
# The Academic Consequences of Employment for Students Enrolled in Community College

Mina Dadgar

June 2012

**CCRC Working Paper No. 46**

*Address correspondence to:*

Mina Dadgar
Research Associate
Community College Research Center
Teachers College, Columbia University
525 West 120th Street
New York, NY 10027
212-678-3091
Email: dadgarm@gmail.com

The author is grateful to Judith Scott-Clayton, Thomas Bailey, Madeline Weiss, and Davis Jenkins of the Community College Research Center for their input and comments on earlier drafts of this paper and to David Prince, Tina Bloomer, and Carmen Stewart of the Washington State Board of Community and Technical Colleges for provision of data and their expertise. Wendy Schwartz is credited with thorough and thoughtful editing. This material is based upon work supported by the Association for Institutional Research, the National Center for Education Statistics, the National Science Foundation, and the National Postsecondary Education Cooperative under Association for Institutional Research Grant Number DG 11-15, as well as by the Bill & Melinda Gates Foundation. Any opinions, findings, conclusions, and recommendations expressed in this material are those of the author and do not necessarily reflect the views of the Association for Institutional Research, the National Center for Education Statistics, the National Science Foundation, or the National Postsecondary Education Cooperative.

## Abstract

College students are increasingly combining studying with paid employment, and community college students tend to work even longer hours compared with students at four-year colleges. Yet, there is little evidence on the academic consequences of community college students' term-time employment. Using a rare administrative dataset from Washington State that combines students' quarterly transcript records with earning records from the state Unemployment Insurance system, this study relies on two causal strategies: first, an individual fixed effects strategy that takes advantage of the quarterly nature of the data to control for unobserved and time-invariant differences among students, and second, an instrumental variable–difference-in-differences framework that takes advantage of the fact that there is an exogenous supply of retail jobs during the winter holidays. The study compares academic outcomes in the fall and winter quarters for students who were more likely to work in retail and those less likely to work in retail based on pre-enrollment association with retail jobs. The findings reject the possibility of large negative effects for small increases in employment for community college students.

## Table of Contents

## 1. Introduction

Community college students often work long hours in paid employment, especially when compared with their counterparts at four-year colleges. For example, according to a report from the National Center for Education Statistics (NCES), in 2007, about 40 percent of full-time community college students worked 20 hours or more per week, compared with 20 percent of students at four-year colleges (Planty et al., 2009). Furthermore, interviews with students who drop out of college reveal that an inability to balance work and school may play an important role in the decision to leave college. According to a recent, nationally representative interview survey of 614 adults, students who left college identified having to work long hours as the main challenge to staying enrolled (Johnson & Rochkind, 2009). And the authors of a report, *Work Less, Study More, and Succeed* (Orozco & Cauthen, 2009), published by the non-partisan research and advocacy group, DEMOS, concluded, based on qualitative and descriptive research, that the main cause of high dropout rates among community college students is term-time employment, that is, working in paid employment during the course of a semester or quarter. They further asserted that providing more financial aid to low-income students is the key to improving college graduation rates.

Despite the prevalence and intensity of employment among community college students, the low graduation rates of these students, and the potentially important policy implications, there is limited rigorous empirical research on the academic consequences of student employment. Using an administrative dataset from Washington State that combines students' quarterly transcript records with earning records from the state Unemployment Insurance system, the study reported on here provides one of the first quasi-experimental estimates of the academic consequences of community college students' term-time employment.

### 1.1 Theoretical Background

Education theory and economic theory provide useful frameworks for studying the consequences of student employment. Tinto's (1993) social integration model hypothesizes that a few hours of on-campus work can help integrate students into campus life and increase retention, whereas long hours of work, especially off-campus work, can

have the opposite effect, not only because it limits the available time for students to study but also because it limits opportunities for interaction with other students and faculty. Human capital theory, as put forward by Becker (1962), suggests that it may optimal for individuals to work only after their education has been completed. The reasoning behind this view is that education is considered an investment that increases human capital, and therefore in the absence of credit constraints (whereby students can borrow money to cover the costs of attending college), postponing work until after graduation can allow individuals to fully reap the benefits of their investment.

Even in the absence of credit constraints, however, Ben-Porath (1967) proposed that it may be optimal to combine schooling with employment if the human capital production function is concave. In other words, due to diminishing marginal returns, as time spent on a given task such as studying increases, the benefits of additional time spent on that task decreases. In the presence of such diminishing marginal returns, it could be expected that the optimal level of accumulation of human capital includes a combination of school and work. This expectation is consistent with empirical findings on high school students that suggest there are positive impacts on future earnings from working while in school despite having a negative effect on grades (Light, 2001; Ruhm, 1995). The same pattern may be true for college student employment. In either case, increasing work hours could reduce the human capital gained by students through studying, but could also increase the human capital attained through working. If there were a range of work intensity in which the amount of human capital gained through working exceeds the loss of human capital from a reduction in study time, then increasing the hours worked within this range would increase students' total human capital and thus their post-high school or post-college earnings. However, increasing hours worked *beyond* this range would likely reduce total human capital and post-college earnings. An extreme case would be students who reduce their hours spent on studying so much that they are forced to drop out of high school or college. In this case, the reduction in their human capital from studying reduces the *total* human capital accumulated and thus reduces post-exit earnings.

Scott-Clayton (2012) has laid out various mechanisms for accumulating human capital through employment during college enrollment. She suggests, for example, that

work experience in even relatively low-skill jobs could help students develop soft skills, build career networks, secure references, and/or acquire information that enables better job matches later in life. Another benefit of working could be the acquisition of informal human capital in terms of "portfolio diversification" in the presence of uncertainty about necessary skills in the job market. Finally, having a job allows students to pay for the tuition costs of enrolling in more courses. For community college students, whose average dropout rates are very high, it may be reasonable to remain at an existing job and thereby minimize the risk of having to find a new job and the costs associated with a job search should they leave college before earning a credential. In fact, in the sample of community college students in the state of Washington used for the study reported here, 77 percent of the students who worked during the first quarter of enrollment worked for the same employer that they worked for prior to college enrollment.

Hypothetically, it is possible that working while in college not only helps students with employment after leaving college but even helps them perform better academically. Some types of jobs, such as those that are low intensity and on campus, may help integrate students into campus life, as Tinto (1993) has suggested. Certain types of employment may also give students motivation, discipline, and structure, and help them to study more effectively. Further, it is possible that some jobs can provide an opportunity for students to interact with educated adults who can serve as mentors or role models, inspiring the students and helping them navigate college. Thus, theoretically, the intensity and type of employment can determine whether a term-time job has positive or negative effects on academic and labor market outcomes. *Understanding the Working College Student* (Perna, 2010) includes multiple essays by various authors based on this theory about the intensity and type of employment, and it features interviews with students about their roles as college students and employees. It concludes that work has both benefits and costs to students' educational experiences and outcomes. The book argues that, on the one hand, working can benefit students by increasing their engagement with effective educational practices, and it may be associated with higher post-college earnings. On the other hand, it cautions that, particularly for community college students, working may limit students' integration into academic life or their time to complete class assignments and could therefore harm students' academic achievement.

## 1.2 The Consequences of Student Employment: A Review of the Empirical Literature

The empirical literature on the academic consequences of student employment is mostly descriptive. It generally finds a positive association for working a few hours on campus but a negative association for working many hours off campus (Dundes & Marx, 2007; Gleason, 1993; Orszag, Orszag, & Whitmore, 2001; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1998). A review of the descriptive literature by Riggert, Boyle, Petrosko, Ashe, and Parkins (2006) concluded that there is still much diversity and contradiction in the findings of the studies on student employment, which may be partly attributed to the differences in methodology and outcomes reported. In some descriptive studies, such as Pascarella et al.'s (1998), the authors controlled for some preexisting student characteristics including students' pre-college test scores; however, even in carefully controlled studies, it is likely that unobserved preexisting differences among students are driving the differences in outcomes.

A handful of quasi-experimental studies have attempted to account for the preexisting differences among students by using exogenous variation for college students' work intensity. With the exception of one particularly rigorous study by Stinebrickner and Stinebrickner (2003), the quasi-experimental studies have generally found small negative effects on academic performance for college students' employment (Desimone, 2008; Kalenkoski & Pabilonia, 2008; Scott-Clayton, 2011).[1]

The most rigorous evidence to date on the academic consequences of college students' employment is from a study by Stinebrickner and Stinebrickner (2003), which found large negative effects of employment on first semester GPA. The authors used data from 1,200 students at Berea College in Kentucky. All Berea students were required to work at least 10 hours per week and were randomly assigned to jobs during their first semester. Some jobs offered work beyond the required hours while others do not, which allowed the authors to use the initial job assignment as an instrument for hours worked. They found a large and negative effect for an increase in hours worked on first semester GPA, which is several times larger than the effects found by the other quasi-experimental

[1] Kalenkoski and Pabilonia (2008) tested for a possible non-linear effect of work intensity by including a quadratic term in the equation, but did not find the coefficient to be significant.

studies on college students' employment. According to the authors, a one-hour exogenous increase in hours worked per week reduced GPA by 0.16 points. The main potential limitation of the Stinebrickner and Stinebrickner study is that the sample was based on students attending Berea College, which is very different from most U.S. institutions in that it is a small college with a distinctive mission and culture; in consequence, the results may not be generalizable to students attending other four-year colleges or community colleges.

Two studies (Kalenkoski & Pabilonia, 2008; Desimone, 2008) used national data and instrumental variables and found small negative effects of employment on college students' academic performance. Kalenkoski and Pabilonia (2008) used the nationally representative NLS-97 sample and constructed an instrument for predicting employment intensity that combined the net price of schooling, parental transfers, county unemployment, the availability of a state work-study program, and the state minimum wage. Desimone (2008) used a sample based on the College Alcohol Study that included several four-year institutions but no two-year institutions. He used fathers' education conditional on mothers' education and religion as instruments to predict hours worked. Kalenkoski and Pabilonia found that a one-hour-per-week increase in employment reduced GPA by 0.022 points for students attending a two-year college and 0.017 points for students attending a four-year college; Desimone found that an extra hour of work reduced GPA by 0.011 points for four-year college students.

The studies by Desimone (2008) and Kalenkoski and Pabilonia (2008) relied on samples that were much more representative than the sample studied by Stinebrickner and Stinebrickner (2003), but they may have limited internal validity. For example, parental transfers and college costs may be invalid instruments because parents who invest more in their children's education are likely to have children with greater college achievement regardless of the students' employment decisions. Similarly, net college cost may be related to college quality, which may affect students' GPAs. Parent's religion and father's education may also be related to children's motivation or study habits, which can affect college achievement.

Scott-Clayton (2011) examined the effect of a specific type of college employment, the federal work-study program, on students' academic outcomes, including

first-year GPA and credit attainment, as well as dropout and degree attainment. She used administrative data from two- and four-year colleges in West Virginia and a difference-in-differences identification strategy to compare students who were and were not eligible for federal work-study at schools that received high per-pupil allocation of work-study funding with schools allocated lower amounts. For first-year academic outcomes, including first-year GPA and credits earned, she found that the effects ranged from small and negative to potentially positive, while for longer term outcomes, including dropout and four-year degree completion, the effects seemed to be negative and large in magnitude. She found that a one-hour increase in federal work-study employment decreased GPA by 0.02 to 0.05 points. However, she found positive point estimates for the effect of federal work-study employment on credits earned, suggesting that it is likely that federal work study increased first-year credit accumulation, despite the other possibly negative effects. Scott-Clayton also found that the results differed by students' gender and how recently they had graduated from high school.

A priori, it would be expected that if there are differences in the academic effects of on-campus and off-campus jobs, then on-campus jobs such as those supported by federal work-study would have more positive (or less negative) effects compared with other types of student employment. For example, as Tinto (1993) has suggested, an on-campus job may have positive effects in terms of enhancing social integration. It is also possible that on-campus jobs would be more supportive of students' academic activities and have more flexible hours or more "down time" when students can study. If these assumptions are true, it would be expected that the effects for off-campus employment would be more negative, compared with the estimates provided by Scott-Clayton (2011) on the effects of federal work-study jobs.

In addition to the literature on college students' employment, there is a rigorous study on the academic consequences of high school students' employment that may have implications for college students' employment. Tyler (2003) used exogenous variation in child labor laws across states to instrument for high school students' work intensity and found large negative effects of high school students' employment on test scores. Using the National Education Longitudinal Study of 1988 (NELS:88) sample, he estimated that a 10-hour-per-week decrease in high school students' work intensity would lead to a 0.20

standard deviation increase in math scores. While his study provides compelling evidence for the negative effects of employment for high school students, it is likely that the effects of employment would be different for college students who may be better at managing their time across various activities and who may have the opportunity to benefit from any positive peer and mentorship effects of employment.

Overall, the evidence on the academic consequences of college students' employment is limited and inconclusive. Desimone (2008), Kalenkoski and Pabilonia (2008), and Scott-Clayton (2011) found small and negative effects of employment on GPA, while Stinebrickner and Stinebrickner (2003) found much larger negative effects. It is not clear whether the differences between Stinebrickner and Stinebrickner's findings and those of other studies results from the fact that the other studies contain bias or that the results from the Berea College study are not generalizable to students attending other institutions. Furthermore, while most studies only consider GPA as an outcome, Scott-Clayton found that the employment offered by the work-study program may have large negative effects when considering the likelihood of dropout. At the same time, she found possible positive effects of work-study employment on first-year credit accumulation, which could be caused by the positive effects of employment in reducing credit constraints and helping students pay tuition.

### 1.3 Contributions of the Current Study

The current study contributes to the emerging research on the academic consequences of college students' employment by providing one of the first quasi-experimental estimates of the academic consequences of community college students' term-time employment. It takes advantage of a rich administrative dataset from Washington State that combines transcript data with quarterly employment information from the state's Unemployment Insurance (UI) records. Washington State is one of the few states in the nation where UI data contain quarterly hours worked (and not just earnings). The outcomes used in that dataset for this study are quarterly GPA and credits earned. Two different identification strategies were employed in the study. The first considered within-student variation in hours worked to predict the effect of a change in hours worked on GPA and credits earned across quarters, using an individual fixed

effects identification framework. The second strategy took advantage of the fact that students who worked in retail jobs worked much longer hours during the fall quarter, which included the holiday shopping season. The study compared fall GPA with winter GPA, and credits earned for students who were likely to work in retail with those who were not, based on their pre-college association with retail jobs.

Findings on GPA suggest small negative effects and are strikingly similar to the findings of Kalenkoski and Pabilonia (2008), the only other study in the literature that examined the consequences of employment for community college students separately.

## 2. The Study Data: Student and Employment Characteristics

This study used student unit record data from the Washington State Board of Community and Technical Colleges (WSBCTC) matched with employment data from Unemployment Insurance records.[2] The student unit record data included transcripts with quarterly information on each student's courses (including grades), any credentials awarded, and student demographic characteristics (including a proxy for SES created by matching student addresses to Census tract data). The Unemployment Insurance (UI) data included quarterly information on hourly wage rates, earnings, and industry of employment.

### 2.1 The Study Sample

The study sample included all first-time college students who enrolled at a Washington community or technical college in the 2001–2002 academic year, had a valid Social Security number (and thus could possibly be matched with employment records), were not international, and were not enrolled through employer contracts (were at least partially "state funded"). The sample was further limited to students whose declared intent was to transfer to a four-year institution, obtain an academic credential, or participate in a workforce-related program. These criteria limited the sample to 41,353

[2] Unemployment Insurance data included records from Washington State and the nearby states of Alaska, Idaho, Montana, and Oregon, as well as federal, military, and postal service records. Wages and hours worked from some types of employment (such as self-employment and undocumented employment) may not be represented in these data.

students, which was the baseline sample used for the descriptive analysis. For the analysis using individual fixed effects, the sample was further limited to students who began in the fall quarter and who attempted some credits during each of the first three quarters of enrollment ($n$ = 10,313); for the difference-in-differences analysis, the sample was limited to students who began in the fall quarter and who attempted credits for at least two quarters ($n$ = 12,588). As will be discussed in the Methodology section below, these limitations were necessary to ensure that each analysis obtained unbiased estimates.

Community colleges enroll many non-traditional students who may be older or may have workforce intent, and the effect of work intensity may be very different for this group of non-traditional students than for traditional students, who are often the population of interest for policymakers. Therefore, the study also estimates the results for a subgroup of "traditional" students. The study identified the characteristics of "traditional" students as the following: students who were 20 years old or younger at the time of initial enrollment in college and who declared an intention to pursue an academic (non-vocational) credential or to transfer to a four-year college. The study tested whether the overall results hold for this sub-sample.

### 2.2 A Description of Community College Students' Term-Time Employment

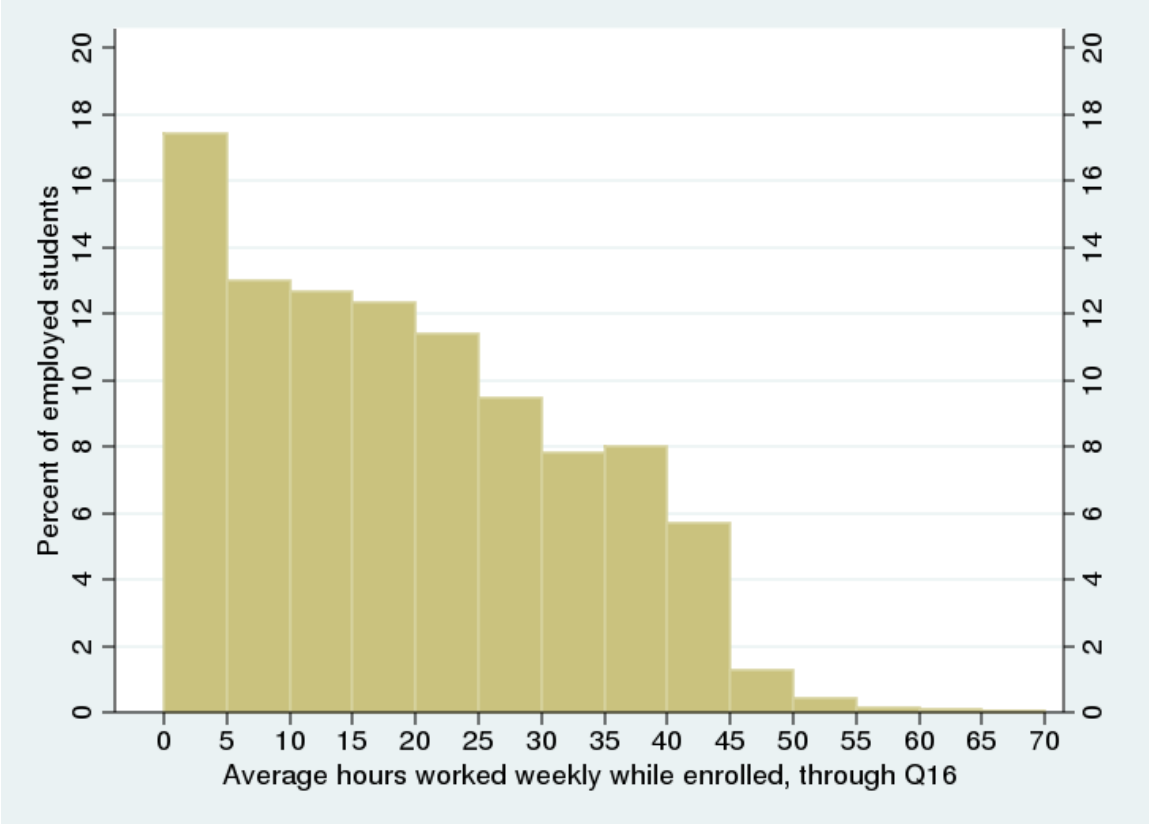
The remainder of this section takes advantage of the detailed nature of the administrative data to describe community college students' employment while enrolled in college. Because previous studies were often based on national survey data, there is limited information about the characteristics of students' work. However, the administrative data from Washington State provided the distribution of hours worked, the type of jobs held by community college students during and after exiting college, and how work intensity while enrolled differed by students' demographic characteristics.

Figure 1 shows the distribution of hours worked weekly during the quarters of enrollment. Approximately 73 percent of the students in the full sample worked some hours while enrolled in college, according to Washington State data.[3] Most students worked part time while enrolled. About 45 percent of the working students in the sample

[3] This number is an underestimation of actual employment to the extent that it may omit self-employed and "under the table" work as well as work for employers outside Washington and its neighboring states.

worked for at least 20 hours per week; 16 percent worked full time, defined as working at least 35 hours per week.

**Figure 1**
**Average Hours Worked Weekly While Enrolled, Employed Students Only**

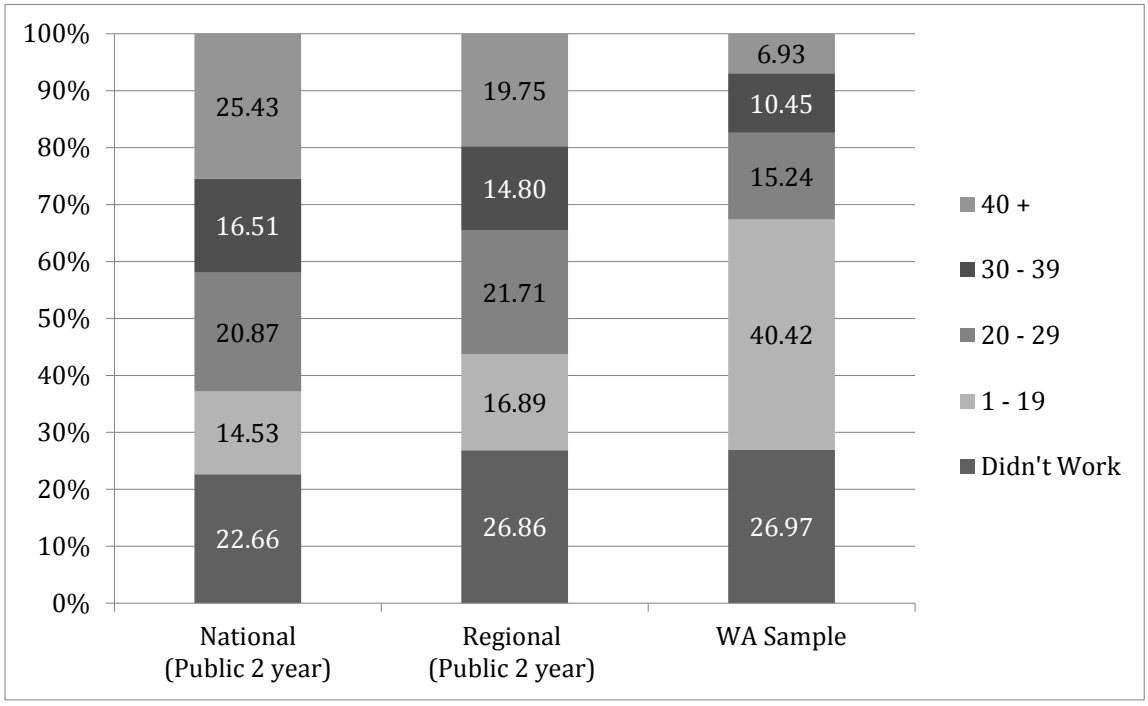



*Note.* The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, who were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.

Figure 2 compares the distribution of hours worked from the Washington State administrative data with student self-reports of hours worked obtained by the National Center for Educational Statistics (NCES) for the 2003–2004 beginning postsecondary students attending public two-year colleges nationally and for the Western region, which includes Washington State (NCES data are not reported by state). The student self-reports from the Western region and administrative data from Washington State were almost identical in finding that about 27 percent of students did not work. However, a

comparison of self-reports and administrative reports of hours worked showed that self-reports of hours worked were much higher than the UI records in Washington. For example, 25 percent of the two-year public college students from the national sample and 20 percent from the Western regional sample claimed to be working 40 hours per week or more, while, according to the UI data, only 7 percent of the students from Washington State worked 40 hours or more per week while they were enrolled in a community or technical college in the state system.

**Figure 2**
**Comparison of Self-Reports Compared With Administrative Records of Hours Worked**




*Note*. National refers to the national sample of students attending a public two-year college during 2003–2004, obtained from the NCES' sample of beginning postsecondary students. Regional refers to the NCES sample for the Western states, which includes Washington State (NCES data are not available by state). WA sample is based on administrative data obtained from Washington State UI records. The WA analysis sample includes the additional restrictions. Adapted from author's calculations using National Center for Education Statistics, Beginning Postsecondary Sample, and WSBCTS matched transcript and Washington State UI data.

There may be several reasons for the discrepancy between the self-reports and administrative data. It may be the case that students tended to overestimate hours worked. It is also possible that the UI data underestimated hours worked by excluding too many categories of employment. However, this is unlikely because the UI data and the self-

reports were very similar with respect to the percentage of students who reported being employed; the two datasets diverged only with respect to hours worked. Another possible explanation for the discrepancy is that students in Washington State were different from students in other U.S. states, or even from students in other states in the Western region. In particular, while in the NCES data 30 percent to 36 percent of the national and regional samples included minority students (Black or Hispanic), only 11 percent of the students in the Washington State data belonged to these minority groups. At the same time, the differences between the Washington sample and the sample from the regional public two-year colleges seemed too big to be explained simply by sample differences or differences in the coverage of employment and suggest significant reporting bias.

Another important aspect of community college students' employment is the type of jobs held by students. While various hypotheses about the possible benefits or harms of student employment are based on assumptions about the kinds of jobs that students hold, it has been impossible in the past to provide information about the industries in which community college students are generally employed without access to administrative data.

Table 1 presents the breakdown of students' industry of employment during the first quarter of enrollment as well as 26 quarters (five years) after initial enrollment. The first column indicates that during the first quarter of enrollment the most common industries where the students were employed were "retail" and "accommodation and food services"; they jointly hired 42 percent of all working students. "Health care and social assistance" is the third most common industry. By the 26$^{th}$ quarter after initial enrollment, most students had exited college, yet a substantial number of students still worked in the retail trade and accommodation and food services industries. While the proportion that continued to work in these industries was halved compared with the first quarter of enrollment, the industries still constituted the most common industries of employment, second only to "health care and social assistance." More importantly for this analysis, the administrative data on students' industry of employment during the first quarter suggests that the most common jobs that community college students hold are not likely to contribute to the students' development of skills or college achievement.

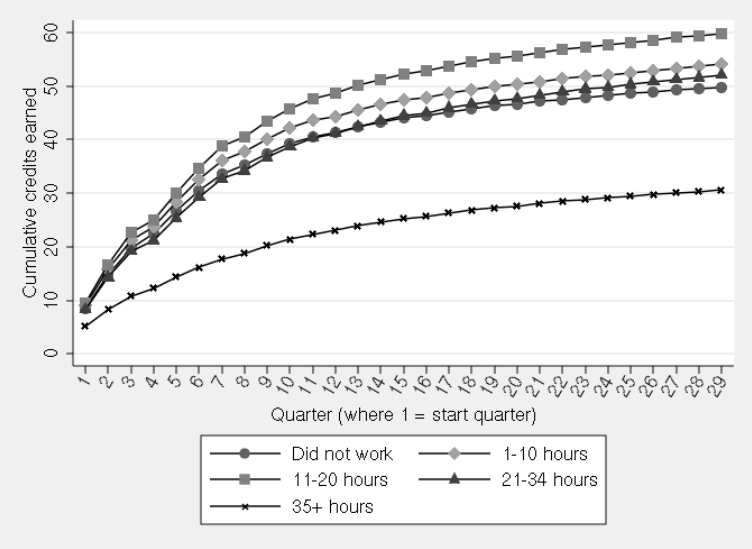
**Table 1**
**Industry of Employment in Quarter 1 and Quarter 26, Employed Students Only**

| Industry of Employment | Percent of Employed Students, Quarter 1 | Percent of Employed Students, Quarter 26 |
|---|---|---|
| Retail Trade | 23.40% | 14.20% |
| Accommodation and Food Services | 18.50% | 8.70% |
| Healthcare and Social Assistance | 10.10% | 14.70% |
| Construction | 8.00% | 10.40% |
| Manufacturing | 7.10% | 9.30% |
| Administrative and Support and Waste Management and Remediation Services | 5.10% | 6.20% |
| Other Services | 4.90% | 4.30% |
| Public Administration | 2.90% | 4.80% |
| Educational Services | 2.90% | 4.90% |
| Arts, Entertainment, and Recreation | 2.60% | 2.20% |
| Wholesale Trade | 2.50% | 4.00% |
| Professional Scientific and Technical Services | 2.30% | 4.10% |
| Real Estate Rental and Leasing | 2.20% | 1.90% |
| Transportation and Warehousing | 2.20% | 3.20% |
| Finance and Insurance | 2.00% | 4.00% |
| Information | 1.70% | 2.20% |
| Agriculture, Forestry, Fishing and Hunting | 1.40% | 1.10% |

*Note.* The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.

Figure 3 shows how credit accumulation over time varies by students' work intensity during the first semester. Similar to any other descriptive associations between students' intensity of employment and academic outcomes, this information should not be interpreted causally. Rather, these associations reveal how failing to account for differences among students could lead to the same incorrect conclusions that were found in other descriptive studies. As is suggested by Figure 3, students who worked moderately while enrolled, between 11 to 20 hours per week, had the highest credit accumulation over time, whereas students who worked 35 hours per week or more had the worst outcomes for credit accumulation over time.

**Figure 3**
**Cumulative Credits Earned by Work Intensity While Enrolled**




*Note.* The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.

Table 2, which shows students' demographic characteristics by work intensity, provides evidence to support that students who worked moderate hours (11–20 per week) were positively selected, and students who worked full time (35 hours per week or more) were negatively selected. In particular, students who worked moderate hours were much younger and less likely to be from a low-SES family compared with students who worked full time. Thus, it is very possible that the previous findings in the descriptive literature that suggested that working moderately improved student outcomes were at least partly driven by the positive preexisting characteristics of these students, while the reverse may be true for students who worked long hours. It is therefore important to separate the effects of employment from the effects of preexisting student characteristics that jointly determine employment intensity and academic achievement.

**Table 2**
**Student Characteristics by Work Intensity**

| | Hours Worked | | | | |
|---|---|---|---|---|---|
| **Student Characteristic** | **No Work** | **1 to 10** | **11 to 20** | **21 to 34** | **35+** |
| Male | 51% | 51% | 46% | 45% | 58% |
| Low SES | 46% | 41% | 37% | 41% | 44% |
| No High school Diploma | 9% | 7% | 5% | 4% | 6% |
| GED only | 7% | 5% | 3% | 4% | 5% |
| African American | 6% | 6% | 4% | 4% | 5% |
| Latino | 8% | 9% | 8% | 9% | 12% |
| Average Age | 27 | 23 | 22 | 23 | 28 |

*Note*. The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, were at least partially state funded, had a valid Social security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.

## 3. Methodology

The simplest way to estimate the effect of hours worked on academic or labor market outcomes would be to compare the outcomes of students who worked at different levels of intensity, controlling for observed differences among them. The problem with such an approach is that there may be unobserved preexisting differences among students who work at different intensities. For example, more motivated students may be more likely to work longer hours while in school and also be less likely to have positive academic outcomes. To overcome the bias created by the endogeneity of work intensity, this study made use of two different identification strategies. First, it used an individual fixed effects identification strategy that relied on the within-student-variation of hours worked across quarters to identify the effect of work intensity on academic outcomes. Second, it used an instrumental variable–difference-in-differences strategy that compared the fall and winter academic outcomes of students who worked in retail as compared with other industries, taking advantage of the fact that the fall quarter coincided with the holiday shopping season and created an exogenous supply of work for students that work in the retail industry.

Two outcomes for which quarterly data are available were considered: GPA and credits earned. Although previous quasi-experimental literature has focused exclusively

on the effect of employment on college students' GPA, using GPA as the only outcome may underestimate the effects of employment, because students may respond to an increase in work opportunities by taking fewer courses while maintaining their GPA. This is particularly a problem in a community college sample, where students have great flexibility in the number of classes they take.

### 3.1 Individual Fixed Effect Identification Strategy

In this framework, the study compared quarterly GPA and credits earned across quarters for the same student. The individual fixed effect dummy variables controlled for all time-invariant student characteristics, while dummy variables for each quarter controlled for any effect of a specific quarter that is shared among all students. In the following model (Equation 1), $\mathrm{GPA_{it}}$ is the grade point average of student *i* at quarter *t*; $\rho_i$ indicates a dummy variable for each student, and $\tau_t$ is a dummy variable for each quarter; $\varepsilon_{it}$ is the error term. $H_{it}^2$ is included in order to allow for a possible non-linear effect of work intensity.

Equation 1: Individual Fixed Effects Model

$$GPA_{it} = \beta_0 H_{it} + \theta H_{it}^2 + \rho_i + \tau_t + \varepsilon_{it}$$

Because the outcomes for the same student across different quarters were compared, it was possible to control for all observed and unobserved student characteristics (such as ability or motivation) that did not change over time. By including quarter fixed effects, it was also possible to control for the shared effects of a specific quarter among students (for example, the effect of a quarter that was a student's first quarter). However, the main shortcoming of this strategy is that it failed to control for student-specific unobserved characteristics or conditions that may have changed across the first three quarters. This failure could bias the results if students changed their work intensity across quarters for reasons that may jointly determine their academic outcomes. For example, students may have worked less and had worse outcomes during the quarters where they anticipated having difficult coursework, or in a quarter when they became ill, had children, or had other life changes. It seems that most conditions that would lead students to work less were also likely to negatively affect their outcomes. As a result it

could be expected that any resulting bias would introduce a more positive relationship between work intensity, quarterly credits earned, and GPA than would exist in the absence of any bias.

In this model, for a given student, GPA during a quarter in which a student worked longer hours was compared with a quarter where the same student worked fewer hours. The study compared student outcomes across the first three quarters, and therefore there was a need to limit the sample to students who attempted credits during all of the first three quarters.[4] Unfortunately, because of the high dropout rates among community college students, this restriction resulted in losing 45 percent of the general sample, and 32 percent of the traditional student sample. This exclusion may also have biased the results if most of the effect of working while enrolled was on dropping out of college before students made it to their third quarter.[5]

### 3.2 Instrumental Variable–Difference-in-Differences Identification Strategy

Because of the potential bias in using individual fixed effects, the study used a second identification strategy that took advantage of the exogenous increase in the supply of retail jobs during the holiday shopping months of November and December and the fact that over 19 percent of all students worked in retail jobs while they were enrolled. One possible identification strategy would be to simply use the fall quarter, which includes November and December, as an instrument to predict the increase in hours worked during that quarter. However, a potential problem with such a strategy is that any systematic differences in relative performance of students in the fall quarter that was not attributable to an increase in hours worked would lead to biased estimates. As a remedy, the study combined the instrumental variable (IV) estimate with a difference-in-differences (DID) estimation, taking advantage of the fact that an increase in hours worked was expected for students who were likely to be employed in retail jobs; thus, other students formed a natural control group for the analysis. To implement this strategy,

[4] When GPA was used as an outcome, the sample was limited to students who had non-missing GPA during the first three quarters, which included those who had not only attempted but had also completed some credits.

[5] However, if full-time students were only attending college to take a few classes to update their job skills, then the exclusion would lead to a more homogenous sample. Unfortunately, it was not possible to distinguish between dropouts who were "affected" by high-intensity work and those who dropped out because of differences in their goals during the first three quarters.

the study identified students who were likely to work in retail while attending college based on pre-enrollment employment in retail jobs. Fortunately, there were data on students' industry of employment for one year prior to initial college enrollment. Of all students, 21 percent worked in retail jobs the quarter before enrollment, and the majority of them (78 percent) continued to work in retail jobs after they enrolled in college (during the fall quarter). As a result, it was possible to compare the academic outcomes (GPA and credits earned) from the fall quarter and the winter quarter for students who were more and less likely, respectively, to work in retail based on their pre-college association with retail jobs. As illustrated in the reduced form equation below, the DID strategy compared the fall and winter academic performance (as measured by GPA and credits earned) of students who were likely to work in retail compared with all other students.

Equation 2: Reduced Form

$$y_{it} = \alpha + \beta(Retail \times Fall) + \gamma Fall + \delta Retail + \theta X_i + \varepsilon_{it}$$

In this equation, *Retail* × *Fall* is an interaction term that is 1 for students who worked in retail the quarter prior to college entry during the fall quarter. *Retail* and *Fall* were the main effects of pre-college employment in the retail industry and the fall quarter; and $X_i$ is a vector of covariates including age, age squared, race, SES, sex, prior education, family status, an indicator for missing covariates, as well as an indicator for whether the student was employed in the summer prior to college entry). In addition to reporting the reduced form, the study also estimated the effect of hours worked (rather than the effect of being a retail-associated student during the fall quarter) using the following two-stage model.

Equation 3: First Stage

$$H_{it} = \alpha + \pi(Retail \times Fall) + \gamma Fall + \delta Retail + \theta X_i + \varepsilon_{it}$$

Equation 4: Second Stage

$$y_{it} = \Omega + \beta \widehat{H}_{it} + \vartheta Fall + \sigma Retail + \varphi X_i + \varepsilon_{it}$$

The identifying assumption is that (1) the interaction between the fall quarter and the association with retail jobs is correlated with hours worked, and (2) the interaction between the fall quarter and retail association only affects the academic outcomes through its effect on hours worked.

The first assumption was testable. Table 4, discussed in the Results section below, shows the "first stage" results and finds that after controlling for the fall quarter, for whether or not the student worked in retail prior to enrollment, and for a host of student background characteristics (including age, age squared, race, SES, sex, prior education, family status, an indicator for missing covariates, as well as an indicator for whether the student was employed in the summer prior to college entry), there is a significant relationship between the interaction term and hours worked. Being associated with retail in the fall quarter leads to 1.36 more hours worked per week, which is an 11 percent increase in time spent working. The second assumption is not directly testable; however, in this context it is very plausible to hold because we do not expect there to be a mechanism outside of an increase in hours worked to affect the relative difference in performance of retail-associated students during the fall quarter versus the winter quarter.

## 4. Results

Table 3 shows the main estimation results using the individual fixed effects identification strategy, and Table 4 includes results from the difference-in-differences estimates. When considering the effects of hours worked on GPA, both identification strategies found small negative effects of an increase in hours worked on GPA. The results for the effect of work intensity on credits earned are more ambiguous, and given that the previous quasi-experimental literature has not examined the effects of student employment on credits earned, it is impossible to put these estimates into context.

### 4.1 Estimates of the Effect of Work Intensity from the Individual Fixed Effects Identification

According to the results using individual fixed effects identification, a one-hour-per-week increase in employment reduced quarterly GPA by 0.0046 points. Given that

the effects are linear, this finding means that a student who went from not working to working 10 hours per week could expect a decrease of only 0.046 points in his or her GPA. As Table 3 shows, the individual fixed effects model also shows a small negative, but statistically significant, effect of an increase in employment on credits earned. The point estimates from this model suggest that a one-hour increase in employment per week reduced credits earned by 0.065 credits. This equates to a loss of 0.65 credits—slightly more than half a credit—for working an additional 10 hours of work per week. Using this model, we can only estimate the effect of increasing work by up to about 10 hours per week, because adequate within-student-variation in hours worked for more than 10 hours per week is not available. Only 17 percent of students increased work hours by more than 10 hours per week; I do not speculate on the effects of increases in work intensities that exceed the 1-10-hour-per-week range. It should also be noted that within this range linear increases in hours worked were found, which is indicated by the fact that the coefficient on the squared term of hours worked approximates zero.

### 4.2 Estimates of Effect of Work Intensity Using the IV–DID Model

Table 4 shows the results from the IV–DID model using the main sample and includes the first stage and the instrumental variable (second stage) results. As discussed earlier, the first stage estimates show how well the interaction of association with retail work and the fall quarter together predicted increases in hours worked over and above either the effect of retail association or the fall quarter. The top panel in Table 4 shows the "first stage" estimates of the effect of being a retail-associated student (based on pre-college employment) during the fall quarter (October, November, and December, which includes the holiday shopping season). Being a retail-associated student during the fall quarter significantly increased hours worked, after controlling for retail association and the quarter of employment. The second model adds in students' demographic characteristics and an indicator for whether or not the student was employed the quarter before enrollment). As mentioned earlier, the first stage indicates an increase of 1.36 hours per week of work or 11 percentage points and is estimated with small standard errors.

**Table 3**

**Individual Fixed Effect Estimates of the Effect Hours Worked While Enrolled on Credits Earned and GPA**

| **Outcomes** | **Dependent Variable: Quarterly Credits Earned** | | | **Dependent Variable: Quarterly GPA** | | |
|---|---|---|---|---|---|---|
| Weekly Hours Worked | 0.0150** | −0.0281*** | −0.0650*** | −0.0105*** | −0.00538*** | −0.00465*** |
| | (0.00655) | (0.00664) | (0.0103) | (0.00100) | (0.00101) | (0.00167) |
| Weekly Hours Worked Squared | −0.00211*** | −0.000916*** | 0.000339 | 0.000268*** | 0.000118*** | 1.09e-05 |
| | (0.000171) | (0.000174) | (0.000246) | (2.66e-05) | (2.66e-05) | (3.98e-05) |
| Includes Covariates | | X | | | X | |
| Includes Individual Fixed Effects | | | X | | | X |
| Observations | 35,235 | 35,235 | 35,235 | 32,465 | 32,465 | 32,465 |
| R-squared | 0.030 | 0.063 | 0.688 | 0.020 | 0.072 | 0.679 |

*Note.* Covariates included age, age squared, race, SES, sex, prior education, family status, as well as an indicator for missing covariates. The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, who were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. For this table, the sample was limited to students who attempted some credits during the first three quarters of entry. For the GPA analysis, the sample was further limited to students who had non-missing GPA in all the three quarters. Mean quarterly credits earned for the sample was 11.9 (SD: 6.12); mean quarterly GPA is 2.87 (SD: 0.895874). Robust standard errors are in parenthesis. Observations are student-quarter. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.

*$p < .10$. **$p < .05$. ***$p < .01$.

## Table 4
## Difference-in-Differences Estimates of the Effect of Being a Retail-Associated Student During the Fall Quarter

| "First Stage" | Dependent Variable: Weekly Hours Worked | |
|---|---|---|
| Retail x Fall | 1.364*** | 1.364*** |
| | (0.398) | (0.389) |
| Includes Covariates | | **X** |
| Observations | 28,784 | 28,784 |
| R-squared | 0.045 | 0.229 |

| | Dependent Variable: Quarterly Credits | | | Dependent Variable: Quarterly GPA | | |
|---|---|---|---|---|---|---|
| **Outcomes** | **Reduced Form** | | **IV–DID** | **Reduced Form** | | **IV–DID** |
| Retail x Fall | 0.249 | 0.249 | | −0.0372 | −0.0373 | |
| | (0.183) | (0.182) | | (0.0301) | (0.0296) | |
| Weekly Hours Worked | | | 0.182 | | | −0.0286 |
| | | | (0.150) | | | (0.0242) |
| Includes Covariates | | X | X | | X | X |
| Observations | 28,784 | 28,784 | 28,784 | 25,880 | 25,880 | 25,880 |
| R-squared | 0.006 | 0.047 | | 0.012 | 0.059 | |

*Note.* In addition to key interaction term (Retail x Fall), all regressions include the main effects of association with a retail job and the fall quarter. Models with covariates also include age, age squared, race, SES, sex, prior education, family status, an indicator for missing covariates, as well as an indicator for whether the student was employed in the summer prior to college entry. The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, who were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. For this table, the sample was limited to students who attempted some credits during the first two quarters of entry. For the GPA analysis, the sample was further limited to students who had non-missing GPA in all the three quarters. Robust standard errors are in parenthesis. Mean quarterly credits earned for the sample is 11.41 (SD: 6.31); mean quarterly GPA is 2.83 (SD: 0.94). Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.
*$p < .10$. **$p < .05$. ***$p < .01$.

The second stage, which is shown in the bottom panel of Table 4, is the effect of this exogenous increase in hours worked on GPA and credits earned. Although the second stage results are not significant for either GPA or for credits earned, the confidence intervals for the effects on GPA are small enough to reveal important information. The point estimates of −0.028 suggest that a one-hour-per-week increase in employment lowered GPA by 0.028 points. These findings are very similar to the point estimates found by Kalenkoski and Pabilonia (2008). The confidence interval from the DID estimates easily rejects the point estimates found by Stinebrickner and Stinebrickner (2003) in their Berea College sample.

By contrast, the confidence intervals on the effect of hours worked on credits earned using the IV–DID model results are large and do not allow for any useful conclusion about the effect size. The standard errors suggest that the effect could fall between −0.118 and 0.209 credits. Because of this large confidence interval and given that previous studies have not estimated the effects of working on credits earned, the DID model does not contribute to our understanding of the effects of term-time employment on earning credits.

### 4.3 Estimating the Effect of Work Intensity for "Traditional Students" Subgroup

The general sample includes a variety of community college students from different age groups and includes students who have academic and vocational intent. It could be argued that older students and students whose intent is to pursue a vocational degree may benefit more or be harmed less from working while studying when compared with traditional students who are younger and who intend to earn an academic credential or transfer to a four-year college. In order to test whether or not these results are robust for a more traditional group of students, the study estimated both the individual fixed effects model and the IV–DID model for a limited sample of students who were 20 years old or younger and declared an intent to earn an academic credential or transfer upon initial enrollment. Table 5 presents the individual fixed effects results for the sample of traditional students, and Table 6 presents the IV–DID results for the same sample.

**Table 5**
**Individual Fixed Effect Estimates of the Effect of Hours Worked for "Traditional Students"**

| Outcomes | Dependent Variable: Quarterly Credits Earned | | | Dependent Variable: Quarterly GPA | | |
|---|---|---|---|---|---|---|
| Weekly Hours Worked | 0.0120* | −0.0390*** | −0.0578*** | −0.0119*** | −0.00518*** | −0.00508*** |
| | (0.00704) | (0.00716) | (0.0113) | (0.00112) | (0.00112) | (0.00188) |
| Weekly Hours Worked Squared | −0.00207*** | −0.000697*** | 0.000359 | 0.000300*** | 0.000107*** | 6.54e-06 |
| | (0.000182) | (0.000186) | (0.000264) | (2.95e-05) | (2.94e-05) | (4.43e-05) |
| Includes Covariates | X | | | X | | |
| Includes Individual Fixed Effects | | X | | | X | |
| Observations | 27,204 | 27,204 | 27,204 | 25,078 | 25,078 | 25,078 |
| R-squared | 0.034 | 0.072 | 0.687 | 0.020 | 0.084 | 0.678 |

*Note.* The "Traditional Students" subgroup is limited to students who were 20 years or younger and indicated an intent to transfer to a four-year institution. Covariates included age, age squared, race, SES, sex, prior education, family status, as well as an indicator for missing covariates. The sample included all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, who were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. For this table, the sample was limited to students who attempted some credits during the first three quarters of entry. For the GPA analysis, the sample was further limited to students who had non-missing GPA in all the three quarters. Mean quarterly credits earned for the sample is 11.86 (SD: 5.64); mean quarterly GPA is 2.88 (SD: 0.88). Robust standard errors are in parenthesis; Observations are student-quarter. Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.
*$p$ < .10. **$p$ < .05. ***$p$ < .01.

## Table 6
## Difference-in-Differences Estimates of the Effect of Being a Retail-Associated Student During the Fall Quarter for "Traditional Students"

| "First Stage" | Dependent Variable: Weekly Hours Worked | |
|---|---|---|
| Retail x Fall | 1.595*** | 1.595*** |
| | (0.459) | (0.448) |
| Includes Covariates | | X |
| Observations | 16,086 | 16,086 |
| R-squared | 0.071 | 0.222 |

| | Dependent Variable: Quarterly Credits | | | Dependent Variable: Quarterly GPA | | |
|---|---|---|---|---|---|---|
| **Outcomes** | **Reduced Form** | | **IV–DID** | **Reduced Form** | | **IV–DID** |
| Retail x Fall | 0.0148 | 0.0148 | | −0.0392 | −0.0383 | |
| | (0.201) | (0.200) | | (0.0364) | (0.0360) | |
| Weekly Hours Worked | | | 0.182 | | | −0.0286 |
| | | | (0.150) | | | (0.0242) |
| Includes Covariates | | X | X | | X | X |
| Observations | 16,086 | 16,086 | 16,086 | 15,609 | 15,609 | 15,609 |
| R-squared | 0.009 | 0.016 | 0.012 | 0.010 | 0.029 | |

*Note*. In addition to key interaction term (Retail x Fall), all regressions include the main effects of association with a retail job, and the fall quarter. Models with covariates also include age, age squared, race, SES, sex, prior education, family status, an indicator for missing covariates, as well as an indicator for whether the student was employed in the summer prior to college entry. The sample includes all first-time freshmen who enrolled at a Washington State community or technical college in fall 2001, who were at least partially state funded, had a valid Social Security number, were not international, and indicated workforce intent or intent to transfer to a four-year institution. For this table, the sample was limited to students who attempted some credits during the first two quarters of entry. For the GPA analysis, the sample was further limited to students who had non-missing GPA in all the three quarters. Robust standard errors are in parentheses. Mean quarterly credits earned for the sample is 12.22 (SD: 5.22); mean quarterly GPA is 2.73 (SD: 0.92). Adapted from author's calculations using WSBCTC data and matched employment data from Unemployment Insurance records.
*$p$ < .10. **$p$ < .05. ***$p$ < .01.

As the tables show, the results from the limited sample are almost identical to the results from the general sample. The findings indicate that the results from the general sample are not driven by students who were older and had vocational intent, and that the results are similar for more "traditional" students.

The results from both models highlight the fact that small changes in hours worked (fewer than 10 hours) led to only small reductions in GPA. The fact that both models reject the large negative effects found by Stinebrickner and Stinebrickner (2003) indicates that the estimates for students at Berea College are not generalizable to community college students, at least those in Washington State. By contrast, when considering quarterly credits earned as the outcome, because of the large standard errors in the IV–DID model, it is impossible to make firm conclusions about the effect of increases in term-time employment on credit accumulation.

In comparing the rigor of the methodology in each model, while the estimates from the individual fixed effects model are more precise, the IV–DID model has much higher internal validity. The individual fixed effect model has several potential shortcomings that could bias the estimates. First, this model only includes students who enrolled in college for the first consecutive quarters, and thus, to the degree that increasing work resulted in a student's dropping or stopping out, the model does not capture negative effects. Second, most of the endogenous reasons that could cause students to work less—for example, changes in a student's personal situation, such as giving birth or health issues—would also negatively affect academic outcomes, and thus could cause an underestimation of the negative effects of working. Finally, students may have reduced employment during the quarters that they expected to have more difficult coursework, which might again cause an underestimation of the negative effects of work. In contrast, the study's DID estimates have greater internal validity and overcome all of the issues discussed above, but they are estimated less precisely. However, even with the larger confidence intervals, the IV–DID model still rejects the large and negative estimates of the magnitude suggested by Stinebrickner and Stinebrickner (2003), and thus it can be concluded that even according to these imprecise estimates, the large negative effects of term-time employment that were suggested by Stinebrickner and Stinebrickner are easily rejected for this sample.

## 5. Discussion and Conclusion

This study is one of the first to examine the causal link between community college students' employment while enrolled and academic outcomes. It took advantage of a rare administrative dataset from Washington State that combines transcript records of the students who initially enrolled in one of Washington's community and technical colleges during the 2001–2002 academic year with employment data from Washington State Unemployment Insurance records that includes quarterly hours worked. The study used an individual fixed effects model, as well as an instrumental variable–difference-in-differences identification strategy, to examine how term-time employment affects students' quarterly GPA and credit accumulation.

The findings on GPA suggest small negative effects, and specifically the IV–DID estimates are strikingly similar to the findings of Kalenkoski and Pabilonia (2008), the only other study in the literature that examines the consequences of employment for community college students in isolation from other college students. Unfortunately, there are no other studies that examine the effects of work intensity on first-semester credits earned for community college students; however, the results from this study's IV–DID model closely approximate the positive point estimates found by Scott-Clayton (2011). They suggest that moderate increases in hours worked (fewer than 10 hours per week) have very small negative effects on GPA but may increase credit accumulation by reducing credit constraints that may have prevented students from taking additional courses.

Like any other empirical study, this investigation is not without limitations. The results from the two models diverge when the effects of term-time employment on credit accumulation are considered, but given that the samples of students used for each identification strategy were different, somewhat different results are to be expected. In particular, the individual fixed effects model was limited by the use of a more restricted sample of students who were enrolled for three consecutive quarters and thus had greater institutional attachment compared with the DID sample, which was restricted to students who were required to be enrolled for only the first two consecutive quarters. In addition, as explained in detail in the Results section above, the individual fixed effects model included several threats to internal validity—within student variation in hours worked, for

example, may have been caused by endogenous reasons that jointly determine hours worked and outcomes, or students may have adjusted how much they worked according to the expected difficulty of the coursework. The IV–DID model overcame all of the shortcomings of the individual fixed effects model but was estimated with less precision. The estimates resulting from these two strategies balance precision with internal validity. Even though the IV–DID estimates were not statistically significant, the confidence intervals were tight enough that the large negative effects suggested by Stinebrickner and Stinebrickner (2003), which is the only natural experiment of the effects of college student employment, can be easily rejected.

Taken together, this study's estimates suggest that the large negative effects of moderate increases in hours worked found in the Berea college sample were not present for these community college students; indeed, using both methods, this study's confidence intervals easily reject Stinebrickner and Stinebrickner's (2003) findings. Instead, the study finds that a moderate increase of 1–10 hours of work per week had very small negative effects on GPA and may have had positive effects on credits earned. Unfortunately, because of data limitations, the study was not able to examine the effects on other outcomes, such as dropout or graduation. It is possible, therefore, that the potentially large negative effects for federal work-study on such outcomes, found by Scott-Clayton (2011), also exist for other types of employment.

## References


Becker, G. (1962). Investment in human capital: A theoretical analysis. *The Journal of Political Economy*, *70*(5), 9–49.

Ben-Porath, Y. (1967). The production of human capital and the life cycle of earnings. *The Journal of Political Economy, 75*(4), 352–365.

Desimone, J. (2008). *The impact of employment during school on college student academic performance* (Working Paper). Cambridge, MA: National Bureau of Economic Research.

Dundes, L., & Marx, J. (2007). Balancing work and academics in college: Why do students working 10 to 19 hours per week excel? *Journal of college Student Retention, 8*(1), 107–120.

Gleason, P. (1993). College student employment, academic progress, and post-college labor market success. *Journal of Student Financial Aid*, *23*, 5–14.

Johnson, J., & Rochkind, J. (2009). *With their whole lives ahead of them* (Report Prepared for the Bill and Melinda Gates Foundation). New York, NY: Public Agenda.

Kalenkoski, C., & Pabilonia S. (2008). Parental transfers, student achievement, and the labor supply of college students. *Journal of Population Economics*, *23*(2), 469–496.

Light, A. (2001). In-school work experience and the returns to schooling. *Journal of Labor Economics,19*(1), 65–93.

Orozco, V., & Cauthen, N. K. (2009). *Work less, study more & succeed: How financial supports can improve postsecondary success*. New York, NY: Demos. Retrieved from http://www.demos.org/pubs/studymore_web.pdf

Orszag J. M., Orszag, P. R., & Whitmore, D. M. (2001). *Learning and earning: Working in college*. Retrieved from http://brockport.edu/career01/upromise.htm.

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

Pascarella, E., Edison, M., Nora, A., Hagedorn, L., & Terenzini, P. (1998). Does work inhibit cognitive development during college? *Educational Evaluation and Policy Analysis, 20*, 75–93.

Planty, M., Hussar, W., Snyder, T., Kena, G., KewalRamani, A., Kemp, J., Bianco, K., Dinkes, R. (2009). *The condition of education 2009* (NCES 2009-081). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.

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

Ruhm, C. J. (1995). The extent and consequences of high school employment. *Journal of Labor Research, 16*(3), 293–303.

Scott-Clayton, J. (2011, December). The causal effect of federal work-study participation: Quasi-experimental evidence from West Virginia. Educational *Evaluation and Policy Analysis, 33*(4), 506–527.

Scott-Clayton, J. (2012, January). *What explains trends in labor supply among U.S. undergraduates, 1970–2009?* Cambridge, MA: National Bureau of Economic Research.

Stinebrickner, R., & Stinebrickner, T. R. (2003, April). Working during school and academic performance. *Journal of Labor Economics, 21*(2), 473–491.

Tyler, J. H. (2003). Using state child labor laws to identify the effect of school-year work on high school achievement. *Journal of Labor Economics, 21*(2), 353–380.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago, IL: University of Chicago Press.