The Impact of Transferring and Time-to-Graduation on Student Debt

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ABSTRACT. This paper tests for the impact of two primary variables on the amount of student-debt load upon graduation: how long it has taken to graduate and whether a student has transferred from another school. We focus on the undergraduates who graduated from the University of Northern Iowa (UNI) between the 2000 and 2010 academic years. Our results show that the length of time it takes a student to graduate and transferring from another school both significantly increase the student's total college debt. Most students who transfer to UNI come from a community college. Thus, community colleges may not provide the financial benefits students expect. (D14, I23)

I. Introduction

The question of student-debt load is a classic example of the "good news, bad news" dilemma. When the economy is doing well, it is only the good news the society focuses on. One fortunate fallout from the current economic crisis may be the appreciation of the bad-news aspect as well. Perhaps it will force the new generation of college students, their parents, college loan officers, and even private lenders to fully appreciate the long-run implications and the potential costs of student debt for the individual students and society at large, as well as its benefits. Understanding the relative impact different variables are likely to have on the amounts students borrow in pursuing a college degree is essential in providing student-specific counseling.

This paper tests for the impact of two primary variables on the amount of student-debt load upon graduation: how long it has taken to graduate and whether a student has transferred from another college. We focus on the undergraduates who graduated from the University of Northern Iowa (UNI) between the 2000 and 2010 academic years. Focusing on one mid-sized state University in the Midwest appears at

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first to be a limitation of our study because its results cannot be readily generalized. However, as discussed below, there are very few studies that focus on the correlates of student-debt burden at all, and our paper is one of them. In addition, studies that focus on a single college or university can help to identify which correlates of student debt are common across different institutional, demographic, social, and economic settings, and which are unique to each. Eventually a meta-analysis of such studies could help in providing guidelines for debt counseling targeted to students' and institutions' specific circumstances.

II. Higher Education, Earnings, and Student Debt in the Literature

In their seminal articles written half a century ago, Mincer (1958) and Schultz (1960) discussed that education is an investment in human capital and that incomes and income distribution are positively correlated with education. Since education has positive externalities, it follows that more individuals should be encouraged to pursue education for more years. The policy implication is that society should lower the effective cost of education to the students and their families through subsidies such as scholarships, grants, assistantships, and even low-cost loans. Fox (1992, p. 669) reports that the number of programs offering subsidies started increasing in the 1970s, including a "system of national and federally guaranteed loans." This was due in part to the impact the Mincer and Schultz papers had on policy makers.

The relationship between education and its pecuniary and nonpecuniary benefits has been analyzed extensively. [For example, Becker (1962; 1975; 1992); Becker-Chiswick (1966); Ben-Porath (1967); Oreopoulos and Salvanes (2011); Rumberger and Thomas (1993); Polachek (2008), etc.] It is now the accepted wisdom that, given everything else and on the average: the present value of the earnings of college graduates exceeds that of individuals with less education; that the gap is even wider for those with post-graduate degrees; and that educated people in general tend to make better decisions and choices in economic and social areas and also in matters concerning family life. Kolesnikova (2010, p. 12) emphasizes that these are correlations and that "uncover(ing) the *causal* impact of education on earnings" (*Italics* in the

original.) has been a challenge which has also made obtaining accurate, reliable estimates of the actual returns to education very difficult.

When the economy is doing well, the funding for subsidies also increases as do the state appropriations for public universities. However, as subsidies become more readily available, the demand for education also increases more than it otherwise would. The need to keep up with cohorts, the fear of being "left behind" in life, peer-envy, and parental and societal expectations are additional factors that increase the demand for college education. Students who do not have the academic tools and aptitude are also encouraged and motivated to pursue a college degree.

While there are always students who do not qualify for subsidies even in the best of economic times, their ranks swell during times of economic hardship. Unfavorable job markets lower the opportunity cost of attending college and induce young people who might otherwise be working to seek refuge in higher education. State appropriations to public education institutions are reduced forcing them to increase tuition even as the funding for grants and scholarships from all sources (including the alumni, the federal government, the university foundation investments, etc.) is declining. The competition for the declining number of grants and scholarships becomes more intense, and more students find themselves looking for alternative sources of funding to pay for the increasing costs of college education.

Students' reaction is predictable and rational, albeit for the short-term; they borrow! This behavior is consistent with the life-cycle hypothesis in that most college students are young and in the dissaving phase of their life which they realize is only temporary and short-lived. They know that once they graduate their incomes will exceed their expenditures throughout most of the rest of their lives. They are told that more education will necessarily mean higher future incomes than otherwise; so, it makes sense to borrow against that expected future income to close the gap between what they need for college and what they have available. However, as the events of the last several decades have shown, the extent of such borrowing is creating problems for college graduates and the society at large for several reasons.

First, most people have positive time preference in their financial affairs. They value highly the immediate benefits of loans and discount the potential long-run costs. Students are the same. They do not always compare the impact each extra year of education is likely to have on their productivity and future income stream against the burden of the added

debt paying for that extra year. After all, if its marginal benefit is less than its marginal cost, an extra year of education is not worth it; all else the same, the students' overall standard of living will then be lower in the future than it would have been without that extra year. If, as expected, the marginal income tax rates in the future are also higher, the impact on their standard of living will be even greater. Davies and Lea (1995, p. 676) also find that while the aforementioned life-cycle model explains well the "overall financial strategy" behind student borrowing, the students' everyday financial decisions appear to be disconnected from the long-term implications of these decisions. This form of "myopia" is consistent with positive time preference: at the time a financial decision is made, the benefits are more often than not immediate and tangible; the costs are neither, so they are discounted easily and almost instinctively.

The second reason is students do not necessarily understand that the "averages" may subsume and conceal important variations across individuals, colleges, majors, and occupations. "Education" is not a homogenous good, and having a college degree is no longer all that matters. Occupational choices made by all generations of college graduates, past, present, and future; the rate and the nature of technological change; and the rate of growth of the market demand for different occupations all contribute to shortages for some occupations and surpluses for others. As Acemoglu (1998), Johnson (1997), and Rumberger and Thomas (1993) have shown, the rates of return differ widely among the "types" of education and of the educated. The quality of the college, the field in which the student majors, and student performance all account for quite a significant percent of the dispersion in incomes across college graduates, and between college graduates and non-graduates. More recently Heckman, et al (2003) took a critical look at the earnings models based on Mincer's propositions, and found that the "averages" indeed conceal wide variations in the relationship between education and earnings. While it is true that markets eventually adjust and self-correct, the key word is "eventually" which may be too far into the future and too late for some college graduates. They will be over-burdened by their student-debt load throughout their lives.

Third, most students do not realize that the changes made in the bankruptcy laws make it virtually impossible to get rid of student-loan debt. FinAid.org, a public service Web site, states that one reason is that the Congress never really defined what constitutes proof of "undue hardship" needed for discharging such debts. Rowley (2010) emphasizes

that getting rid of mortgage obligations, credit-card debts, and even gambling debts through bankruptcy has become easier than discharging most types of student-loan debts. As an article in a recent issue of the *Kiplinger* magazine (September 2010) reports, if a private lender sues someone for failure to make payments on their student loans and wins, that lender may in fact "… garnish (their) wages, put a lien on (their) house and wipe out (their) bank account." Even in the unfortunate event of a student's death, their co-signers remain responsible for the student debt owed to private lenders. The situation is not much better when it comes to federal loans either. While the terms of the federal student loans in general tend to be a bit less stringent and their interest rates lower, the federal government still can garnish the social security benefits, disability payments, and the income tax refunds for the unpaid portion of the federal student loans and their finance charges. FinAid.org warns that "(m)ost bankruptcy attorneys won't even try to get federal student loans discharged" any more.

Various statistics published by the Bureau of Labor Statistics (Office of Productivity and Technology) show that in spite of occasional spikes, labor productivity has been declining across most sectors of the US economy, most notably since 1988-1989. A recent article in the *Economist* (September 11, 2010, p.72) cites a report by the OECD that 70.9 percent of all college graduates in the US who are between the ages of 25-29 are underemployed, working at jobs and occupations for which they are overqualified. As stated earlier, simply having a college degree, and having it at virtually any cost however long it takes, is not as important as it used to be.

The dimensions and consequences of government debt and the debt of the American public in general have been analyzed extensively. Statistics reveal that the debt burden of college students has also been increasing for several decades. Rowley (2010) likens the student-loan debt problem to the subprime mortgage crisis whereby the students' loan requests could be approved on line and virtually immediately, by some private lenders. She states that the student-loan debt has quadrupled this decade, reaching $833 billion by mid-2010, "surpassing (the total) outstanding credit-card debt for the first time" ever in the U.S (Ibid). Citing the Federal Reserve Bank of New York among others, Mark Whitehouse ("Number of the Week: Class of 2011, Most Indebted," posted May 7, 2011, on the Wall Street Journal Blog) labeled the Class of 2011 as the "most indebted ever." Their average debt burden is

reported to be $18,000; when the amounts borrowed by their parents (and the graduates themselves are expected to retire) are included, the average debt burden per student approaches $23,000, almost 50% higher in real terms than a decade ago. The choices college students are making are contributing to the overall debt burden in the country. Quite a number of college graduates are entering the labor force already encumbered by debt which they may not be able to retire for many years if ever, given the projected trends for the earnings in their major fields.

Yet the discussion of the issues underlying student-debt load has mostly been in magazine and newspaper articles. Our literature search shows that the economics literature has not so far paid it the attention it deserves. The two papers we found are rather limited in scope. One is a recent College Board report by Baum and Steele (2010). As detailed as it is, the report is more of a descriptive study (relying on descriptive statistics and correlations) than an analytical one. Baum and Steele note that approximately 67 percent of the college students who graduated in the US in 2007-2008 had taken out student loans. Using $30,500 as a critical threshold, the authors focus on the "characteristics" only of the 17% of the indebted graduates whose debt exceeded it. They present no findings concerning time-to-graduate or transfer status. Among their findings are: there are more independent students (namely, those who are not listed as "dependents" on their parents' income tax returns, and are on their own) than dependent students in that high-debt category; and while the students from middle-income families are more likely to be in this high-debt group than those from lower or higher income families, (in general) neither the student income nor family income is statistically significantly correlated with student-debt load. (Ibid, pp. 1, 3, 4-5, 10.)

This is somewhat surprising especially when viewed in light of the economic trends. According to the US Department of Education (Higher Education General Information Survey, HEGIS), the in-state tuition and the required fees at 4-year public universities in the US increased by a factor of 3.3 (from $2,179 in 1977 to $7,173 in 2008, in 2008 prices). Income is the main indicator of the capacity to purchase and/or borrow. The Bureau of Labor Statistics figures show that during the same period, the median family income increased by only 21.5% from $50,620 to $61,521, also in 2008 prices (U.S. Census Bureau, http://www:Census.gov). So, the gap between family income (the "base" source of funds) and the amount needed for college education has been

widening, increasing the need to rely on other sources including borrowing.

The other major paper we found on student debt is by Davies and Lea (1995), and it sheds some light on this finding. This study is similar to ours in that it is also specific to one university, but in England. The authors refer to it as a "pseudo-longitudinal" study because rather than tracking a cohort group throughout their college years, they collected data from a survey of first, second, and third year undergraduates. (The authors explain that in English universities, most "…first degree courses last for three years," p. 667.) Using regression analysis, they found that the life-cycle model adequately describes the "overall financial strategy" the students follow to finance their education: once they borrow, students tend to become more tolerant of indebtedness and tend to borrow even more over time; and the older students and those who take longer to graduate accumulate more debt. The authors also found that both low-income and high-income students tend to borrow more than middle-income students: the former because they need to, the latter because they expect their future income-stream to be even higher. (Ibid, pp. 663, 671, 675-676.) This explains why the correlation between student income and debt load is not significant, similar to what Baum and Steele found for the US college graduates. Obviously, there is more to the decision behind borrowing to finance college education than need and income. This is why more studies, including those with a "narrow" institutional focus such as ours, are needed. The results can only help to enhance financial and debt counseling for the students.

III. Data and Model

To investigate the determinants of student debt, we collected data on over 1,200 graduates of a Midwestern public university between 2000 and 2010. In addition to the total education debt the student accumulated over his or her college career, we collected data on a number of student characteristics that we believe affect the student's total debt.

The descriptive statistics for the ones relevant for our regression model are shown in Table 1. We have no *a priori* expectations about the relationship between gender and the accumulation of student debt. We expect "good" students to be more aware of the future costs of student-debt; therefore, we expect both the university GPA and high school percentile to be inversely related with total debt. Rural students

are likely to come from fiscally more conservative families who believe in "making-do" with what one has and be more averse to acquiring and accumulating debt. If so, such students should graduate with less debt than urban students. On the average, academic suspension will lengthen the time to graduate; however, such students are also likely to have used that time to work and save. So, we have no a priori expectations of the impact suspension may have on debt at graduation.

In light of the findings by Baum and Steele (2010) and Davies and Lea (1995), we are also interested in testing the impact family income is likely to have on student debt at graduation. Unfortunately, when students fill out financial aid forms, they do not always include their family's data, leaving many students with blank family adjusted gross income data. Thus, to rectify this we created a dummy variable equal to one if the student included the parent's information on the application and zero otherwise. It is unclear whether the coefficient of that variable would be positive or negative. On the one hand, we would expect the students who include their parents' information to be in greater need of funding. On the other hand, the students who do not provide such information might not have because they have no parents to turn to. The next variable in Table 1 is student's own adjusted gross income; we expect students with higher adjusted gross incomes to have lower debt.

TABLE 1–Descriptive Statistics

Variable	Mean	Median	Std. Deviation
Total Student Debt	21,049.00	19,125.00	11,780.02
Male dummy (male=1)	0.32	0.00	0.47
University GPA	3.28	3.33	0.42
High School Percentile	74.63	78.00	17.93
Rural dummy (rural=1)	0.66	1.00	0.47
Suspended dummy (suspended=1)	0.01	0.00	0.10
Parent's Adjusted Gross Income	47,657.00	45,049.00	34,632.76
Student's Adjusted Gross Income	3,353.00	2,916.00	3,655.11
Athletic Scholarship received	88.02	0.00	785.26
Other Scholarship received	1,767.00	1,262.00	1,714.26
Pell Grant received	605.30	0.00	824.32
Single-parent Household	0.05	0.00	0.22
Months to Graduate	45.53	52.00	10.85
Transfer Student dummy (transfer=1)	0.26	0.00	0.44

*n = 1,279

As the name implies, Pell Grants are not loans. As a discretionary item in the federal budget, the total amount is determined annually by legislative action. The amount a qualifying student receives is computed by a formula that considers overall financial need, and there is a legislative limit on the maximum amount a student can receive. (As of 2012, that maximum will be indexed to the Consumer Price Index.) Thus, the students who qualify for Pell Grants are likely to be under more financial duress and to borrow more than other students. The same is true for students from single-parent households.

The last two variables in Table 1 are the ones we are most interested in. We would expect longer time on campus to translate into higher debt. However, since a large portion of the students in our sample are transferring credits from community colleges which typically have lower tuition than the university, we would expect, all else equal, students in our sample who transfer credits to have lower debt overall.

IV. Results

We estimated a standard ordinary least squares regression model with the log of student debt as the dependent variable. We tried a number of alternative functional forms, but the log-linear form provided the best overall fit. The regression results are shown in Table 2.

Overall, the R-squared is 0.1571 and the adjusted R-squared is 0.1484. While these are a bit low, the F statistic testing the overall significance of the regression model is 18.13 on 13 and 1265 degrees of freedom, which rejects the null hypothesis at better than 1%. Thus, while the R-squared suggests that there are additional variables that explain variation in the natural log of total student debt beyond those included in our model, the F test indicates that the overall results are statistically significant.

Care must be taken when interpreting the coefficients in a log-linear model. A common practice is to interpret the coefficients as the percentage change in the dependent variable associated with a one-unit change in the corresponding independent variable. While this is a nice rule-of-thumb approximation, when the change in the independent variable is large, the approximation is not accurate (see Wooldridge, 2009, p. 190).

In the present case, this rule of thumb will not be very accurate for interesting changes in the variables. For example, the athletic scholarship

variable is measured in dollars. Thus, the rule of thumb given above indicates that the coefficient represents the approximate percentage change in total student debt resulting from a one dollar change in scholarship dollars received. From a practical standpoint, a one dollar change in athletic scholarship dollars received is not very interesting. A more interesting analysis would be the percentage change in total student debt resulting from a $1,000 increase in athletic scholarship dollars received. With this large change in the independent variable, the rule of thumb will not give us an accurate measure of the impact this change will have on total student debt.

TABLE 2–OLS Regression Results
Dependent Variable: ln (Total Student Debt)

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	9.7220000	0.2098000	46.349	0.000	***
Male dummy (male=1)	-0.1359000	0.0362900	-3.746	0.000	***
University GPA	-0.2027000	0.0472600	-4.289	0.000	***
High School Percentile	-0.0027690	0.0011080	-2.498	0.013	**
Rural dummy (rural=1)	0.0459300	0.0352600	1.303	0.193	
Suspended dummy (suspended=1)	-0.2593000	0.1663000	-1.559	0.119	
Parent's Adjusted Gross Income	0.0000003	0.0000005	0.650	0.516	
Student's Adjusted Gross Income	0.0000044	0.0000048	0.911	0.363	
Athletic Scholarship received	-0.0000593	0.0000209	-2.833	0.005	***
Other Scholarship received	-0.0000385	0.0000104	-3.693	0.000	***
Pell Grant received	0.0000532	0.0000237	2.246	0.025	**
Single-parent Household	0.2101000	0.0758200	2.772	0.006	***
Months to Graduate	0.0239800	0.0023930	10.020	0.000	***
Transfer Student dummy (transfer=1)	0.2839000	0.0615500	4.613	0.000	***

R-squared = 0.1571, Adjusted R-squared = 0.1484
F-statistic = 18.13 on 13 and 1265 degrees of freedom, p-value = 0.000
n = 1,279
*, **, *** indicates significance at 10%, 5%, and 1%

The exact percentage change in the dependent variable can be found by using the following formula (Wooldridge, 2009, p. 190):

$$\%\Delta\hat{y} = 100 \cdot \left[\exp\left(\hat{\beta}\Delta x\right) - 1\right]$$

For example, a $1,000 change in athletic scholarship dollars received implies

$$\%\Delta\hat{y} = 100 \cdot \left[\exp(-0.00005927 \cdot 1000) - 1\right] = -5.75\%$$

Thus, the results suggest that a $1,000 dollar increase in athletic scholarship dollars received results in a 5.75% reduction in total student debt. We will use this formula when computing percentage changes in the dependent variable associated with changes in the independent variables.

The results indicate that male students borrow 12.7% less than female students. In the present sample, the average level of total student debt is $21,049, implying that male students borrow approximately $2,675 less than female students. This is somewhat different than what Davies and Lea (1995) found. While the male students in their sample were more likely to assume debt than the females, there was no significant difference in the amount of debt each accumulated.

The university grade point average suggests that students who perform better in school tend to borrow less. A one point improvement in GPA, from a 2.50 to 3.50 for example, reduces total borrowing by 18.4%, or by approximately $3,862 at the mean. In addition, the high school percentile variable indicates that students who perform better in high school tend to borrow less. A ten point improvement in high school percentile translates into 2.7% less borrowing, or $575 less at the mean. The reason, of course, is that the students with higher GPAs or percentile rankings are more likely to qualify for and obtain academic scholarships, either from the University or perhaps church groups, non-profits, civic and fraternal organizations, etc.

The coefficients on rural and suspended are not statistically significant, indicating that students who come from rural areas don't borrow a statistically significantly different amount than students from urban areas, and students who are suspended at some point during their academic career tend to have similar levels of borrowing to students who are not suspended. The latter may be due to several reasons. One is that they may work and save during the time they are suspended, and as a result do not need to assume as much debt upon being readmitted. The other is that the lenders may consider the suspended students as less likely to graduate upon readmission, therefore, being as "high risk." This would lower the expected ("collateral") value of their diploma and make most private lenders less willing to extend them loans.

Interestingly, parent and student adjusted gross income levels at the time of admission are not statistically significant determinants of student-debt load in our study either. This is consistent with the findings by Baum and Steele (May 2010) and Davies and Lea (1995) as we reported earlier.

Students receiving athletic or other scholarships borrow less overall. A $1,000 increase in athletic scholarship reduces total borrowing by 5.75%, or $1,211 at the mean, while a $1,000 increase in other scholarships reduces total borrowing by 3.78%, or $795 at the mean. Student receiving Pell grants, on the other hand, tend to borrow more. In particular, a $1,000 increase in Pell grants predicts a 5.47% increase in total borrowing, or $1,151 at the mean. While this latter result may be a bit surprising, it is important to remember that Pell grants are given out based on financial need. Thus, the positive relationship between Pell grants and total student debt may simply be picking up the greater financial need these students have and the higher likelihood that the students receiving Pell grants need to borrow to fund their education.

Students from single-parent households tend to borrow more overall. The coefficient suggests that students from single-parent households borrow 18.95% more than students not from single-parent households, or approximately $3,989 more at the mean.

The number of months it takes a student to graduate is, as expected, positively related to total borrowing. Each additional month increases total borrowing by 2.43%. Semesters are approximately four months long. So an additional semester of school increases total borrowing by 10.07%, or by approximately $2,119 at the mean.

Finally, students who transfer from another school borrow nearly 33% more overall than do native students. That is slightly more than a $6,900 difference at the mean. Most students who transfer to UNI come from a community college. As states cut back on support for university education, more and more students are turning to community colleges to save money. Yet, as our results indicate, a student who spends two years at a community college and then transfers to the university will have total debt of $6,900 more than a native student for the same amount of time on campus. Thus, community colleges may not provide the cost savings students expect.

V. Conclusion

With university tuition rising at a higher rate than incomes, the need for students to take on higher levels of education debt is increasing. With those higher levels of debt comes the need to pay off those loans in the future. With the job market tight and many new graduates underemployed, the prospect of paying off those loans in a timely manner is falling. This paper investigates the factors that influence the level of student borrowing, paying particular attention to the time to graduate and the student's transfer status.

Our results show that the length of time it takes a student to graduate and transferring from another school both significantly increase the student's total education debt. The relative merits for eventual academic success at a university of transferring a large number of courses from a community college may be debatable. From a financial standpoint alone, however, it appears transferring credits may not provide the financial benefits one would initially expect.

While our results are based on students from a single university, they are consistent with the small amount of previous research in this area. Additional research at other universities will allow us to generalize the findings to a broader range of students.

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