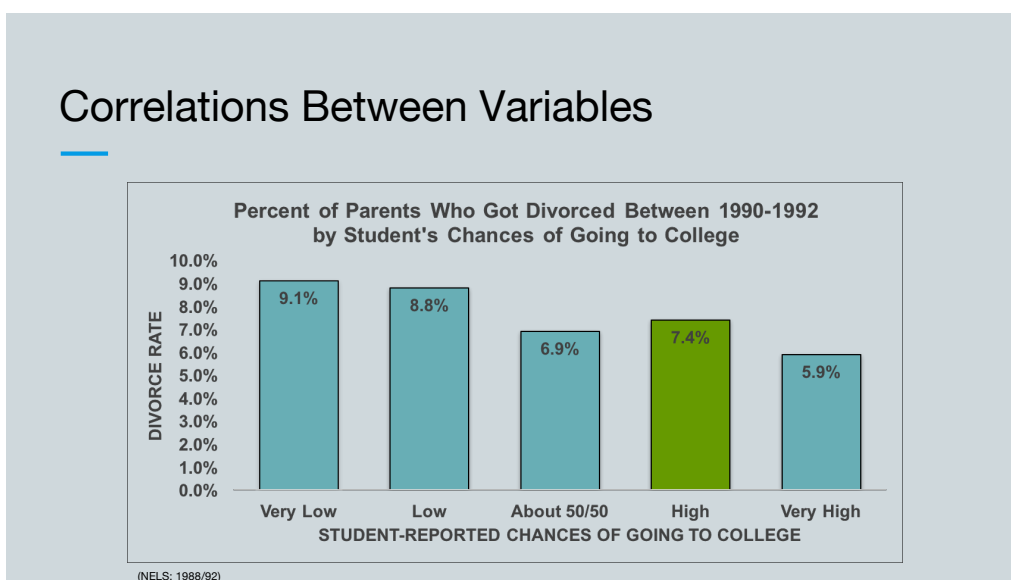


Figure 4: Data Source: NELS. Data here only include students whose parents were married as of 1988. Student reported chances of going to college is from initial 1988 survey when students was in eighth grade. Divorce is taken from either the 1990 or 1992 follow-up survey.

Table 1: Summary statistics

Variable	N	Min	Max	Mean	Std. Dev.
Parents divorced 1988-91	8169	0	1	0.035	0.183
CollegebyF3	8116	0	1	0.727	0.446
CollegebyDec93	8169	0	1	0.703	0.457
1987 Total family income	8169	1	15	10.290	2.245
1987 Income quartile 1	8169	0	1	0.176	0.380
1987 Income quartile 2	8169	0	1	0.304	0.460
1987 Income quartile 3	8169	0	1	0.245	0.430
1987 Income quartile 4	8169	0	1	0.275	0.447
1991 Total family income	7289	1	15	10.657	2.321
1991 Income quartile 1	7289	0	1	0.158	0.365
1991 Income quartile 2	7289	0	1	0.234	0.423
1991 Income quartile 3	7289	0	1	0.441	0.497
1991 Income quartile 4	7289	0	1	0.167	0.373
White Non-Hispanic	8169	0	1	0.734	0.442
Black Non-Hispanic	8169	0	1	0.059	0.236
Hispanic	8169	0	1	0.117	0.321
Asian/Pacific Islander	8169	0	1	0.076	0.264
Male	8169	0	1	0.475	0.499
Female	8169	0	1	0.525	0.499
Urban school 1988	8169	0	1	0.232	0.422
Rural school 1988	8169	0	1	0.322	0.467
Suburban school 1988	8169	0	1	0.446	0.497
Number of siblings	8138	0	6	2.231	1.519
One older sibling	8169	0	1	0.315	0.465
Number of older siblings	8101	0	6	1.246	1.450
Student says fin. aid is very important	8169	0	1	0.323	0.468
Student says fin. aid is somewhat important	8169	0	1	0.184	0.387
Student applied for college fin. aid by 1991	8169	0	1	0.367	0.482
Parent expects child to finish a 4/5 year program 1988	8169	0	1	0.396	0.489
Parent expects child to earn master's degree 1988	8169	0	1	0.120	0.325
Parent expects child to earn Ph.D. or M.D. 1988	8169	0	1	0.112	0.315
Parent expects child to finish college 1992	8169	0	1	0.332	0.471
Parent expects child to earn master's degree 1992	8169	0	1	0.204	0.403
Parent expects child to earn Ph.D., M.D., other 1992	8169	0	1	0.163	0.370

Notes:

Table 2: Baseline Results. Dependent Variable is Parents divorced by 1991

	(1)	(2)	(3)	(4)	(5)	(6)
CollegebyF3	-0.443*** (0.126)	-	-		-0.455*** (0.134)	-
CollegebyD93	-	-0.460*** (0.124)	-		-	-0.476*** (0.131)
incquart2_baseline	-	-	0.105 (0.181)	-0.496*** (0.147)	0.181 (0.183)	0.193 (0.183)
incquart3_baseline	-	-	0.130 (0.188)	-1.590*** (0.164)	0.263 (0.193)	0.274 (0.192)
incquart4_baseline	-	-	-0.136 (0.193)	-1.874*** (0.259)	0.0559 (0.203)	0.0813 (0.203)
Constant	-3.022*** (0.101)	-3.030*** (0.0967)	-3.363*** (0.147)	-2.323*** (0.103)	-3.152*** (0.156)	-3.171*** (0.154)
Observations	8,116	8,169	8,169	7,289	8,116	8,169

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: CollegebyF3 indicates student attended college as indicated in 3rd follow-up survey (1994). CollegebyD93 indicates student went to College by December of 1993. Columns (3) and (5) use household income in initial 1988 survey for quartiles. Columns (4) and (6) use income reported in 1992 follow-up survey for 1991 income.

Table 3: With College*Income Quartile Interactions

VARIABLES	(1) College by Follow up 3 Only Married Parents	(2) College by Dec93 Only Married Parents	(3) College by Follow up 3 Only Married Parents	(4) College by Dec93 Only Married Parents
CollegebyF3	-0.576* (0.307)	-	-0.0262 (0.207)	-
CollegebyDec93	-	-0.641** (0.316)	-	-0.0762 (0.207)
incquart2	0.0960 (0.246)	0.154 (0.236)	-0.650*** (0.234)	-0.621*** (0.223)
incquart3	0.259 (0.279)	0.171 (0.272)	-1.357*** (0.293)	-1.423*** (0.284)
incquart4	-0.0664 (0.387)	-0.0953 (0.368)	-1.089* (0.605)	-1.260** (0.603)
incquart2_college	0.191 (0.375)	0.133 (0.381)	0.250 (0.304)	0.222 (0.300)
incquart3_college	0.0618 (0.397)	0.237 (0.403)	-0.298 (0.358)	-0.193 (0.354)
incquart4_college	0.211 (0.477)	0.309 (0.471)	-0.882 (0.674)	-0.667 (0.673)
Constant	-3.107*** (0.184)	-3.116*** (0.178)	-2.301*** (0.148)	-2.286*** (0.143)
Observations	8,116	8,169	7,244	7,289

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: CollegebyF3 indicates student attended college as indicated in 3rd follow-up survey (1994). CollgebyD93 indicates student went to College by December of 1993. Columns (1) and (2) use household income in initial 1988 survey for quartiles. Columns (3) and (4) use income reported in 1992 follow-up survey for 1991 income.

Table 4: Male and Female Subgroups, College by Follow-up 3

VARIABLES	(1) MALE	(2) FEMALE	(3) MALE	(4) FEMALE
CollegebyF3	-1.094* (0.573)	-0.346 (0.375)	-0.0136 (0.319)	-0.0376 (0.271)
incquart2	-0.406 (0.400)	0.444 (0.318)	-0.882** (0.372)	-0.466 (0.302)
incquart3	0.255 (0.395)	0.274 (0.397)	-1.388*** (0.424)	-1.295*** (0.408)
incquart4	-0.182 (0.578)	0.0412 (0.521)	-1.556 (1.035)	-0.702 (0.751)
incquart2_college	1.156* (0.679)	-0.347 (0.463)	0.193 (0.493)	0.214 (0.389)
incquart3_college	0.247 (0.685)	0.0344 (0.517)	-0.216 (0.525)	-0.395 (0.493)
incquart4_college	0.906 (0.789)	-0.184 (0.622)	-0.0799 (1.106)	-1.708* (0.895)
Constant	-3.132*** (0.273)	-3.086*** (0.248)	-2.376*** (0.228)	-2.242*** (0.195)
Observations	3,844	4,272	3,456	3,788

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: CollegebyF3 indicates student attended college as indicated in 3rd follow-up survey (1994). Columns (1) and (2) use household income in initial 1988 survey for quartiles. Columns (3) and (4) use income reported in 1992 follow-up survey for 1991 income.

Table 5: Male and Female Subgroups, College by December 1993

VARIABLES	(1) MALE	(2) FEMALE	(3) MALE	(4) FEMALE
CollegebyF3	-1.798** (0.754)	-0.225 (0.375)	-0.212 (0.321)	0.0207 (0.271)
incquart2	-0.457 (0.380)	0.581* (0.310)	-1.047*** (0.364)	-0.311 (0.286)
incquart3	0.0591 (0.382)	0.291 (0.387)	-1.585*** (0.416)	-1.251*** (0.389)
incquart4	-0.368 (0.569)	0.133 (0.486)	-1.783* (1.031)	-0.835 (0.748)
incquart2_college	1.832** (0.835)	-0.650 (0.462)	0.504 (0.494)	-0.0231 (0.380)
incquart3_college	1.119 (0.843)	-0.0319 (0.510)	0.122 (0.526)	-0.479 (0.480)
incquart4_college	1.749* (0.929)	-0.351 (0.595)	0.275 (1.105)	-1.587* (0.893)
Constant	-3.074*** (0.256)	-3.153*** (0.248)	-2.294*** (0.214)	-2.279*** (0.192)
Observations	3,883	4,286	3,491	3,798

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: CollegebyF3 indicates student attended college as indicated in 3rd follow-up survey (1994). Columns (1) and (2) use household income in initial 1988 survey for quartiles. Columns (3) and (4) use income reported in 1992 follow-up survey for 1991 income.

Table 6: Selected Subgroups

VARIABLES	(1) Rural	(2) Oldest Child and Male	(3) Parents think College, Males
College	-1.258** (0.552)	-1.696 (1.090)	-0.781*** (0.238)
incquart2	-0.246 (0.334)	-0.973 (0.720)	-0.172 (0.290)
incquart3	0.307 (0.374)	0.291 (0.597)	-0.460 (0.365)
incquart4	0.473 (0.519)	-0.662 (1.099)	-1.140* (0.609)
incquart2_college	1.176* (0.640)	2.251* (1.271)	0.131 (0.376)
incquart3_college	0.345 (0.688)	0.845 (1.213)	0.588 (0.432)
incquart4_college	0.210 (0.785)	1.949 (1.514)	1.170* (0.646)
Constant	-2.853*** (0.224)	-2.803*** (0.420)	-2.452*** (0.167)
Observations	2,629	1,417	5,533

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: CollegebyF3 indicates student attended college as indicated in 3rd follow-up survey (1994) is used in columns (1) and (3). CollgebyD93 indicates student went to College by December of 1993 and is used in column (2). All columns use household income from initial 1988 survey for quartiles.