

# HIGH SCHOOL EXPOSURE TO ECONOMICS AND PERSONAL FINANCE-DOES IT MATTER?

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**Abstract**—Current research shows mixed results regarding secondary school exposure to economics and personal finance education and its relation to student performance in a college personal finance course. Several studies argue that students receiving high school exposure to concepts in economics and/or personal finance will perform at a higher level than students who did not. On the other hand, many studies have found no significant evidence of performance gains for students that have taken a course in economics and/or personal finance prior to graduating high school. The purpose of this study is to estimate the relationship between high school exposure to economic and personal finance education and student performance in a college-level personal finance course. The data set includes survey responses and exam scores for students in personal finance (FIN 2003) from fall 2015 through spring 2016. The sample is currently comprised of 174 usable responses taken from five sections of the course. Using OLS analysis, we find a positive and significant correlation between high school exposure and academic performance. The results demonstrate the potential benefits of educating secondary school students in economic and personal finance concepts prior to college. These findings support state efforts to improve and expand high school economic and personal finance education.

## I. INTRODUCTION

Beginning in 2010, the Arkansas Department of Education mandated that economics was to be a required course in the high school curriculum. Prior to 2010, economics was offered as an elective in many high school social studies curricula. School districts have the choice to include economics in their social studies, family and consumer science, or business education curriculum. The most common approach that schools have taken is a social studies approach, pairing economics and civics into a one semester class for ninth grade Arkansas students.

Arkansas joined an expanding list of states that are now requiring economics and financial literacy education in secondary schools. According to the 2016 Survey of the States conducted by the Council for Economic Education, 20 states require an economic course for high school graduation. Additionally, 17 states require a personal finance course be taken for high school graduation. The number of states that include personal finance in their high school education standards has increased from 21 to 45 since 1998 (Council for

Economic Education 2016). As Walstad (2001) states, “The most important task of high school economic education is to raise public literacy in a subject that is of central importance for citizens in many aspects of their lives” (p.202).

Recent changes in state educational mandates create an opportunity to assess the effect of students’ high school exposure to economics and personal finance on their performance in a college level personal finance course. This study compares collegiate performance levels of students who have received precollege economics and / or personal finance preparation with those who have not. Performance is measured by exam scores received in a college level personal finance course, (FIN 2003), offered as an introductory course for freshmen and sophomore students at a regional college in south Arkansas.

## II. LITERATURE REVIEW

Research findings regarding the effectiveness of high school personal finance education have been somewhat mixed. One reason for the mixed results may be caused by program heterogeneity. Every program varies with divergent emphases and different testing measures. Nonprofit organizations such as the National Foundation for Financial Education (NEFE), Jump\$tart, the Council for Economic Education (CEE), and Junior Achievement have all created curriculum materials to improve personal finance education for high school students. Although the increase in resources is helpful for teachers, differences in course content, test measurement, teacher preparation, and instruction time limit the comparability of data across various educational programs (Walstad, Rebeck, and Macdonald 2010).

Loibl and Fisher (2013) find that personal finance is delivered through three instructional approaches including business education, family and consumer sciences, and social studies/economics. These different approaches each have relative strengths and weaknesses in terms of subject definition, scope, status, sequence, and dynamic as discussed in Grossman, Stodolsky, and Knapp (2004). For example, survey respondents indicated that personal finance classes taught from a business education perspective tend to be yearlong electives, thus reducing the overall number of students attending but focusing more time on personal finance content. Personal finance taught from a family and consumer sciences approach tends to be a one-semester elective thus less time is spent on personal finance content and the teacher is

less likely to emphasize investing in the course. Lastly, personal finance taught from a social studies/economics approach is often taught in mandatory classes thus having a larger number of students and an increased emphasis on investing. The various approaches used for delivering personal finance instruction make it difficult to estimate the impact of high school instruction on college level performance (Loibl and Fisher 2013).

Mandell (2008) used JumpStart test scores for high school seniors from 2000 to 2006 to compare results of students who had taken a personal finance course with those who had not. The findings demonstrated no performance gains for students who had taken a personal finance course relative to those that had not. Likewise, Peng, Bartholomae, Fox, and Cravener (2007) found no significant relationship between taking a high school personal finance course and investment knowledge. Mandell and Klein (2009) conducted a survey of students that graduated from high school between 2001 and 2004. Financial literacy surveys were administered to approximately 400 students where roughly half of the students had previously taken a personal finance course while the remaining half had not. A comparison of survey results demonstrated no significant difference in scores. Mandell and Klein (2007) used surveys to gauge student interest in personal finance, finding significant evidence that students experience apathy in regards to personal finance education. They argued that this finding shows the importance of teaching students why financial literacy is important in addition to personal finance fundamentals.

Several studies, however, have shown positive effects of precollege personal finance preparation for high school students. For example, Harter and Harter (2009) conducted a study using the Financial Fitness for Life (FFL) curriculum developed by the CEE. In this study high school teachers received FFL training prior to using it in the classroom. Their findings showed positive and significant performance gains for FFL students compared with students using other financial education materials. Danes, Huddleston-Casas, and Boyce (1999) found that early exposure to financial education helped to increase financial knowledge, improve financial behavior such as budgeting, and resulted in higher levels of confidence amongst students. Bernheim, Garrett, and Maki (2001) showed that precollege preparation in personal finance education resulted in positive lasting effects of financial knowledge and savings behavior when students reached adulthood. A similar study by Tennyson and Nguyen (2001) found a positive and significant correlation between mandatory coursework and high school student knowledge of personal finance.

This study analyzes student performance in a collegiate personal finance course. Performance outcomes for students who have had high school exposure to economics and /or personal finance are compared with those who have not. Although many prior studies have looked at the effect of economic and personal finance education on high school

students and alumni, this study is unique in estimating a correlation between a student's pre-collegiate exposure and their academic performance in a college personal finance course.

### III. DATA COLLECTION

Surveys were distributed to students enrolled in Personal Finance at a regional college in south Arkansas. Student responses were collected in five sections of the course over two semesters. Each section of the course was taught by the same instructor, ensuring consistency in information covered and course rigor. Student performance was measured by four exam scores from the class, with each exam being worth 100 points. A copy of the survey used is included in Appendix A at the end of the paper.

Overall there are 174 usable responses that comprise the data set. Of these responses, 52.3% were from male students whereas 47.7% of responses came from female students. In terms of age, 59.8% were 19 or younger, 33.3% were between 20-24 years, 2.3% of students were 25-30, and 4.6% of students were over 30. The sample of students is comprised of approximately 50% freshmen, 23.6% sophomore, 14.9% junior, and 11.5% senior. Ethnicities of students surveyed were 1.1% American Indian, 2.3% Asian, 28.2% African American, 63.8% Caucasian, 4% Hispanic, and 0.6% Other. In regards to high school exposure to economics and personal finance courses prior to college, 67% reported having taken a previous course in economics while 16.7% reported a prior class in personal finance. Table I provides summary statistics from the collected surveys.

**Table I**  
**Summary Statistics from Collected Surveys**

<i>Age</i>		<i>Classification</i>	
17-19	104	Freshman	87
20-24	58	Sophomore	41
25-30	4	Junior	26
30+ yrs	8	Senior	20
<i>Gender</i>		<i>Ethnicity</i>	
Male	91	American Indian	2
		Asian/Pacific	
Female	83	Islander	4
		African American	49
<i>High School Exposure</i>		Caucasian	111
Economics	117	Hispanic	7
Personal		Other	
Finance	29		1

Each student's academic performance is measured by their resulting exam scores on each of four exams given during the semester. Exam scores are based on a 100 point scale. Table II presents average, maximum, and minimum scores for each of the four exams

**Table II**

**Exam Results (scores shown out of 100 possible points)**

	Exam 1	Exam 2	Exam 3	Exam 4
Avg	85.22	78.26	74.18	79.87
Max	100.00	100.00	99.13	100.00
Min	55.80	34.00	41.76	42.00

**IV. METHODOLOGY**

The analysis in this study follows the econometric approach presented in Grimes, Millea, and Thomas (2010). This approach estimates an educational production function where a measure of academic performance is modeled as a function of incoming characteristics, demographic characteristics, and student characteristics. Specifically, this model projects the following relationship for individual students in the sample:

$$\text{Academic Performance} = f(I, D, S)$$

Where *I* denotes a vector of students' incoming characteristics, *D* denotes a vector of demographic characteristics, and *S* denotes a vector of personal student characteristics. Each student's academic performance is measured based on their performance on four course exams worth a maximum of 100 points each. Equation [1] is provided below:

$$[1] AP_i = \alpha_1 I_i + \alpha_2 D_i + \alpha_3 S_i + \varepsilon_i$$

Academic Performance is represented by  $AP_i$  for each student, *i*. Specifically,  $I_i$  = (exposure to course in economics and/or personal finance);  $D_i$  = (gender, ethnicity, age cohort);  $S_i$  = (classification, major, employment, first time in course) for each student, *i*. In order to reduce the number of control variables, ethnicities with four or fewer students were combined into *other*. *Other* is therefore comprised of students in the American Indian, Asian/Pacific Islander, or Other ethnic group as listed in Table 1. In addition, student classifications were combined into two categories, *lower* and *upper*. *Lower* includes all freshman and sophomore students whereas *upper* is comprised of juniors and seniors. In addition, age cohorts were combined, creating *traditional* for students aged 17-24 and *nontraditional* for students 25 or older. Regression results are discussed in the following section.

**V. RESULTS**

The educational production function in equation [1] was estimated using ordinary least squares (OLS). Statistical significance at the 10%, 5%, and 1% critical values are denoted by \*, \*\*, and \*\*\* respectively. Table III provides regression results for equation [1]. Estimated coefficients are

shown with corresponding t-statistics in parenthesis below each coefficient. Significant findings are discussed below.

**Table III**

**Ordinary Least Squares Estimation Results for Academic Performance**

Variable	Exam #1	Exam #2	Exam #3	Exam #4
<i>Incoming Characteristics</i>				
Economics	3.30** (2.92)	2.48 (1.34)	1.19 (0.76)	2.02* (1.83)
Personal Finance	-2.96 (-2.63)	-3.12 (-1.24)	1.856 (1.13)	-2.74 (-1.12)
<i>Demographic Characteristics</i>				
African American	-4.82 (-1.39)	-6.78 (-1.06)	2.47 (0.78)	-1.97 (-1.17)
Hispanic	-3.27 (-1.21)	-4.16 (-0.59)	-3.976 (-1.23)	-1.24 (-1.12)
Other	-1.89 (-1.16)	-6.44 (-1.36)	-4.34 (-1.03)	1.98 (1.27)
Female	6.96 (1.73)	3.12* (1.92)	2.16* (1.86)	1.02 (0.49)
Nontraditional	1.61 (0.17)	2.64* (1.97)	3.16* (1.89)	1.90 (0.58)
<i>Student Characteristics</i>				
Upper	2.61 (1.34)	2.29** (2.18)	3.61* (2.07)	1.19 (0.85)
Business Major	1.38 (1.09)	2.01 (1.23)	4.27 (1.32)	-0.43 (-0.29)
First	-1.19 (-0.58)	2.49 (0.59)	-1.74 (-0.69)	2.10 (0.54)
Job	2.76* (2.13)	0.17 (0.40)	0.72 (0.43)	1.06 (0.61)
F-Statistic	3.61	3.14	4.28	3.28
R <sup>2</sup>	0.20	0.18	0.21	0.22

Regression results convey a mixed message regarding the effectiveness of high school exposure to economics and personal finance education. Students who completed an economics course prior to college demonstrated performance gains of 3.3 and 2 points on exams 1 and 4, respectively, relative to students who had not. These findings are significant at the 5% and 10% critical value levels, respectively. The coefficients on personal finance exposure are insignificant for each specification, supporting the findings of Peng, Bartholomae, Fox, and Cravener (2007). There are a few alternative explanations for this result. First, of the 174 usable responses, 117 students had received high school exposure to

economics while only 29 students reported high school exposure to personal finance. It is possible that a larger sample of students with personal finance exposure would better capture the resulting effects. Second, there are often more clearly defined teaching standards and curriculum for economics relative to personal finance, leading to increased consistency among economics course content relative to personal finance (Loibl and Fisher 2013; Tennyson and Nguyen 2001; Walstad 2001). Third, many economics courses include a unit on personal finance. This may lead to some confusion on the part of the student participants when answering the survey as observed in Mandell and Klein (2009). Lastly, a high school personal finance course is more likely to be alternatively named, and thus, less likely to be recalled by survey respondents years later. It is possible that many students with exposure to personal finance concepts are identifying their experience as an economics class due to heterogeneity in course names across school districts.

Average exam scores based on student ethnicities were not statistically significant in any case. Female students exhibited performance gains of 3.12 and 2.16 points relative to male students on exams 2 and 3. These findings are significant at the 10% critical value level. Students aged 25 years or older demonstrating performance gains of approximately 2.6 and 3.2 points relative to traditional students for exams 2 and 3. This result seems intuitive that older students are likely to have more experience dealing with financial issues, thus improving their performance relative to younger students in a personal finance course.

Estimated coefficients on student characteristics support previous findings. Junior/senior students demonstrated performance gains of 2.3 to 3.6 points relative to freshman/sophomore students in the sample on exams 2 and 3. These findings are significant at the 5% and 10% critical value levels, respectively. Junior/Senior students often have more work experience as well as time management skills relative to freshman/sophomore students. Business majors show performance gains of 2 points on exam 3 relative to non-business majors. Additionally, employed students demonstrate performance gains of 2.8 points on exam 1, supporting results discussed in McCormick (2009). This findings are significant at the 10% critical value level.

## VI. CONCLUSION AND FUTURE RESEARCH

The findings discussed in the previous section provide two major outcomes from this analysis. First, there is evidence that high school exposure to economic education can improve student performance in a college personal finance course. The resulting coefficients demonstrate that students may benefit by approximately 1/3 of a letter grade (3.3 points) on the first exam and 1/5 of a letter grade on the last exam in the course for having taken economics in their secondary school education. Given that personal finance is usually a component in an economics course, we can surmise that early exposure to the personal finance concepts are helpful to students in a

college personal finance course. The results also show that junior/senior level students demonstrated higher levels of performance relative to freshmen/sophomore students for 2 out of 4 exams. This is probably due to upper level students having more experience working while managing money and time when in school.

A future contribution to this study would be to expand the sample of students. To do this, more observations must be collected over time using a consistent survey instrument. This expanded data set would allow for increased diversity among students as classroom demographics may vary somewhat among semesters. Expanding the data set could also lead to a larger group of students having some high school exposure to personal finance in the sample. Overall a larger sample may allow for a more accurate measure of the benefits to college students that have had some previous exposure to economic and personal finance courses in their high school education. In addition, the survey could be refined to better capture personal finance taken as an independent course or as a component of another course. Optimally, a study including student admission records could capture high school exposure without relying on a self-reported survey instrument.

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- 3b) If your answer to #3 was yes, was the course taken in Arkansas? *Yes / No*
- 3c) If not Arkansas, what state was your ECONOMICS course taken in?  
\_\_\_\_\_
- 4) Did you take a required PERSONAL FINANCE course in middle school or high school?  
*Yes / No*
- 4b) If your answer to #4 was yes, was the course taken in Arkansas? *Yes / No*
- 4c) If not Arkansas, what state was your PERSONAL FINANCE course taken in?  
\_\_\_\_\_
- 5) Are you currently employed? *Yes / No*
- 6) Is this your first time to take this course here at SAU?  
*Yes / No*
- 7) What is your age?  
A. 19 or younger                      C. 25-30  
B. 20-24                                  D. Over 30
- 8) Gender  
A. Female                                  B. Male
- 9) Racial or Ethnic Identification  
A. American Indian or other Native American  
B. Asian or Pacific Islander  
C. Black or African American  
D. Caucasian/White  
E. Hispanic  
F. Other: \_\_\_\_\_

## Appendix A

### Economics and Personal Finance Survey

- 1) Are you a business major? *Yes / No*
- 2) What year of study are you currently in?  
*Freshman    Sophomore    Junior    Senior*
- 3) Did you take a required ECONOMICS course in middle school or high school?  
*Yes / No*