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## Employment and student performance in Principles of Economics

Jae-Kwang Hwang\*

Virginia State University, 1 Hayden Street, P.O. BOX 9047, Petersburg, VA 23112, United States

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### ABSTRACT

This paper examines the effect of several variables on student performance in Principles of Economics at the historically black university. The results indicate that the attendance, class size, GPA, number of hours worked per week and SAT scores significantly affect student performance. Especially, the grades of the students who work more than 20h/week are negatively and significantly affected.

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### 1. Introduction

Economists have used evidence from Principles of Economics classes to investigate relationships between academic achievement, attendance and paid employment. This paper adds to this literature through a study of undergraduates attending one university in the US which caters largely for students from an Afro-Caribbean background.

When evaluating the effects on achievement of students' experiences in and out of-it is important to control for students' characteristics. For example, several studies ([Anderson et al., 1994](#)) have suggested that males perform better than females in college economics. However, more recent studies have found no significant gender effect on student performance ([Parker, 2006](#); [Swope and Schmitt, 2006](#)). Unsurprisingly, measures of students' average prior academic performance (such as in Grade Point Averages, GPA, or Standard Assessment Tests, SATs) are also correlated with achievements in economics (e.g. [Park and Kerr, 1990](#)).

Turning to students' experience in class, [Arias and Walker \(2004\)](#) found that class size had a statistically significant impact on student performance. [Stanca \(2006\)](#), [Marburger \(2006, 2001\)](#),

\* Correspondence address: Department of Accounting & Finance, Virginia State University, P.O. Box 9047, Petersburg, VA 23806, United States. Tel.: +1 804 524 5365; fax: +1 804 524 5400.

E-mail address: [jhwang@vsu.edu](mailto:jhwang@vsu.edu).

Durden and Ellis (1995), and Romer (1993) showed that attendance did matter for academic achievement in Principles of Economics course. Outside of class, Arano and Parker (2008) found that working has a negative effect on academic performance for freshmen but that for upper classmen the negative effect occurs only when working longer hours. Kember et al. (1996) showed the numbers of hours worked accounted for only a small proportion of GPA. They indicated that students' learning approaches might be well inappropriate for higher education if students worked long hours yet achieving little. Chambers (1992) suggested that a careful account of student work-load will lead to the reorganization of curricula and lead to improve the quality of student learning.

Relatively, many students work for pay while they are in school. From the data collected by the Bureau of Labor Statistics that in October 2009, 7.1% of full-time students work full-time and 33.2% of full-time students work part time. There might be two opposing effects of working for pay on academic performance. Working may limit the numbers of hours for students to study, so it has a detrimental effect on academic performance. On the other hand, students who work can organize their time more efficiently so that working may have a positive effect on academic performance.

This paper examines the associations between achievement in the Principles of Economics course and African-American students' experience after controlling for students' characteristics through SAT scores, college GPAs, and gender. Three aspects of students' experience are considered: class size, number of hours worked per week and class attendance.

The dependent variable is mean exam scores on the Principles of Economics course. The students in the sample had the same instructor over five semesters, thereby controlling for variation in instruction, exams and grading mechanism.

Major findings can be summarized as follows. First, as expected, we find that the attendance, class size, GPA, and SAT scores have significant effects on student performance in Principles of Economics classes. Second, the grades of students who work more than 20h/week are significantly and negatively affected.

This paper is organized as follows. The next section explains data and methodology underlying the empirical study. Thereafter the findings are reported, conclusions are drawn. Finally, some implications are indicated.

## 2. The data and methodology

Students were surveyed at the end of Principles of Economics courses at the Virginia State University. The Virginia State University has approximately 95% African-American students, and many of them receive a need-based scholarship rather than a merit-based scholarship. The sample comprised students completing the one semester course in Spring 2005 (three sections); Fall 2005 (two sections); Spring 2006 (two sections); Fall 2006 (two sections) and Spring 2007 (two sections). Each of these eleven sections had the same instructor, curriculum, exams and grading system. The participating students provided their student identification number making it possible to follow them up after their final exam. Before completing the questionnaire, the students were advised that participation was strictly voluntary and that the anonymity of their responses was maintained at all times. After reviewing the students' responses, only 215 questionnaires out of 424 are available for this study because of omissions, multiple answers, failure to complete the questionnaire, and illegible responses. Table 1 lists definitions of the variables used in the study.

This paper adopts the educational production function where the independent variables are gender, student ability, attendance and some other variables that may affect academic achievement.

$$\text{Grade} = f(\text{Gender}, \text{GPA}, \text{SAT}, \text{Attendance}, \text{working hours}, \text{other variables})$$

We use the GPA and SAT scores as proxies for student ability. We use class attendance as a proxy for student effort. We also use gender, major, class size, and numbers of hours of paid work, which may affect academic achievement in a systematic way.

Table 2 presents the descriptive statistics of the sample. Grade, which is the average of the exam scores, is regressed on the explanatory variables in the analysis. The average is 68.4 out of 100 points scale. Points from homework, quiz and extra points are dropped to have pure test scores because not

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