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Should I Work or Should I Borrow? A Counterfactual Analysis on the Effect of Working While Enrolled and Debt on Baccalaureate Completion

By Pilar Mendoza

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Using the 2007-2008 National Postsecondary Student Aid Study, this study tested positively the hypothesis that college students are either likely to acquire debt above the national median or work more than 30 hours a week in order to graduate from a four year degree within six years. These results resonate with the theory of academic capitalism, in which higher education has become a private good that students have to purchase despite governmental programs to provide students with financial aid in the form of grants. This finding has important implications for college affordability.

Loans are the main federal strategy to make college affordable for U.S. citizens, and debt is part of college students' reality. However, it is unclear to what degree student loans promote college attainment (Dowd, 2008). In fact, Hossler, Ziskin, Gross, Kim and Cekic (2009) conducted a comprehensive review of studies on financial aid and noted that:

> Surprisingly, perhaps the most important limitation of research on the effects of financial aid on retention is that there are very few studies of the effects of financial aid on graduation. In addition, there is a dearth of research on the effects of…loan debt on persistence and graduation… (p. 391).

Moreover, they demonstrate that the research on financial aid in general is inconclusive due to many contradictory results. Several authors have attributed these mixed results to a series of methodological limitations and biases, most notable the lack of adequate control for self-selection or the endogeneity of aid (Cellini, 2008; Chen, 2008; Dowd, 2008; Hossler, et al., 2009). Similarly, it is unclear the effect of work intensity while enrolled in higher education (Perna, 2010) despite the assumption based on theoretical models of student retention that working 10 to 20 hours on campus will increase integration and persistence (Pascarella & Terenzini, 2005). In light of these challenges and gaps of knowledge, the purpose of this study is to estimate the effect of both debt and working in college on college graduation, while controlling for self-selection bias.

The process of marketization of higher education (academic capitalism) started with changes in student financial aid policy in 1972, when the Higher Education Act of 1965 was amended to give aid to students rather

than institutions, inducing a competition for federally subsidized student tuition dollars among academic institutions. By the 1980s and 1990s, higher education was increasingly conceptualized as a private good, which justified the notion that students should pay for their postsecondary education. This ideology has resulted in an emphasis on federal student loans in the last decades (Slaugher & Rhoades, 2004). In particular, the increase in student borrowing can be attributed to two amendments to the Higher Education Act in the early 1990s, which included increased loan limits and expanded eligibility for loan programs (Education Resources Institute & Institute for Higher Education Policy, 1995). Overall, these changes represent a shift from public to private financing of higher education, making the primary beneficiaries of a college education those who can afford it or are willing to acquire education debt (Callender & Jackson, 2005; Heller & Rogers, 2006; Johnstone, 2004).

However, a postsecondary degree brings benefits not only for individuals but also society (Kim, 2007), which questions the federal initiatives favoring education as a private good. Income is higher and unemployment rates are lower among those with a college degree. In 2008, the median family income for those with a bachelor's degree or more was $101,099, compared to $49,414 for those with a high school diploma (College Board, 2009). According to the National Center for Education Statistics (NCES), in 2005, unemployment rates among individuals over 25 years old with a baccalaureate degree was 2.3%, 4.5% among those with some college education but no degree, and 5.1% among those with a high school diploma. Individuals with college degrees enjoy better health, greater life expectancies, and improved qualities of life (Baum & Payea, 2004; Bowen, 1997; Institute for Higher Education Policy, 1998). Also, those with postsecondary degrees are more likely to engage in civic activities (Bowen, 1997). For postsecondary institutions, successful degree completion of their students validates their mission, attracts students to enroll, and fosters public support, especially from the state, alumni, and parents. The economic competitiveness of the country increasingly depends on a skilled workforce with a postsecondary education who are capable of dealing with the demands of the global market. Also, opening the doors of postsecondary education to disadvantaged groups is an effective means to reduce social inequalities (Bowen, 1997; Chen & DesJardins, 2010; Kim, 2007; Park, 1996).

According to the U.S. Census Bureau, minorities are one-third of the American population and are expected to become the majority in 2042, with the nation projected to be 54% minority in 2050. Thus, it is imperative that the government tailors their postsecondary education efforts towards policies that ensure postsecondary attainment for the youth, especially minorities, who will be the base of the future workforce of this country. However, there are significant postsecondary attainment gaps in the U.S. among population groups. In 2008, among the total population between ages 25 and 29, 27% had at least a bachelor's degree. Nonetheless, 33% of Whites, 17% of Blacks and 11% of Hispanics in this age group had at least a bachelor's degree. Melguizo (2008) found a consistent graduation gap of 20 points between African Americans and Hispanics in relation to Whites, with African Americans and Hispanics

showing completion rates of 47% and 46% respectively, whereas Whites have a graduation rate of 67%.

There are a variety of reasons behind these gaps including lack of aspirations and support, poor academic preparation, lack of adequate engagement and commitment, and financial circumstances (Chen, 2008). This study focuses on the latter, and that is, college affordability. In the United States, the real cost of a college education has climbed almost 30% in the past 10 years and shows no sign of stabilizing in the near future (Cellini, 2008). Paying for college is more challenging for low income families (Swail, Redd, & Perna, 2003). According to a 2007 report from NCES, the percentage of African American, Native American, Hispanic and other Pacific Islander families with children in poverty were higher than White and Asian families (Kewal-Ramani, Gilbertson, Fox & Provasnik, 2007). In 2006, the median household income of African American families was $31,969, and $37,781 for Hispanics. In contrast, White households had a median income of $52,423 (DeNavas-Walt, Proctor, & Smith, 2007). To meet the costs of college, the majority of students apply for financial aid and many students work while enrolled. Studies consistently show that retention rates are higher for students who work a modest number of hours per week (10 to 15). Unfortunately, the proportion of full-time, traditional-age undergraduates working between 20 and 34 hours per week has increased to about 21% in 2007. Today nearly one in 10 full-time, traditional-age undergraduates is employed at least 35 hours per week (Perna, 2010).

According to the College Board (2009), in 2009-2010, published in-state tuition and fees at public four-year institutions rose 6.5% and 4.3% at private non-for-profit institutions compared to the rates in 2008-2009. However, only one third of students paid the full cost of higher education, while two thirds paid less due to financial aid and tax discounts. Students' financial need has risen over the past decade. In particular, even after taking into account family contributions and all available grants and loans, low-income students are especially likely to face substantial unmet need (Long & Riley, 2007). Furthermore, in recent years, financial aid policies have shifted emphasis from increasing the educational opportunity for low-income students towards focusing on affordability concerns for students who come from middle-income families. As a result, loans, merit-based aid and education tax credits are increasingly replacing need-based aid (The National Center for Public Policy and Higher Education, 2006). In the last decade, grant aid to full time students increased an average of 3.4% per year after adjusting for inflation, while federal loans grew 4.0% a year. In 2008-09, full time undergraduate students received an average of $10,185 in financial aid, consisting of $5,041 in grant aid and $4,585 in federal loans (College Board, 2009). Among 2007-08 graduates receiving a bachelor's degree, 66% graduated with loan debt. The median debt for all bachelor's degree recipients was $11,000. But for two-thirds of borrowers who earned a bachelor's degree, the median loan debt was $20,000, and another 10% had borrowed $40,000 or more (College Board, 2008). Clearly, financial aid that does not meet the financial needs of students can have a negative effect on persistence due to dissatisfaction with those financial circumstances. This compromises students' commitments to

participate in their college environment, affecting integration into the academic community. Students who drop out of college because of financial hardships are more challenged financially than if they had never entered college because of the accumulated debt (Kim, 2007).

The Impact of Financial Aid and Working While on Education Attainment

Despite the abundance of contradictory results and methodological challenges in financial aid research, there are a few results that are consistent in the literature. Studies on the relationship between financial aid and college student outcomes are as varied as the forms of financial aid available (i.e., grants, loans, merit- based, need based, etc.) and outcomes (i.e., enrollment, retention, completion, job placement, etc). However, most of the research has focused on college initial enrollment and retention (e.g., Callender & Jackson, 2005; Dynarski, 2004; McDonough & Calderone, 2006; Mendoza & Mendez, in press ; Paulsen & St. John, 2002; Perna, 2000; St. John, Cabrera, Nora, & Asker, 2000; Singel, 2002). A common theme across these studies is that different types of financial aid impact students differently by socio-economic statuses (Chen & DesJardins, 2010; Dowd, 2008; Mendoza & Mendez, in press; Nora, Barlow, & Crisp, 2005) as well as U.S. immigrant and citizenship status (Pachon & Zarate, 2005; Tornatzky, Cutler, & Lee, 2002).

Overall, there seems to be a positive correlation between low-income and minority student persistence and adequate financial aid; however, this effect changes by race/ethnicity (Chen & DesJardins, 2010). St. John, Paulsen, and Carter (2005) explain that this differential responsiveness to aid may be due to some culturally constructed value of aid and price, independent of the associated direct effects. From a rational-choice perspective, students engage in a cost-benefit analysis that shapes their commitment to continue with their program degree. This analysis includes student satisfaction with their ability to pay for college and perceptions of their financial reality (St. John, Hu, & Weber, 2001-2002). For some students, taking on the burden of a loan negatively affects this perception, which then creates a negative effect on college outcomes such as initial enrollment or persistence. This is consistent with previous studies indicating that low-income and minority students are much less willing to borrow to attend college (e.g. Olivas, 1985; St. John et al., 2005).

These assertions agree with the notions of social and cultural capital surrounding students' college decisions in light of financial aid. Access to information about financial aid options (social capital) as well as the cultural meaning of money and a college education (cultural capital) are factors that shape students' decision to apply for financial aid and acquire debt. For example, past researchers have explored how social networks surrounding students (i.e., school counselors, teachers, peers, and family members) either facilitate or hinder valuable information on college opportunities and respective funding options, which ultimately affects students' college going decisions (Archer & Hutchings, 2000; McDonough, 1994; McDonough & Calderone, 2006; Nora, Barlow & Crisp, 2005; Perna, 2000; St. John, 2003, 2006; St. John et al., 2000; Tierney & Venegas, 2006; Trent, Lee, & Owens-Nicholson, 2006).

On the other hand, studies highlighting the socially constructed meaning of money emphasize the borrowing beliefs and values of students as well as the associated behaviors from those beliefs (Callender & Jackson, 2005; McDonough & Calderone, 2006). For example, an important consideration is students' attitude towards risk and rewards of borrowing in order to attend college, particularly as it relates to potential for loan default and high debt burden (Gladieux & Perna, 2005). African Americans and Latinos as well as low income students have higher risk aversion compared to other groups and thus, may miss the opportunities to access or continue higher education (Price, 2004). Risk aversion is associated with the psychological stress of future loan repayment (Archer & Hutchings, 2000; Nora et al., 2005) and students' perceptions of their ability to pay for college (Cabrera, Stampen, & Hansen, 1990; Metcalf, 2005; St. John et al., 2000). In the same vein, Dowd (2008) discusses the notion that students' self-efficacy in relation to college achievement and future earnings affects their decision to acquire debt. Also, as an aspect of cultural capital, research has shown that a measure for willingness to acquire debt for college is whether or not parents have a property mortgage or own a home. This finding indicates that for some, debt is a worthwhile investment that will pay off with future returns (Dowd, 2008). Degree completion and non-completion are also significantly related to borrowing tendencies, with degree completions at public and private colleges being associated with doubled loan amounts between the freshman and senior year (Price & Davis, 2006).

Studies have shown inconclusive results regarding the impact of loans on persistence. For example, in one study, loans had a negative effect on retention at one four-year institution (DesJardins, Ahlburg & McCall, 2002); however, in another study, government-subsidized loans had positive effects on persistence at another institution (Singell, 2002). In a study by the University System of Maryland and the University of Wisconsin System, loans have no significant effect on persistence (Titus, 2007). Some studies suggest that as the amount of debt increases, the probability of persisting at four-year colleges decreases (Somers & Cofer, 1997). However, other findings suggest exceptions and mixed results that show moderate or weak connections to persistence (Cofer & Somers, 1999; Dowd & Coury, 2006). These are just a few examples of studies showing inconclusive results regarding the effects of loans on persistence.

Research on financial aid has been inconclusive in great part because of omitted variable bias and the fact that statistical estimates are generally confounded by interactions between students' career expectations, enrollment choices, financing strategies and self selection to certain types of aid. These interactions are also affected by differential risks of indebtedness or willingness to incur debt due to varying cultural and social values across groups by social class and race/ethnicity (Cellini, 2008; Chen, 2008; Dowd, 2008; Hossler et al., 2009). In particular, the possibility of self-selection bias influencing the analysis of the impact of student loans is significant given that loans must be repaid. In light of these criticisms, recent studies have started to address these issues in their analysis using techniques such as propensity score matching, fixed effects and even history analysis (Chen & DesJardins, 2010; Mendoza & Mendez, 2008;

Mendoza & Mendez, in press). Another source of bias is related to the fact that studies normally do not account for the fact that students tend to change financial aid packages from term to term (Chen, 2008).

There is a general consensus in the literature indicating that working between 10 to 15 hours a week while enrolled is beneficial for students, especially if they work on campus (Perna, 2010). However, based on an extensive review of the literature of studies on college student employment conducted before 2003, Riggert, Boyle, Petrosko, Ash and Rude-Parkins (2006) argued that this literature also presents a host of contradictory results. In particular, these studies concluded that working while enrolled is beneficial, neutral or detrimental to the progress of students in college regardless of whether students work off-campus or on-campus and the amount of hours worked per week. They attributed these inconsistencies to methodological challenges and lack of clear conceptual frameworks. More recent studies have found that working 20 hours a week or more negatively impact the academic performance of students (Kulm & Cramer, 2006; Miller, Danner, & Staten, 2008).

The reality is that most college students are now increasingly working longer hours than the recommended to meet the costs of college attendance (Riggert, et al., 2006). According to NCES, in 2007, 45 % of undergraduates between the ages of 16 and 24 attending college full time worked while enrolled. Of these, about 21 % worked between 20 and 35 hours a week and nearly 1 in 10 full-time, traditional-age undergraduate is employed at least 35 hours per week. Moreover, after controlling for attendance status, the distribution of undergraduates by the number of hours worked is similar at community colleges and four-year public and private institutions (Perna, 2010). Given the proliferation of working while enrolled and the inconclusive results from previous studies, there is a clear need for research in this area in order to understand the extent of the implications of student employment.

Research Design

Theoretical Framework

This study uses Rong Chen's framework on the differential effects of financial aid on student persistence (2008). This framework integrates different approaches to the issue of student retention including sociological, psychological, economic, and organizational perspectives. Based on an extensive literature review on student retention, Chen's model is based on the premise that the effects of financial aid on persistence should be studied by subgroups of students characterized by socio-demographic variables such as socio-economic status and race/ethnicity. In particular, Chen recommends including in the analysis interaction terms between subgroups of students and various forms of financial aid in order to damper main effects bias.

Chen's framework identifies the following eight constructs that impact student persistence: 1) Student background characteristics such as gender, age, race/ethnicity, family income, and parental education. 2) Educational aspiration. 3) Pre-college preparation including academic measures such as high school GPA, ACT/SAT scores, and curriculum. 4) College experience including major, GPA as well as social and academic integration. 5) Organi-

zational characteristics such as type of institution attended. 6) Financial factors such as students' perceptions about college costs, price, financial aid, and labor market conditions. 7) Time in college or class level. Lastly, 8) interactions between groups (i.e., income levels, race/ethnicity, and time in college) with types of financial aid.

In addition, this study used literature on college student debt (Archer & Hutchings, 2000; Dowd, 2008; Hossler et al., 2009; Nora et al., 2005; Price, 2004) to determine the factors associated with student debt. As such, the constructs that impact students' indebtedness used in this study are: 1) Social capital in the form of information about borrowing that students might acquire through peers, family members, counselors or other sources such as the Internet and whether or not the student has proficiency in English to comprehend such information. 2) Cultural capital associated with the value of borrowing as a means to acquire assets and future returns. This construct is associated with family values about a college education as an investment, which translates into the willingness to acquire debt and the expectation of receiving parental help for loan repayment. 3) Unmet need defined as price of going to college minus expected family contribution and grants. And 4) expected returns in the form of better future earnings due to a college education; in particular, those expecting a professional degree are likely to incur more debt (Dowd, 2008). The following summary describes how this study expands and operationalizes Chen's (2008) eight constructs and college student debt.

Student Individual Characteristics

There is a general consensus in the literature that demographic characteristics play an important role on student outcomes (Dowd, 2008; Hossler et al., 2009). The most studied individual characteristic within the financial aid area of research is income. Overall, several studies have shown a strong positive correlation between student enrollment, retention and graduation with income (Chen & DesJardins, 2008; McDonough & Calderone, 2006). More recent studies are finding that income moderates the impact of financial aid on student outcomes (DesJardins & McCall, 2010; Mendoza, Mendez & Malcolm, 2009; Mendoza & Mendez, in press). However, the definition of income depends on whether the student is independent or dependent. Therefore, several studies controlled for dependency status in their analysis and included individual or parental income accordingly (Arulselvan, Mendoza, Boginski, & Pardalos, 2009; Kim, 2007). Ishitani (2006) found that students with family incomes over $50,000 are more likely to graduate in any period than those from lower income families.

Socio-economic status is associated with individual income but embraces a series of characteristics that translate into students' values, attitudes and behaviors towards postsecondary education. For example, level of parental education is a factor that influences college outcomes. In particular, research has consistently shown that first-generation students have different college enrollment and persistence behaviors than those with at least one parent having a bachelor's degree (Levine & Nidiffer, 1996; Paulsen & St John, 2002). Race/ethnicity has been found to impact the role

of financial aid on student retention. In particular, African American, Native American and Hispanic students are less likely to enroll, persist and graduate from college. Moreover, they are less likely to benefit from financial aid such as loan and merit-based aid (e.g. Arbona & Nora, 2007; Chen & DesJardins, 2010; Hu & St. John, 2001). However, income moderates the effect of race/ethnicity on financial aid outcomes (Mendez & Mendoza, 2008; Mendez, Mendoza, & Malcolm, in press; Mendoza & Mendez, in press). Finally, only a few studies have controlled for gender and age. However, there is evidence that age is negatively correlated with student achievement (Arulselvan, et al., 2009; Chen & DesJardins, 2008). In regards to the influence of gender, previous works report conflicting results of the effect of gender on student outcomes but some studies have shown that women tend to have higher probability of attainment than men (DesJardins, Ahlburg & McCall, 2002).

Academic Aspirations

Students' highest degree expected by students influence their level of commitment to obtaining a degree (Burton & Ramist, 2001; Kim, 2007; Tinto, 1987). Therefore, measures of academic aspirations are important factors in student retention and graduation. From an economic perspective, the more likely students are to benefit from a college degree, the more likely they are to aspire to complete their education. In this sense, a college education is viewed as an investment (Kim, 2007).

Pre-college Preparation

High school academic preparation has been considered an important factor affecting student performance in college (Astin, Tsui, & Avalos, 1996; Bowen & Bok, 1998; Burton & Ramist, 2001; Pascarella & Terenzini, 1991). Several measures have been used to control for students' pre-college preparation such as high school rank, high school GPA and standardized ability test such as ACT scores. From all these, recent studies have shown that only ACT scores appear to have an independent effect on college performance (DesJardins et al., 2002). Human capital theory assumes that students' ability lowers educational costs and increases the demand for education (DesJardins & McCall, 2010; Dynarski, 1999; Stampen & Cabrera, 1988).

College Experiences

According to Tinto's theory of college student retention (1993), students bring to college individual characteristics that impact their initial commitment to the entering institution, which in turn, affects their future commitments to the institution. This continued commitment depends on the level of social and academic integration they experience over time. The greater a student's commitment is to the institution; the greater the chances that the student will persist through graduation. However, Braxton (2000) tested Tinto's theory and concluded that academic integration was not a factor in students' commitments and that the experiences of residential students are very different from commuter students. Nevertheless, research continues to demonstrate that college GPA is a strong predictor of

persistence and graduation (Chen & DesJardins, 2008; DesJardins et al., 2002; Mendoza & Mendez, in press; Mendoza, Mendez & Malcolm, 2009). In addition, academic integration is commonly found to be related to student retention. Common measures of academic integration include level of student participation in study groups, social contact with faculty, meeting with an academic advisor, or talking with faculty about academic matters outside of class. Social integration is commonly measured as whether students participate in a variety of social activities such as fine arts and social events, intramural and varsity sports, clubs and student organizations (Kim, 2007). Other important measures of students' level of involvement are related to work experiences while enrolled, living arrangements and enrollment status. In particular, whether students are enrolled part time or full time and whether students live on-campus or off-campus affect integration (Braxton, 2000; Kim, 2007).

Institutional Characteristics

Students enrolled in different colleges within an institution have different experiences, which can result in different graduation rates based on the fit of students academically and socially. Students' fit and integration relate to institutional climate, which has been found to be a significant predictor of student dropout rates (Weidman, 1989). Studies have measured institutional climate by aggregating individual values of students' academic and social integration during college. Other institutional variables used include enrollment size, institutional selectivity, major, institutional control (public versus private), tuition, and percentage of minorities enrolled (Astin & Oseguera, 2002; Kim, 2007). For example, Melguizo (2008) found that students attending more selective institutions are more likely to graduate. This is also true for African American and Hispanic students, which supports the argument that minorities do benefit from attending elite institutions (Alon & Tienda, 2005).

Time in College

The temporal dimension of college outcomes is increasingly gaining attention in the literature (Chen, 2008; Chen & DesJardins, 2010). Several studies have shown that retention patterns differ by academic class level. In fact, most of attrition takes place during the freshman year (Mendoza & Mendez, in press; Nora et al., 2005). Delayed enrollment after high school graduation has a significant association with dropout or graduation rates (Ahlburg, McCall, & Na, 1997; DesJardins et al., 2002). This study used a terminal measure for both debt (cumulative debt) and a terminal measure of persistence (graduation) at the end of the observation period in order to avoid temporal bias.

Other Factors

In addition, this study used literature on college student debt (Archer & Hutchings, 2000; Dowd, 2008; Hossler et al., 2009; Nora et al., 2005; Price, 2004). As such, the constructs that impact students' indebtedness used in this study are: 1) Social capital in the form of information about borrowing that students might acquire through peers, family members,

counselors or other sources such as the Internet as well as whether students have proficiency in English to comprehend such information. 2) Cultural capital associated with the value of borrowing as a means to acquire assets and future returns such as owning a home or having a home mortgage. This construct is associated with family values about a college education as an investment, which translates into the willingness to acquire debt and the expectation of receiving parental help for loan repayment. 3) Unmet need defined as price of going to college minus expected family contribution and grants. And 4) expected returns in the form of better future earnings due to a college education; in particular, those expecting a professional degree are likely to incur more debt (Dowd, 2008). Finally, this study included covariates related to students' employment experiences as well as reasons to work while enrolled.

Data Source, Sample and Population

This study used the 2007-2008 National Postsecondary Student Aid Study (NPSAS:08) collected by NCES to produce reliable national estimates of characteristics related to financial aid for postsecondary students such as how students and their families pay for postsecondary education, and to describe some demographic and other characteristics of those enrolled. Dating back to 1987, the survey is administered every three to four years and is the most inclusive, nationally representative survey related to postsecondary financial aid. The ultimate goal of these surveys is to address policy questions around the rise of financial aid programs in the last two decades (Wei, Berkner, He, Lew, Cominole & Siegel, 2009). NPSAS:08 is a complex survey representative of those enrolled in all types and levels of postsecondary institutions in the nation NPASAS:08 variables used in this study are listed in Table 1.

The sample for this study included U.S. dependent undergraduate students enrolled for the first time in a four-year degree granting institution in the academic year 2002-2003 seeking their first bachelor's degree and with any amount of debt (weighted N=2,489.5). U.S. dependent students were selected because foreign students do not qualify for most financial aid. The decision not to include independent students was based on the notion that these students tend to be nontraditional students and thus, behave very differently than dependent students, especially in relation to finances and other areas such as career goals, attendance patterns, and type of institutions attended (Arulselvan, et al., 2009). In addition, in order to target traditional students this study included dependent students that have been enrolled for the first time in postsecondary education for six years at the time when the survey was conducted.

Hypotheses

The burden of debt depends on the financial circumstances of individuals and the perceptions about it. For example, a debt of $40,000 is perceived differently for someone with a family income of $100,000 than for someone with a family income of $50,000. Therefore, I used a relative measure of debt in order to reflect these differences. In particular, I created the measure *Debt/EFC*, where *Debt* refers to the cumulative undergraduate debt amount by the end of 2008 and *EFC* is the Expected Family Contribution index in 2007-2008, which is used by the federal

Table 1. Covariates Used to Build the Models Based on Theoretical Constructs

Construct	Variable
Student individual characteristics (including cultural capital)	Age as of 12/31/07
	Race/ethnicity (with multiple) and gender
	English is the primary language
	Parent's highest education level
	Parents own home or pay mortgage
	Adjusted Gross Income (AGI)
Pre-college preparations	Earned Advanced Placement credit in high school
	Grade point average in high school
	Delayed enrollment into PSE-number of years
	SAT derived combined score
Academic aspirations	Highest level of education ever expected
College experiences	Residence while enrolled
	Attendance pattern
	Grade point average
	Field of study: undergraduate
Institutional characteristics	Carnegie-Basic classification collapsed
	Percentage of minorities
Finances including related cultural and social capital	Student budget (attendance adjusted)
	Other financial support received
	Aid total amount
	Help from parents: tuition and nontuition
	Job: earnings from work while enrolled (excluding work-study/assistantship)
	Expect help with repaying student loans
	Information about financial aid
Job experiences and reasons for working	Job: related to major (degree)
	Job affects school: helped with career preparation (student)
	Job affects school: limited access to campus facilities (student)
	Job affects school: limited the class schedule (student)
	Job: effect on grades (student)
	Job: hours worked per week (excluding work-study/assistantship)
	Job: located primarily on or off campus
	Primary role as student or employee (including work-study/assistantship)
	Reason for working: earn spending money
	Reason for working: gain job experience
	Reason for working: minimize debt
	Reason for working: parents' expectations
	Reason for working: pay educational expenses
	Reason for working: pay living expenses
	Reason for working: to send money home

government to determine financial need of college students and allocate aid accordingly. The Expected Family Contribution (EFC) is how much money a dependent student's family is expected to contribute to college education for one year. It is based on family taxed and untaxed income, assets, and benefits (i.e., unemployment or Social Security) as well as family size and the number of family members who will attend college or career school during the year in question. For example, a *Debt/EFC=2* means that the student's cumulative undergraduate debt is twice as much as what her family is expected to contribute for college on a given year. I calculated this number for all cases in the dataset and found out that the median was four; that is a debt of four times students' EFC. In addition, after preliminary exploratory analysis, I found that there were significant differences in graduation rates when students worked more than 30 hours a week. Given this and the purpose of this study, I formulated the following three hypotheses:

I.   Students with a ratio *Debt/EFC* above the median are more likely to graduate within six years.

II.   Students with a ratio *Debt/EFC* above the median work less than 30 hours a week (excluding work-study) while enrolled.

III. Students who work less than 30 hours a week (excluding work-study) while enrolled are more likely to graduate within six years.

Analysis   The main analytical strategy was descriptive statistics and a quasi-experimental design using propensity score stratification (Morgan & Winship, 2007). Propensity score techniques are particularly useful to damper self-selection bias in by mimicking an experimental design with randomized assignments to the variable of interest. This study followed the methodology suggested by Hahs-Vaughn and Onwuegbuzie (2006) for conducting propensity score analysis using complex survey data. A detailed description of the analysis is provided in the Appendix.

Limitations   Most of the limitations of this study are common limitations in social science research such as the impossibility to accurately measure all explanatory variables. Also, given that the dataset was not specifically designed for this study, it suffered from omitted variables. In particular, the dataset did not include measures of social and academic integration. Nevertheless, the variables available in the dataset are extensive and I tried to include as many covariates as possible in the calculation of the propensity scores, which is one of the advantages of this methodology. Another limitation is that the dataset is cross-sectional, which is particularly problematic given that students could change their financial aid from term to term. To damper this limitation, I decided to use a terminal measure related to the treatment at the end of the six year period of the survey, and that is cumulative debt. Also, I measured the final outcome, graduation, as opposed to retention, which also changes from term to term. Another limitation is that some of the variables were based on self-reported information.

A final limitation has to do with methodological constraints. Given that the treatment must be dichotomous based on the methodology employed in this study, I decided to include only students with any amount of debt and create a treatment that would place students in two groups, those with Debt/EFC above or below the median. This prevented me from drawing conclusions between students with debt and no debt. A better design would have been to have a categorical treatment variable to compare students with various degrees of debt, including no debt.

Results

First I present an overview of frequencies and means of the dependent, treatment, and covariate variables (Tables 2 & 3) followed by a discussion of crosstabulations between the dependent and treatment variables by income and race/ethnicity and gender (Tables 4, 5, 6, & 7). Then I present the results from the counterfactual models (Tables 8, 9, & 10). All the descriptive statistics and crosstabulations are weighted to reflect population estimates.

Descriptive Statistics Summary

More than half of the students in the sample completed their degree program in six years by 2007-2008 (60.8%). In this same year, 35.7% of students had a ratio of Debt/EFC above the median, which is four times what families were expected to pay during that year. Also, 30.8% of students worked more than 30 hours a week (see Table 2).

In 2007-2008, the estimated mean cost of attendance for students in this study was about $16,264, who received on average an estimated amount of $10, 997 in financial aid, including loans. However, 5.2% of students did not have information about financial aid. The estimated mean of the EFC for these students that year was $10,644. Most of the students, 80.6%, expected help from parents to pay tuition and/or other expenses; but only 26.5% expected help with repaying their loans. The students in the dataset had an average cumulative debt on all undergraduate loans of $21, 905 (see Table 3).

More than half of students worked while enrolled (about 58%) and did so almost 19 hours a week on average and earned an estimated mean of $5,952 excluding work-study in 2007-2008. From these, 82.0% of students worked to meet the expenses of going to college including earning spending money, minimizing debt, paying educational and living expenses, and sending money home. However, students worked for other reasons as well, such as gaining job experience (43.7%) or to meet parents' expectations (23.5%). Based on students' reports, for 52.1% of students said their jobs were not related to their major, for 33.3% their jobs did not help them with career preparation, for 65.6% their jobs were located off campus, for 32.5% their jobs had negative effects on their grades, for 64.8% their jobs affected class scheduling, and for 53.8% their jobs affected access to campus facilities.

Based on the Carnegie-Basic classification of postsecondary institutions, doctoral granting institutions enrolled the largest number of the students in the sample (50.2%). The estimated mean of percentage of minorities at

Table 2. Estimated Frequencies of Categorical Variables

Variable	Estimate (%)	Standard Error (%)
Completed degree program in 2007-2008		
Yes	60.8	1.5
Debt/EFC		
Above the median (4)	35.7	1.2
Work Intensity		
More than 30	30.8	1.3
Race/ethnicity and gender		
American Indian or Alaska Native or Pacific Islander	1.0	0.2
Asian male	2.9	0.5
Asian female	2.0	0.3
Black or African American male	4.5	0.5
Black or African American female	7.5	0.7
Hispanic or Latino male	4.5	0.5
Hispanic or Latino female	6.8	0.7
White male	34.7	1.2
White female	34.4	1.3
Other	1.7	0.3
English is the primary language		
No	8.9	0.8
Parents' highest education level		
Do not know parents' education level	1.5	0.3
Did not complete high school	3.0	0.4
High school diploma or equivalent	20.4	1.0
Less than two years of college	11.1	1.1
Associate's degree	9.7	0.7
2 or more years of college but no degree	5.3	0.6
Bachelor's degree	26.1	1.2
Graduate degree	22.9	1.9
Parents own home or pay mortgage		
No	13.4	0.8
Earned Advanced Placement credit in high school		
No	76.4	1.1
Grade point average in high school		
1.0-1.4 (D to C)	1.4	0.4
2.0-2.4 (C to B)	17.9	1.5
3.0-3.4 (B to A)	80.8	2.4
Highest level of education ever expected		
Bachelor's degree	29.9	1.2
Post-BA or post-master certificate	2.4	0.4
Master's degree	49.2	1.3
Doctoral degree	6.3	0.7
First-professional degree	11.8	0.9

Table 2 cont. Estimated Frequencies of Categorical Variables

Variable	Estimate (%)	Standard Error (%)
Residence while enrolled		
On campus	17.2	1.0
Off campus	58.4	1.4
Living with parents	17.0	1.0
Attended more than one institution	7.4	0.6
Attendance pattern		
Full-time/full year, 1 institution	43.6	1.4
Full-time/full year, 2+ institution	4.1	0.4
Full-time/part year	21.3	1.2
Part-time/full year, 1 institution	14.2	0.9
Part-time/full year, 2+ institution	1.5	0.2
Part-time/part year	15.5	1.0
Field of study: undergraduate		
Humanities	13.2	0.9
Social/behavioral sciences	15.0	0.8
Life sciences	9.4	0.8
Physical sciences	1.3	0.3
Math	0.8	0.2
Computer/information science	2.4	0.5
Engineering	7.6	0.7
Education	9.6	0.7
Business/management	20.4	1.0
Health	5.8	0.5
Vocational/technical	1.1	0.2
Other technical/professional	13.4	0.9
Carnegie-Basic classification collapsed		
Research & Doctoral	50.2	2.1
Master's	39.1	2.0
Baccalaureate	10.7	0.7
Help from parents: tuition and nontuition		
No help from parents	19.4	1.0
Help with tuition only	5.1	0.5
Help with nontuition expenses only	31.0	1.3
Help with both tuition & nontuition	44.5	1.3
Expect help with repaying student loans		
Yes	26.5	1.0
Information about financial aid		
No	5.2	0.6
Other financial support received		
Yes	10.4	0.8

Table 2 cont. Estimated Frequencies of Categorical Variables

Variable	Estimate (%)	Standard Error (%)
Job: related to major		
No	52.1	1.2
Job affects school: helped with career preparation		
No	33.3	1.2
Job affects school: limited access to campus facilities		
No	46.2	1.3
Job affects school: limited the class schedule		
No	35.2	1.2
Job: effect on grades		
Positive effect	18.3	0.9
Negative effect	32.5	1.2
No effect	25.7	1.0
Job: located primarily on or off campus		
On campus	8.3	0.7
Off campus	65.6	1.4
Both on and off campus	4.2	0.5
Primary role as student or employee		
Student working to meet expenses	82.0	1.1
Employee who decided to enroll in school	1.6	0.3
Reason for working: earn spending money		
Yes	62.5	1.3
Reason for working: gain job experience		
Yes	43.7	1.3
Reason for working: minimize debt		
Yes	41.1	1.3
Reason for working: parents' expectations		
Yes	23.5	1.1
Reason for working: pay educational expenses		
Yes	54.8	1.3
Reason for working: pay living expenses		
Yes	64.7	1.4
Reason for working: to send money home		
Yes	4.3	0.4

Table 3. Estimated Means of Continuous Variables

Continuous Variables	Mean Estimate	Standard Error
Age as of 12/31/07	22.3	0.0
Adjusted Gross Income (AGI)	68,576.9	1106.4
Delayed enrollment - number of years	0.03	0.006
SAT derived combined score	1,003.1	6.2
Grade point average	290.3	1.8
Percentage of minorities at institution	23.6	0.7
Student budget (attendance adjusted)	16,264.1	288.4
Aid total amount	10,997.0	229.9
Job: earnings from work while enrolled (excluding work-study/assistantship)	5,952.1	203.3
Job: hours worked per week (excluding work-study/assistantship)	18.7	0.4
Amount still owed on all undergraduate loans	21,905.4	367.4
Expected Family Contribution (EFC composite)	10,644.3	259.0

students' institutions was 23.6%. Students' GPA and SAT score estimated mean was 2.9 and 1003.1, respectively. The vast majority of students did not delay enrollment to postsecondary institutions after high school graduation and the mean age estimate in 2007-2008 was 22.3 years old. Only 17.2% of students lived on campus by the time of the survey and 43.6% attended full time at one institution. The most popular fields of study were business/management (20.4%) followed by social/behavioral sciences (15.0%), humanities, (13.2%), and other technical/professional (13.4%). The majority of students expected to have a graduate degree (70.1%), particularly 49.2% expected to earn a master's degree. In terms of academic performance in high school, 23.6% earned Advanced Placement credit and 80.8% had a GPA above B.

Overall, 69.1% of students were White, 12.0% African American, 11.3% Latinos, 4.9% Asian, and 1.0% American Indian or Alaska Native or Pacific/Islander. The distribution across gender was different for African Americans and Hispanics, with 3% and 2.8% more females in both cases respectively. English was not the primary language of 8.9% of students. In terms of socio-economic status, 13.4% of students' parents did not own a home or pay mortgage, and the highest education level for 51.0% of students' parents was a bachelor's or graduate degree. The mean estimate of the adjusted gross income of students in the set was $68,577.

Cross-tabulations Summary

The distribution of income levels across race/ethnicity and gender varied significantly among students in the dataset with a few identifiable patterns (see Table 4). White students from both sexes were evenly distributed in all

Table 4. Racial/Ethnic and Gender Distribution by Income Levels

Race/Ethnicity	$25,000 or less	$25,001-$50,000	$50,001-$75,000	$75,001-$100,000	$100,001 or more
			Income Levels (%)		
Asian male	33.3	39.8	12.1	9.0	5.9
Asian female	27.5	43.6	9.0	14.4	5.6
African American male	28.4	26.5	14.8	15.6	14.7
African American female	21.7	45.7	14.6	9.1	8.9
Hispanic or Latino male	31.9	16.5	30.9	8.0	12.7
Hispanic or Latino female	21.4	34.9	16.4	11.9	15.4
White male	10.1	22.2	21.3	24.8	21.7
White female	9.9	25.5	24.3	20.1	20.1

income brackets above $25,000 (about 20-25% in each income bracket). However, about 10% of White students had an income of $25,000 or less, which represents the group with the lowest percentage of students in the lowest income bracket. Except for White students, there were significant sex differences within race/ethnic groups and across income levels. The group with the largest representation in the lowest income bracket was Asian males (33.3%). The biggest sex disparities within groups were found among Hispanics and African Americans. Around 40-60% of students of all races/ethnicities regardless of sex fell within the income bracket $25,001-$75,000 and around 20-45% fell within the bracket $75,001-$100,000.

The racial/ethnic and gender distribution of students who completed their degree program in 2007-2008 by income levels mirrors the racial/ethnic and gender distribution by income described in the previous paragraph except for a few exceptions (see Table 5). In other words, students who graduated were not underrepresented or overrepresented in their respective racial/ethnic, gender, and income group by more than 5%. I calculated these percentages by subtracting the overall percentage of each racial/ethnic group in Table 4 from the corresponding percentage in Tables 5, 6, and 7. The few exceptions were Hispanic males in the income bracket $50,001-$75,000, who were overrepresented by 14.7% and underrepresented by 12.5% in the income bracket $25,000 or less and by 6.3% in the next income bracket ($25,001-$50,000). African Americans from both sexes were underrepresented also in the lowest income bracket by 6.2% (females) and 6.4% (males). Finally, Asian American females were underrepresented in the income bracket $25,001-$50,000 by 8.8%.

The distribution of Debt/EFC above the median by race/ethnicity, gender, and income indicate that the higher the income, the less Debt/EFC for all groups (see Table 6). The largest overrepresentation of students based on income was concentrated in the lowest income bracket ($25,000 or less) for all groups In particular, African American males were

Table 5. Racial/Ethnic and Gender Distribution of Students Who Completed Their Degree Program in 2007-2008 by Income Levels

Race/Ethnicity	Income Levels (%)				
	$25,000 or less	$25,001-$50,000	$50,001-$75,000	$75,001-$100,000	$100,001 or more
Asian male	35.8	36.0	13.4	8.3	6.5
Asian female	28.4	34.7	13.3	14.2	9.4
African American male	22.0	29.7	15.8	14.3	18.1
African American female	15.5	47.1	15.6	10.7	11.1
Hispanic or Latino male	19.4	10.2	45.6	7.9	16.8
Hispanic or Latino female	16.8	36.1	16.9	14.5	15.7
White male	7.8	22.1	19.6	25.6	24.9
White female	8.5	24.1	22.7	24.3	20.4

Table 6. Racial/Ethnic and Gender Distribution of Students with Debt/EFC Above the Median (4) by Income Levels

Race/Ethnicity	Income Levels (%)				
	$25,000 or less	$25,001-$50,000	$50,001-$75,000	$75,001-$100,000	$100,001 or more
Asian male	54.0	37.8	5.5	0.0	2.7
Asian female	43.3	53.3	3.4	0.0	0.0
African American male	56.0	36.1	7.9	0.0	0.0
African American female	33.5	55.1	5.2	5.9	0.3
Hispanic or Latino male	54.0	21.8	22.8	1.4	0.0
Hispanic or Latino female	42.8	41.7	10.7	4.7	0.0
White male	30.3	42.0	17.3	8.5	1.9
White female	29.6	43.0	17.1	7.3	3.0

Table 7. Racial/Ethnic and Gender Distribution of Students Who Work More Than 30 Hours a Week by Income Levels

Race/Ethnicity	Income Levels (%)				
	$25,000 or less	$25,001-$50,000	$50,001-$75,000	$75,001-$100,000	$100,001 or more
Asian male	52.4	21.6	2.3	0.0	23.6
Asian female	18.3	70.2	6.0	0.1	5.4
African American male	24.4	29.9	11.3	16.0	18.3
African American female	20.4	32.2	16.0	21.0	10.4
Hispanic or Latino male	49.1	12.6	25.7	3.8	8.9
Hispanic or Latino female	36.2	32.8	5.0	1.9	24.0
White male	9.1	24.9	19.1	29.7	17.2
White female	11.0	25.3	29.6	14.4	19.7

overrepresented in this income bracket by 27.6%, followed by Hispanic, White, and Asian males. Asian and African American females had the lowest over-representation in this income bracket (15.8% and 11.7%, respectively). White students were the only group that continued with the similar rates of overrepresentation in the income bracket of $25,001-$50,000 while the rest of the groups dropped to a rate of overrepresentation below 10%. All groups shifted to be underrepresented in the next income brackets. Whites had the largest representation among students who came from families with incomes above $75,001.

The racial/ethnic and gender distribution of students who worked more than 30 hours a week while enrolled by income levels indicate that White students were the only group that was not underrepresented or over-represented in any income bracket by more than 6% (see Table 7). On the contrary, in the lowest income bracket, Asian males were overrepresented by 19.1% and Hispanics by 14.8% (females) and 17.1% (males). The sex representation among Asians shifted in the next income bracket ($25,001-$50,000). In this case, males were underrepresented by 18.2% while females were overrepresented by 26.6%. African American females were underrepresented in this income bracket by 13.5%. Asian males and Hispanic females followed similar patterns in the next income brackets, $50,001-$75,000 and $75,001-$100,000. Both groups were under-represented by 9.8% (Asian males) and 11.4% (Hispanic females). However, there was an overrepresented by 17.7% for Asian males and 8.6% for Hispanic females for incomes above $100,001. Finally, African American females in the income bracket $75,001-$100,000 were over-represented by 11.9%. The rest of the groups were over or unde-rrepresented by less than 5.7%.

Counterfactual Models Results

In order to determine the effect of the propensity scores in the models, a separate analysis was run using logistic regressions without stratifying the sample by propensity scores. This analysis indicated that the treatment is not significant in any of the three models when run without the propensity scores; however, the treatments were significant in the three models when the propensity scores were included.

All hypotheses were confirmed by the models. In particular:

◆ Hypothesis I: Students with a Debt/EFC greater than the median were 1.6 times more likely to graduate within six years than students with a smaller Debt/EFC (treatment p-value = 0.021) as shown in Table 8.

◆ Hypothesis II: Students with a Debt/EFC greater than the median were 1.5 times more likely to work less than 30 hours a week (excluding work-study) while enrolled than students with a smaller Debt/EFC (treatment p-value = 0.032) as shown in Table 9.

◆ Hypothesis III: Students who worked less than 30 hours a week (excluding work-study) while enrolled were 1.4 times more likely to graduate in six years than students who worked more than 30 hours a week while enrolled (treatment p-value = 0.009) as shown in Table 10.

These results indicate that students that were willing to acquire a debt of four times their EFC or more by the end of the sixth year and worked less than 30 hours a week while enrolled were more likely to graduate in six years. However, 30.8% of students worked more than 30 hours a week, had a smaller debt than four times their EFC, and were less likely to graduate in six years. In other words, most students acquired debt in order to obtain a bachelor's degree. However, some students might not be willing to acquire enough debt to help them graduate, and that is according to this study, four times what their families can contribute to their education. These students might work instead, but if they work more than 30 hours a week, they are at risk of not graduating within six years.

Discussion   As federal loans continue to be one of the major strategies from the government to increase postsecondary attainment, studies like this one are needed to inform policymakers on the effectiveness of student loans. The results of this study indicate that student loans promote attainment to some degree given that by 2007-2008, 60.8% of students who have borrowed completed their bachelor's degree within six years. However, 39.2% of students had debt and had not graduated within six years from a four-year degree, the average cumulative debt on all undergraduate loans was $21, 9057, and 73.5% of students did not expect help from their parents or legal guardians to repay student loans.

The burden of debt is reflected when cumulative college debt is compared with what families are expected to contribute to their children's college education annually as defined by the federal government through the EFC index. In particular, this study indicates that in 2007-2008, 35.7% of students that have acquired college loans since 2002-2003 had a debt four times bigger than what their families are expected to pay during that year. Students with this amount of debt or higher are more likely to graduate in six years. However, students with debt less than this amount are more likely to work while enrolled more than 30 hours a week and less likely to graduate in six years. This agrees with previous studies indicating that working 20 hours a week or more negatively impact the academic performance of students (Kulm & Cramer, 2006; Miller et al., 2008). Overall, 21% of full-time, traditional-age undergraduates worked 20-34 hours per week and 10% more than 35 hours a week in 2007 (Perna, 2010). However, according to this study, 30.8% of dependent students who enrolled for the first time in 2002-2003 in a four-year institution and acquired student loans worked more than 30 hours a week while enrolled. Of these, the vast majority, 82.0%, worked to meet the costs of going to college despite all types of financial aid received, including loans, and help from parents to cover college expenses. Some students who worked while enrolled indicated that their job had a negative impact on their academic performance. In particular, 32.5% of working students reported that work had a negative effect on grades, 64.8% said that it affected class scheduling, and 53.8% indicated that it affected access to campus facilities.

Regardless of race/ethnicity and gender, the lowest income bracket had the largest proportion of students with Debt/EFC above the median

Table 8. Parameter Estimates Hypothesis I

DV: Completed degree program in 2007-2008 (Ref: No)
Treatment: Debt/EFC in 2007-2008 (Ref: above 4=median)

Parameter	Design Effect	ExpB	95% CI for ExpB		Sig.
			Lower	Upper	
Treatment: Debt by EFC	2.372	0.639	0.437	0.934	0.021
		1/0.639=1.6			
English is the primary language	1.856	0.784	0.521	1.181	0.243
Parent's highest education level	1.660	0.991	0.948	1.036	0.685
Earned Advanced Placement credit in high school	2.324	1.091	0.784	1.520	0.604
Grade point average in high school	2.160	1.099	0.953	1.267	0.192
SAT derived combined score	1.755	1.000	1.000	1.001	0.224
Residence while enrolled	1.334	0.788	0.686	0.905	0.001
Attendance pattern	2.317	1.215	1.113	1.326	0.000
Grade point average	1.776	1.009	1.007	1.011	0.000
Carnegie-Basic classification collapsed	3.187	0.958	0.750	1.224	0.731
Percentage of minorities	2.712	0.998	0.991	1.006	0.653
Student budget (attendance adjusted)	1.254	1.000	1.000	1.000	0.293
Other financial support received	1.691	0.950	0.663	1.361	0.778
Job: earnings from work while enrolled (excluding work-study/assistantship)	1.585	1.000	1.000	1.000	0.013
Information about financial aid	2.029	0.899	0.513	1.577	0.710
Job: hours worked per week (excluding work-study/assistantship)	1.325	0.994	0.981	1.006	0.338
Job affects school: limited the class schedule	1.382	0.709	0.550	0.914	0.008
Job affects school: limited access to campus facilities	1.708	0.949	0.720	1.250	0.708
Primary role as student or employee (including work-study/assistantship)	1.383	1.143	1.020	1.281	0.021
Reason for working: pay educational expenses	1.908	1.189	0.895	1.580	0.232
Job: related to major	1.738	1.077	0.882	1.316	0.464
Job: effect on grades	1.582	1.140	0.989	1.315	0.071
Pseudo R Squares	Cox & Snell	0.140			
	Nagelkerke	0.190			
	McFadden	0.113			
Predicted Percent Correct	No	44.7%			
	Yes	83.1%			
	Overall	68.0%			

Table 9. Parameter Estimates Hypothesis II

DV: Working Intensity in 2007-2008 (Ref: more than 30 hours a week)
Treatment: Debt/EFC in 2007-2008 (Ref: above 4=median)

Parameter	Design Effect	ExpB	95% CI for ExpB Lower	95% CI for ExpB Upper	Sig.
Treatment: Debt by EFC	1.973	0.643	0.429	0.963	0.032
		1/0.643=1.5			
English is the primary language	1.436	1.116	0.695	1.791	0.650
Adjusted Gross Income (AGI)	0.785	1.000	1.000	1.000	0.061
Earned Advanced Placement credit in high school	1.308	0.950	0.714	1.266	0.727
Delayed enrollment into PSE-number of years	0.726	1.036	0.740	1.450	0.838
SAT derived combined score	1.526	1.000	0.999	1.000	0.450
Highest level of education ever expected	1.898	0.918	0.822	1.025	0.127
Residence while enrolled	1.285	1.236	1.062	1.438	0.006
Attendance pattern	2.319	0.894	0.816	0.980	0.016
Grade point average	1.471	1.003	1.000	1.005	0.017
Carnegie-Basic classification collapsed	1.619	0.671	0.550	0.818	0.000
Percentage of minorities	1.643	0.996	0.989	1.002	0.193
Other financial support received	1.465	1.580	1.000	2.496	0.050
Aid total amount	1.055	1.000	1.000	1.000	0.107
Help from parents: tuition and nontuition	2.041	1.287	1.123	1.474	0.000
Job: earnings from work while enrolled (excluding work-study/assistantship)	2.310	1.000	1.000	1.000	0.000
Expect help with repaying student loans	1.500	0.676	0.499	0.916	0.012
Information about financial aid	1.506	1.581	0.892	2.802	0.116
Job: related to major	1.646	0.723	0.541	0.967	0.029
Job affects school: helped with career preparation	1.334	1.257	0.961	1.644	0.095
Job affects school: limited access to campus facilities	1.631	0.566	0.432	0.743	0.000
Reason for working: gain job experience	1.622	1.098	0.805	1.497	0.555
Job: effect on grades	1.647	1.422	1.202	1.682	0.000
Reason for working: pay educational expenses	1.371	1.073	0.800	1.439	0.638
Job: located primarily on or off campus	1.704	0.541	0.421	0.695	0.000
Reason for working: earn spending money	1.561	1.124	0.798	1.583	0.501
Reason for working: minimize debt	1.442	0.850	0.642	1.125	0.253
Reason for working: pay living expenses	1.384	0.944	0.682	1.308	0.729
Pseudo R Squares	Cox & Snell	0.307			
	Nagelkerke	0.433			
	McFadden	0.297			
Predicted Percent Correct	No	90.1%			
	Yes	50.1%			
	Overall	77.8%			

Table 10. Parameter Estimates Hypothesis III

DV: Completed degree program in 2007-2008 (Ref: Yes)
Treatment: Working Intensity in 2007-2008 (Ref: more than 30 hours a week)

Parameter	Design Effect	ExpB	95% CI for ExpB Lower	Upper	Sig.
Treatment: Work Intensity	1.748	0.721 1/0.721=1.4	0.565	0.920	0.009
English is the primary language	1.791	1.093	0.735	1.626	0.659
Parent's highest education level	1.743	0.971	0.928	1.016	0.205
Adjusted Gross Income (AGI)	0.741	1.000	1.000	1.000	0.001
Earned Advanced Placement credit in high school	2.321	0.620	0.444	0.866	0.005
Grade point average in high school	1.921	0.815	0.723	0.919	0.001
Delayed enrollment into PSE-number of years	1.474	1.643	0.897	3.009	0.107
Highest level of education ever expected	2.594	0.856	0.768	0.954	0.005
Residence while enrolled	1.283	1.287	1.119	1.480	0.000
Attendance pattern	1.971	0.654	0.585	0.730	0.000
Percentage of minorities	2.534	1.000	0.993	1.007	0.920
Student budget (attendance adjusted)	1.339	1.000	1.000	1.000	0.063
Other financial support received	1.852	1.672	1.123	2.490	0.012
Aid total amount	1.336	1.000	1.000	1.000	0.191
Help from parents: tuition and nontuition	1.779	1.377	1.193	1.589	0.000
Expect help with repaying student loans	1.879	0.797	0.602	1.056	0.113
Information about financial aid	1.959	1.659	0.967	2.845	0.066
Expected Family Contribution (EFC composite)	1.495	1.000	1.000	1.000	0.119

	Cox & Snell	0.140			
Pseudo R Squares	Nagelkerke	0.190			
	McFadden	0.113			

	No	44.7%			
Predicted Percent Correct	Yes	83.1%			
	Overall	68.0%			

whereas those with higher income (above $75,001) had the smallest proportion. This indicates that low income is a critical component for students to acquire high levels of debt regardless of race/ethnicity and gender. In fact, all groups of students with a Debt/EFC above the median were overrepresented by more than 10% in the lowest bracket income ($25,000 or less) and also underrepresented by more than 10% among those with income above $75,001. These statistics reflect the fact that low-income students are especially likely to face substantial unmet financial need (Long & Riley, 2007), which force them to acquire larger amounts of debt than their peers with higher income.

However, as indicated in recent studies (Mendez & Mendoza, 2008; Mendez, Mendoza, & Malcolm, in press; Mendoza & Mendez, in press), within income brackets, I found significant differences by race/ethnicity and gender. Minority groups had the largest representation of students with income less than $25,001 in this study. For example, African American males had the highest overrepresentation whereas African American females had the lowest representation in the lowest income bracket (less than $25,001). In particular, 28.4% of African American males had an income $25,000 or less; but 56.0% of them had a Debt/EFC above the median (27.6% difference). On the contrary, 21.7% of African American females were in this income and 33.5% had a Debt/EFC above the median (11.7% difference).

Overall, a larger proportion of low income students, including minority students, had Debt/EFC above the median than students with higher income. This result might seem against the concept of debt aversion found by others among low-income and certain minority groups (Arbona & Nora, 2007; Chen & DesJardins, 2010; Hu & St. John, 2001; Price, 2004). However, these studies are about college enrollment or persistence, whereas this study used a population that had been enrolled for at least six years in college; therefore, the students in this study were those who have already beaten the odds and committed to a college degree by enrolling and persisting for six years. In this case, the notion of self-efficacy in relation to college debt discussed by Dowd (2008) is more appropriate to interpret the results of this study, in which the higher the self-efficacy of students, the more willing they are to acquire debt. I argue that the students in this study, including minorities and low income, have a relatively high self-efficacy concept given their academic achievement of enrolling and staying enrolled for six years in college. Therefore, given that low-income students have higher need for financial aid, they are willing to acquire larger proportions of debt to meet the costs of staying enrolled.

Previous studies have found gap disparities in graduation rates by income and race/ethnicity (Arbona & Nora, 2007; Chen & DesJardins, 2010; Hu & St. John, 2001; Ishitani, 2006). This study found further disparities within race/ethnicity by gender and income levels. Overall, as is the case with Debt/EFC, the higher the income was, the larger the proportion of students who have graduated by 2007-2008. In particular, all groups where overrepresented in the income bracket above $75,001. On the contrary, students who graduated by 2007-2008 were underrepresented in the lowest income for all groups (except for Asian males and females).

Hispanic males were underrepresented by 12.5% in the lowest income bracket, making it the group with the lowest proportion of students who have graduated, followed by African Americans. There is a sharp gender gap among Hispanics and graduation rates, in which Hispanic women were underrepresented by 4.6% compared to 12.5% of Hispanic males in the lowest income bracket.

These results resonate with Slaughter and Rhoades' (2005) theory of academic capitalism, in which higher education has become a private good that students have to purchase through monetary means despite governmental programs to provide students with financial aid in the form of grants (e.g., Federal Pell Grants). Particularly problematic are the implications of academic capitalism as it refers to college affordability for lower income students and minority groups. As it has been highlighted in previous works, these students are less likely to acquire college debt, or acquire large amounts of debt, to fulfill their academic and professional aspirations (e.g., Chen, 2008; Chen & DesJardins, 2010; Mendoza & Mendez, in press). According to this study, these students might work long hours instead, which is likely to interfere with academic progress and attainment. Policy makers and tax payers should re-evaluate the overemphasis on loans in current financial aid polices in order to close the achievement gap among groups. Otherwise, as the minority population continues to grow in the United States, the nation will lack an educated workforce capable of competing in the global economy.

Appendix

The goal of counterfactual models is to look at the effect of some causes of particular outcomes rather than to find all possible causes, recognizing that we cannot have a perfect causal understanding of a given outcome due to the impossibility of knowing and measuring all possible variables involved (Morgan & Winship, 2007). Moreover, counterfactual models not only focus on some causes but also on selected effects (Morgan & Harding, 2006). Propensity score matching is a quasi-experimental counterfactual model that is increasingly attracting the attention of social scientists working with observational data, including research related to financial aid (Dowd 2008; Hossler et al., 2009; Raynolds & DesJardins, 2009; Titus, 2007). Propensity score matching techniques are particularly useful to damper self-selection bias in financial aid research by mimicking an experimental design with randomized assignments of financial aid to students.

   Causal effects are best estimated when treatment is assigned randomly to cases and comparisons are made against a control group. However, this is not possible in most observational studies in which the researcher has no control over treatment assignment and individuals freely self-select into the treatment group as is the case with students choosing financial aid, for example. Therefore, any observed differences might be because of treatment effects or due to pre-existing differences (Hahs-Vaughn & Onwuegbuzie, 2006). Rosenbaum and Rubin (1983) proposed to use a conditional probability of being assigned to the treatment group given predetermined characteristics. This conditional probability is known as the propensity score. Once the propensity score is obtained for each case in the dataset, cases receiving treatment are compared with control cases that share a similar propensity score in light of a desirable outcome.

   This study followed step by step the methodology suggested by Hahs-Vaughn and Onwuegbuzie (2006) for conducting propensity score analysis using complex survey data. Such methodology includes the following steps: 1) Define the covariates in the analysis based on a theoretical model or previous research. 2) Conduct an informative but informal step to verify preliminary differences in the treatment and control groups. 3) Compute the propensity scores by modeling the treatment as the dependent variable of relevant covariates identified in step one using logistic regression and saving the predicted probabilities for each case from such regression. These probabilities are the propensity scores. All relevant covariates are retained in this model despite whether they are significant or not because the goal is not to achieve statistical significant inferences but to obtain scores that balance the data as explained in step five. 4) Create quintiles through ranking the cases by their propensity scores and five dummy variables for each quintile. 5) Balance the data over the propensity scores by reviewing the confounding of the covariates within quintiles. This is done by regressing each covariate as the dependent variable and the treatment as independent variable along with four of the five quintile dummy variables. Non-statistically significant treatment variables indicate balance. If balance is not achieved, the propensity score model needs to be revisited by modifying covariates or including interaction or quadratic

terms, for example. 6) Estimate the treatment effect by incorporating the quintile dummy variables in the main model along with other pertinent covariates as well as strata, cluster and normalized weights.

Models Specification

I ran one model for each of the three hypotheses. All models were logistic regressions given that they all have a dichotomous dependent variable. The models had three parts, the treatment, the covariates related to the dependent variable, and the propensity scores related to the treatment. After conditioning the dataset and removing outliers, I built the models manually based on model statistics and the theoretical framework. In particular, diagnostics statistics, pseudo R-squared indicators and percentage predicted as well as multicollinearty tests were used in order to find the optimal models. The final models for each hypothesis were those including the covariates that indicated the lowest VIF values for the corresponding treatments. Given the complex design of the sample used in this study, in order to obtain results generalizable to the entire population, the principal models were run with normalized, strata, and cluster weights using the Complex Samples add-on module of IBM SPSS. Given that the propensity score model is not inferential but rather a means to balance the data on the treatment variable across strata, there was no need to include weights in such analysis.

The first model (for hypothesis I) had a dependent variable indicating whether students in the sample graduated or not by the end of 2007-2008. The treatment (T) was whether they had a Debt/EFC above the median or not. The covariates (represented by the vector X) were those that resulted in the best fitted model and the lowest VIF value for the treatment, the vector P included dummy variables representing the quintile to which students belong based on their propensity score:

$$Log(Y_{Degree}) = \alpha T_{Debt/EFC} + \vec{\beta}\vec{X}_{Degree} + \vec{\delta}\vec{P}_{Debt/EFC} + \varepsilon_1$$

Similarly, the second model (for hypothesis II) had a dependent variable indicating whether students worked more than 30 hours or less, the treatment was the same as in model one, thus, the propensity scores are the same ones as well. The covariates included variables related to the effects of working while enrolled:

$$Log(Y_{Working}) = \alpha T_{Debt/EFC} + \vec{\beta}\vec{X}_{Working} + \vec{\delta}\vec{P}_{Debt/EFC} + \varepsilon_2$$

The last model (for hypothesis III) had a dependent variable indicating whether students graduated or not as in model one, but the treatment this time was whether they work more than 30 hours a week or not. Therefore, given that the treatment was different than in the previous two models, I calculated different propensity scores accordingly for this case. The covariates were those related to the dependent variable, which were the same ones as the ones in the first model:

$$Log(Y_{Degree}) = \alpha T_{Working} + \vec{\beta}\vec{X}_{Degree} + \vec{\delta}\vec{P}_{Working} + \varepsilon_3$$

References

Ahlburg, D. A., McCall, B. P., & Na, I. (1997). *Time to drop out from college: A hazard model of college dropout with endogenous waiting time.* Working paper. Minneapolis, MN: Industrial Relations Center, University of Minnesota.

Alon, S., & Tienda, M. (2005). Assessing the "mismatch" hypothesis: Differentials in college graduation rates by institutional selectivity. *Sociology of Education, 78*(4), 294-315.

Arbona, C., & Nora, A. (2007). The influence of academic and environmental factors on Hispanic college degree attainment. *The Review of Higher Education, 30*(3), 247-269.

Archer, L., & Hutchings, M. (2000). "Bettering yourself"? Discourses of risk, cost and benefit in ethnically diverse young working-class non-participants' constructions of higher education. *British Journal of Sociology of Education, 21*(4), 555-574.

Arulselvan, A., Mendoza, P., Boginski, V., & Pardalos, P. (2009). Predicting the nexus between secondary education affordability and student success: An application of network-based approaches. In N. Memon & Alhajj, R. (Eds), *Advances in Social Network Analysis and Mining* (pp. 149-154). Washington, DC: IEEE Computer Society.

Astin, A. W., & Oseguera, L. (2002). Degree attainment rates at American colleges and universities. Los Angeles: UCLA, Higher Educational Research Institute.

Astin, A. W., Tsui, L., & Avalos, J. (1996). Degree attainment rates at American colleges and universities: Effects of race, gender, and institutional type. Los Angeles: UCLA, Higher Educational Research Institute.

Bowen, W. G., & Bok, D. (1998). *The shape of the river: Long-term consequences of considering race in college and university admissions.* Princeton, NJ: Princeton University Press.

Braxton, J. M. (2000). *Reworking the student departure puzzle.* Nashville, TN: Vanderbilt University Press.

Burton, N. W., & Ramist, L. (2001). *Predicting success in college: SAT studies of classes graduating since 1980.* New York: College Entrance Examination Board.

Baum, S., & Payea, K. (2004). *Education pays 2004: Trends in higher education series.* Washington, DC: College Board.

Bowen, H. R. (1997). *Investment in learning: The individual and social value of American higher education.* Baltimore, MD: Johns Hopkins University Press. Cabrera, A. F., Stampen, J. O., & Hansen, W. L. (1990). Exploring the effects of ability to pay on persistence in college. *Review of Higher Education, 13*(3), 303-336.

Callender, C., & Jackson, J. (2005). Does the fear of debt deter students from higher education? *Journal of Social Policy, 34(*4), 509–540.

Cellini, S. R. (2008). Causal inference and omitted variable bias in financial aid research: Assessing solutions. *The Review of Higher Education, 31*(3), 329-354.

Chen, R. (2008). Financial aid and student dropout in higher education: A heterogeneous research approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research, Vol. 23*, (pp. 209–239). New York: Springer.

Chen, R., & DesJardins, S. L. (2008). Exploring the effects of financial aid on the gap in student dropout risks by income level. *Research in Higher Education, 49*(1), 1-18.

Chen, R., & DesJardins S. L. (2010). Investigating the impact of financial aid on student dropout risks: Racial and ethnic differences. *Journal of Higher Education, 81*(2), 209-237.

Cofer, J., & Somers, P. (1999, April). *A national study of persistence at two-year colleges.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Quebec, Canada.

College Board. (2008). *Trends in students aid 2008.* Washington, DC: The College Board.

College Board. (2009). *Trends in students aid 2009.* Washington, DC: The College Board.

DeNavas-Walt, C., Proctor, C. D., & Smith, J. (2007). *Income, Poverty, and Health Insurance Coverage in the United States: 2006* (U.S. Census Bureau, Current Population Reports, P60-233). Washington, DC: U.S. Government Printing Office.

DesJardins, S. L., Ahlburg, D. A., & McCall, B. P. (2002). A temporal investigation of factors related to timely degree completion. *Journal of Higher Education, 73*(5), 555–581.

DesJardins, S. L., & McCall, B. P. (2010). Simulating the effects of financial aid packages on college student stopout, reenrollment spells, and graduation chances. *The Review of Higher Education*, *33*(4), 513-541.

Dowd, A. C. (2008). Dynamic interactions and intersubjectivity: Challenges to causal modeling in studies of college student debt. *Review of Educational Research, 78*(2)*,* 232-259.

Dowd, A. C., & Coury, T. (2006). The effect of loans on the persistence and attainment of community college students. *Research in Higher Education, 47*(1), 33-62.

Dynarski, S. M. (1999). *Does aid matter? Measuring the effect of student aid on college attendance and completion.* (NBER Working Papers 7422). Cambridge, MA: National Bureau of Economic Research.

Dynarski, M. (2004). The new merit aid. In C. Hoxby, (Ed.), *College choices: The economics of which college, when college, and how to pay for it.* (p. 63-100). Chicago: University of Chicago Press.

Education Resources Institute & Institute for Higher Education Policy. (1995). *College debt and the American family.* Washington, DC.

Gladieux, L., & Perna, L. (2005). *Borrowers who drop out: A neglected aspect of the college student loan trend.* National Center Report No. 05–2. San Jose, CA: National Center for Public Policy and Higher Education.

Hahs-Vaughn, D. L., & Onwuegbuzie, A. J. (2006). Estimating and using propensity score analysis with complex samples. *Journal of Experimental Education, 75(1)*, 31-65.

Heller, D. E., & Rogers, K. R. (2006). Shifting the burden: Public and private financing of higher education in the united states and implications for Europe. *Tertiary Education and Management, 12*, 91-117.

Hossler, D., Ziskin, M., Gross J. P., Kim, S., & Cekic, O. (2009). Student aid and its role in encouraging persistence. *Higher Education: Handbook of Theory and Research*, 389-425.

Hu, S., & St. John, E. P. (2001). Student persistence in a public higher education system: Understanding racial/ethnic differences. *Journal of Higher Education,* 72, 265-286.

Institute for Higher Education Policy. (1998). *Reaping the benefits: Defining the public and private value of going to college.* Washington, DC: Author.

Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *The Journal of Higher Education*, *77*(5), 861-885.

Johnstone, D. B. (2004). The economics and politics of cost sharing in higher education: Comparative perspectives. *Economics of Educational Review, 23*, 403-410.

Kewal-Ramani, A., Gilbertson, L., Fox, M. A., & Provasnik, S. (2007). *Status and trends in the education of racial and ethnic minorities* (NCES 2007-039), 177. Washington, DC: U. S. Government Printing Office.

Kim, D. (2007). The effect of loans on students' degree attainment: differences by student and institutional characteristics. *Harvard Educational Review, 77*(1), 64-100.

Kulm, T. L., & Cramer, S. (2006). The relationship of student employment to student role, family relationships, social interactions and persistence. *College Student Journal, 40*(4), 927-938.

Levine, A., & Nidiffer, J. (1996). *Beating the odds: How the poor get to college.* San Francisco: Jossey-Bass.

Long, B., & Riley, E. (2007). Financial aid: A broken bridge to college access? *Harvard Educational Review, 77*(1), 39-63.

McDonough, P. M. (1994). Buying and selling higher education: The social construction of the college applicant. *Journal of Higher Education, 65*(4), 427-446.

McDonough, P. M., & Calderone, S. (2006). The meaning of money: Perceptual differences between college counselors and low-income families about college costs and financial aid. *American Behavioral Scientist, 49*(12), 1703-1718.

Melguizo, T. (2008). Quality matters: Assessing the impact of attending more selective institutions on college completion rates of minorities. *Research in Higher Education, 49*, 214-236.

Mendez, J. P., & Mendoza. (2008). The implications of financial aid packages on African American student retention. *National Association of Student Affairs Professionals Journal, 11*(1), 46-65.

Mendez, J. P., Mendoza, P., & Malcolm, Z. (in press). The impact of financial aid on Native American student persistence in higher education. *Journal of Diversity in Higher Education.*

Mendoza, P., & Mendez, J. P. (in press). The Oklahoma Promise Program: A national model to promote college persistence. *Journal of College Student Retention: Research, Theory & Practice.*

Mendoza, P., Mendez, J. P., & Malcolm, Z. (2009). Financial aid and persistence in community colleges: Assessing the effect of state and federal financial aid programs in Oklahoma. *Community College Review, 37*(2), 112-135.

Metcalf, H. (2005). Paying for university: The impact of increasing costs on student employment, debt and satisfaction. *National Institute Economic Review, 191*, 106-117.

Miller, K., Danner, F., & Staten, R. (2008). Relationship of work hours with selected health behaviors and academic progress among a college student cohort. *Journal of American College Health, 56*(6), 675-679.

Morgan, S. L., & Harding, D. J. (2006). Matching estimators of causal effects: Prospects and pitfalls in theory and practice. *Sociological Methods and Research, 35*, 3-60.

Morgan, S. L., & Winship, C. (2007). *Counterfactuals and causal inference: Methods and principles for social research.* New York, NY: Cambridge University Press.

National Center for Public Policy and Higher Education. (2006). *Measuring up: The national report card on higher education.* San Jose, CA: National Center for Public Policy and Higher Education.

Nora, A., Barlow, E., & Crisp, G. (2005). Student persistence and degree attainment beyond the first year in college: The need for research. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 129-154). Westport, CT: American Council on Education.

Olivas, M.A. (1985). Financial aid packaging policies: Access and ideology. *Journal of Higher Education, 56*, 462-475.

Pachon, H. P., & Zarate, M. E. (2005). *Perspectives of college costs, benefits, and financial aid among California Latino youth.* Los Angeles, California: Tomas Rivera policy institute and SallieMae fund.

Park, K. H. (1996). Educational expansion and educational inequality on income distribution. *Economics of Education Review, 15*(1), 51–58.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research.* San Francisco, CA: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research.* San Francisco, CA: Jossey-Bass.

Paulsen, M. B., & St. John, E. P. (2002). Social class and college costs: Examining the financial nexus between college choice and persistence. *Journal of Higher Education, 73*(2), 189–236.

Perna, L. W. (2000). Differences in the decision to attend college among African Americans, Hispanics, and Whites. *Journal of Higher Education, 71*(2), 117-141.

Perna, L.W. (Ed.). (2010). *Understanding the working college student: New research and its implications for policy and practice.* Sterling, VA: Stylus Publishing.

Price, D. V. (2004). Educational debt burden among student borrowers: An analysis of the Baccalaureate & Beyond Panel, 1997 follow-up. *Research in Higher Education, 45*(7), 701–737.

Price, D. V., & Davis, R. J. (2006). Institutional grants and baccalaureate degree attainment. Washington, DC: National association of student financial aid administrators.

Riggert, S. C., Boyle, M., Petrosko, J. M., Ash, D., & Rude-Parkins, C. (2006). Student employment and higher education: Empiricism and contradiction. *Review of Educational Research, 76*(1), 63-92.

Singell, L. D. (2002). Come and stay awhile: Does financial aid effect enrollment and retention at a large public university? Eugene, OR: University of Oregon.

Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy markets, state, and higher education.* Baltimore, MD: John Hopkins University Press.

Slaughter, S., & Rhoades, G. (2005). Markets in higher education: Students in the seventies, patents in the eighties, copyrights in the nineties. In P. G. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American higher education in the twenty-first century: Social, political, and economic challenges* (2nd ed., pp. 486-516) Baltimore, MD: John Hopkins University Press.

Somers, P., & Cofer, J. (1997). Singing the student loan blues: Multiple voices, multiple approaches? Sallie Mae/TERI Conference on Student Debtload, Washington, DC.

St. John, E. P. (2006). Contending with financial inequality and academic success: Rethinking the contributions of qualitative research to the policy discourse on college students. *American Behavioral Scientist, 49*, 1604-1619.

St. John, E. P., Cabrera, A. F., Nora, A., & Asker, E. H. (2000). Economic influences on persistence reconsidered: How can finance research inform the reconceptualization of persistence models? In J. M. Braxton (Ed.), *Reworking the student departure puzzle.* Nashville: Vanderbilt University Press.

St. John, E. P., Hu, S., & Weber, J. (2001). State policy and the affordability of public higher education: The influence of state grants on persistence in Indiana. *Research in Higher Education, 42*, 401-428.

St. John, E. P., Paulsen, M. B., & Carter, D. F. (2005). Diversity, college costs, and postsecondary opportunity: An examination of the financial nexus between college choice and persistence for African Americans and Whites. *The Journal of Higher Education, 76*(5), 545-549.

Stampen, J. O., & Cabrera A. F. (1988). The targeting and packaging of student aid and its effect on attrition. *Economics of Educational Review, 7*(1), 29-46.

Swail, W., Redd, K., & Perna, L. (2003). Retaining minority students in higher education: A framework for success. *ASHE-ERIC Higher Education Reports, 30*(2), 1-172.

Tierney, W. G., & Venegas, K. M. (2006). Fictive kin and social capital: The role of peer groups in applying and paying for college. *American Behavioral Scientist, 49*(12), 1687-1702.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago, IL: University of Chicago Press.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of students' attrition. 2nd Ed.* Chicago: The University of Chicago Press.

Titus, M. A. (2007). Detecting selection bias using propensity score matching and estimating treatment effects: An application to the private returns to a Master's degree. *Research in Higher Education, 48*(4), 487-521.

Tornatzky, L. G., Cutler, R., & Lee, J. (2002). *College knowledge.* Claremont, CA: Tomas Rivera policy institute and SallieMae fund.

Trent, W. T., Lee, H. S., & Owens-Nicholson, D. (2006). Perceptions of financial aid among students of color: Examining the roles(s) of self-concept, locus of control, and expectations. *American Behavioral Scientist, 49*(12), 1739-1759.

Wei, C., Berkner, L., He, S., Lew, S., Cominole, M., & Siegel, P. (2009). 2007-08 national postsecondary student aid study. Institute of Educational Sciences (IES). Retrieved from http://nces.ed.gov/pubs2009/2009166.pdf

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Springer.