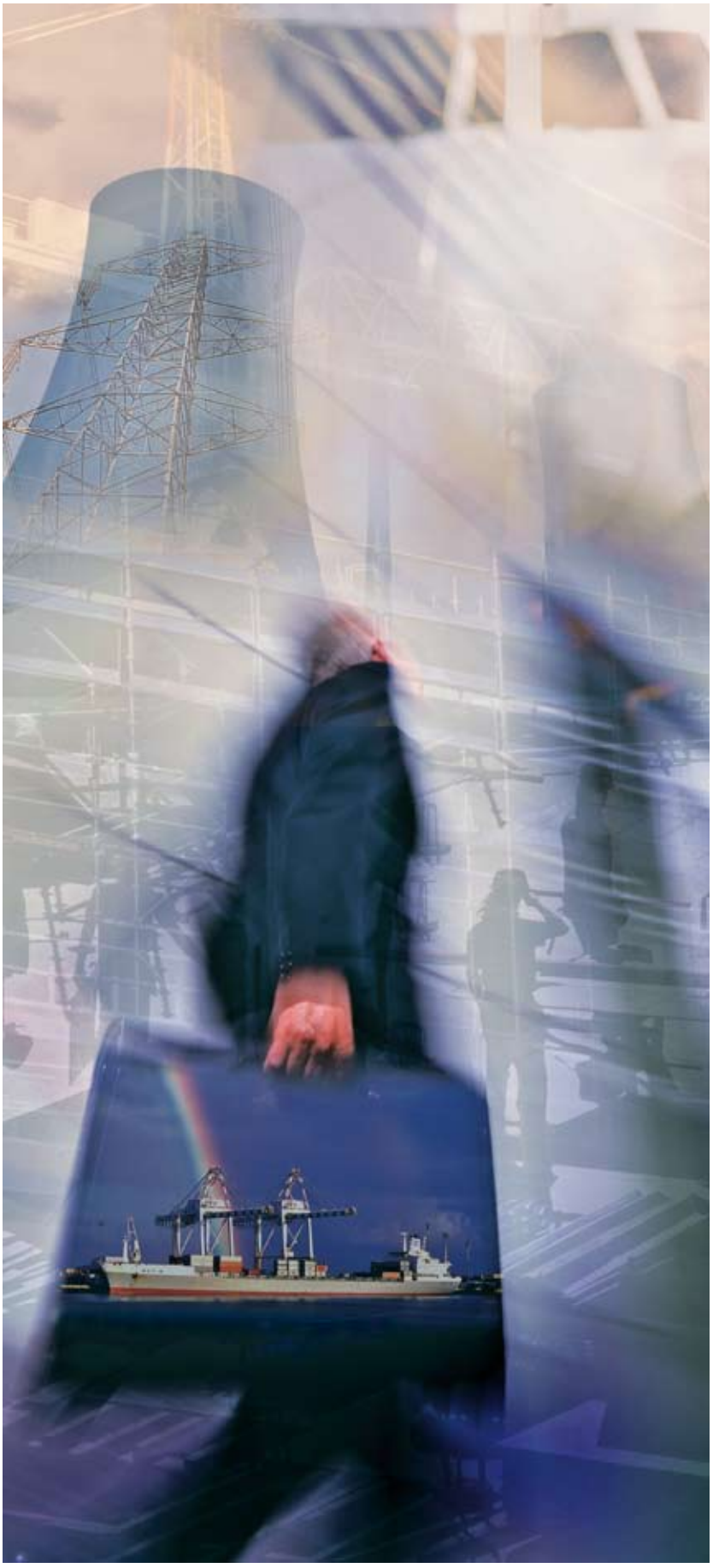

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The Economic Society of Australia warmly welcomes you to the Gold Coast, Queensland, Australia for the 37th Australian Conference of Economists.

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Attendance and Performance in a Large Economics Class

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Abstract

In this paper we investigate whether lecture attendance is related to student performance in the multiple choice component of the final exam, for a large class of first year economics students. Our findings indicate that in this learning environment, lecture attendance was not statistically significantly related to academic performance. This result may cast doubt on calls to make attendance compulsory.

JEL codes: A20, A22

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I Introduction

A considerable body of research has investigated the impact of class attendance on the academic performance of students in economics classes at US universities. For example, Park and Kerr (1990) used a multinomial logit model to identify the major determinants of undergraduate student grades in a money and banking course over a three year period. Of some fifteen variables tested, they found that only class attendance, intelligence and a measure of the value of the course as perceived by the student were significantly associated with performance. Romer (1993) investigated the extent and impact of absenteeism in undergraduate economics classes at three relatively elite universities. He found that approximately one third of students missed class on average and concluded that, controlling for prior ability, attendance was positively and significantly associated with academic performance. As a result, Romer suggested that universities should experiment with mandatory lecture attendance schemes in an attempt to improve learning.[1]

Durden and Ellis (1995) surveyed first year students in a one year introductory economics class and after controlling for a host of student and other characteristics concluded that class absences were negatively and significantly associated with academic performance but in a non-linear manner. That is, four or fewer absences had no negative impact, but beyond this, additional absences reduced academic performance and at an increasing rate. Devadoss and Foltz (1996) investigated the determinants of academic performance for around 400 students enrolled in agricultural economics courses at four

[1] This generated some correspondence in a subsequent volume of the journal. In the discussion section of this paper we address this issue.

universities and also concluded that increased attendance was associated with increased performance.

Less research on this issue appears to exist for universities outside of the US. Rodgers (2002) reported on the success and impact of an incentive scheme designed to encourage increased tutorial attendance in an introductory statistics course at a regional Australian University. Whilst Rodgers found attendance and academic performance to be positively correlated, and that the incentive scheme did have a small positive impact on attendance, academic performance did not improve. "Students attended more classes but did not perform better than students with the same characteristics and attendance levels in the previous year when the scheme was not used" (p.265).

Van Walbeek (2004) investigated the relationship between lecture attendance and student performance for a first year microeconomics class at a university in South Africa. Performance was measured in two ways: via scores on the multiple choice component and the essay component of the final exam. After controlling for student characteristics such as age, gender and whether a high school economics course had been completed, Van Walbeek found attendance to be positively and significantly associated with both measures of academic performance.

Whilst studies such as these, which regress a measure of each students' academic performance against their aggregate class attendance and some other control variables, have in the main found a positive association between attendance and performance, these conclusions could be spurious. For example, if more motivated students attend class more often and also perform better than less motivated students, then motivation may be the real determinant of performance rather than attendance *per se*. In an attempt to isolate the

pure attendance effect, Marburger (2001) collected data on individual student absences from a relatively small microeconomics principles course at a US university and linked individual questions in three multiple choice tests held throughout the course to specific classes. Hence, "…if a student responded incorrectly to a specific exam question, the records revealed whether the student had been absent during the class period in which the relevant material was covered" (p.102). Importantly, to control for differences in student characteristics such as motivation and intelligence, Marburger assigned individual dummy variables to each student in his sample. "By assigning student-specific dummy variables, all other external factors associated with each student's exam performance (i.e. ability/motivation/study habits) could be controlled" (p.104). He also assigned individual dummy variables to each question in each examination to control for differences in difficulty or clarity across questions. On the basis of his results, Marburger concluded that "…absenteeism increased the probability that the average student would respond incorrectly to the average exam question by (between 7.5% and 14.6%)" (p.105, term in parenthesis ours).

Our interest also lies in the relationship between attendance and academic performance, but in a first year class where lectures in large theatres to hundreds of students are the principle means of instruction. Most lecturers would like to believe that their teaching efforts add some value to students additional to that which would result from students simply reading the relevant textbook. Marburger's results support this view but involved a class of less than 60 students. Is this also the case for a class with over 400 students enrolled?

The remainder of this paper is organized as follows. In the following section we further discuss the approach of Marburger (2001) and then discuss our data and present our estimation results. In section III we discuss our results and make some concluding comments.

II The Model, the Data and the Estimation Results

In this section we estimate the impact of lecture attendance on the academic performance of 402 students who were enrolled in the autumn semester 2005 Macroeconomic Essential for Business course at the University of Wollongong (UOW).[2] We replicated the approach of Marburger by estimating the binomial probit model (1) below, with the dependent variable $RESP_{i,k}$ being coded one for a correct response by student i to test question k and zero otherwise. The explanatory variable of interest, $ATTEND_i$, was coded one if student i attended the lecture during which the material relevant to that question was presented and discussed, and zero otherwise. In order to control for unobserved heterogeneity across students in characteristics such as intelligence, motivation and prior economics study, we also including individual student dummy variables. To control for differences in difficulty and clarity across the test questions, we also included individual question dummy variables. The model estimated is as follows[3]:

$$RESP_{i,k} = \alpha_o + \alpha_1 ATTEND_i + \Sigma_{i=1} \alpha_2 STUDENT_i + \Sigma_{k=1} QUESTION_k + \varepsilon_i \qquad (1)$$

[2] 420 students were eligible to sit the final examination but we omitted eighteen students who were granted a supplementary final examination because these students had an additional month during which they could study and prepare.

[3] See Marburger pp.104-6 for more details on this approach.

For our dependent variable, we used student responses to the 65 multiple choice questions on the final examination[4]. Hence our data consists of 26130 observations. Other things equal, if lecture attendance increases (decreases) exam performance then α_1 in equation (1) will be positive (negative).

We collected attendance data throughout the semester by distributing alphabetical enrolment lists at the beginning of each lecture and asking each attending student to sign next to their name. The purposes for which this data were to be used were carefully explained to students in the first lecture of the semester and, in particular, students were assured that their or their friend's absenteeism from lectures would not be officially penalized in any way. As the lists were circulating in the first 10 minutes of each lecture, a teaching assistant counted the actual number of students in the lecture theatre so as to provide us with some confirmation of the accuracy of our attendance numbers[5]. Similar data collection methods have been used by other researchers and appear to produce data of acceptable quality. The material covered in each lecture was also noted progressively during the semester. Hence, similar to Marburger (2001), we were able to link individual multiple choice questions in the final exam to specific lectures.

[4] Most prior studies also focus only on student performance on multiple choice questions in exams as these are more likely to provide some degree of homogeneity in examination conduct and marking criteria.
[5] Of course this check could not confirm whether students were signing for themselves and/or for a friend. Such a checking procedure would require examination of students' identity cards, a process that would have been highly disruptive and which in any case was beyond our limited resources. This procedure also failed to count students who entered the lecture theatre after the lists were collected, but these were few in number. Indeed some late students approached the lecturer at the end of each class to ensure that their attendance, albeit late, was nevertheless recorded.

Figure 1: Weekly Lecture Attendance Rates (percentage of final enrolments)

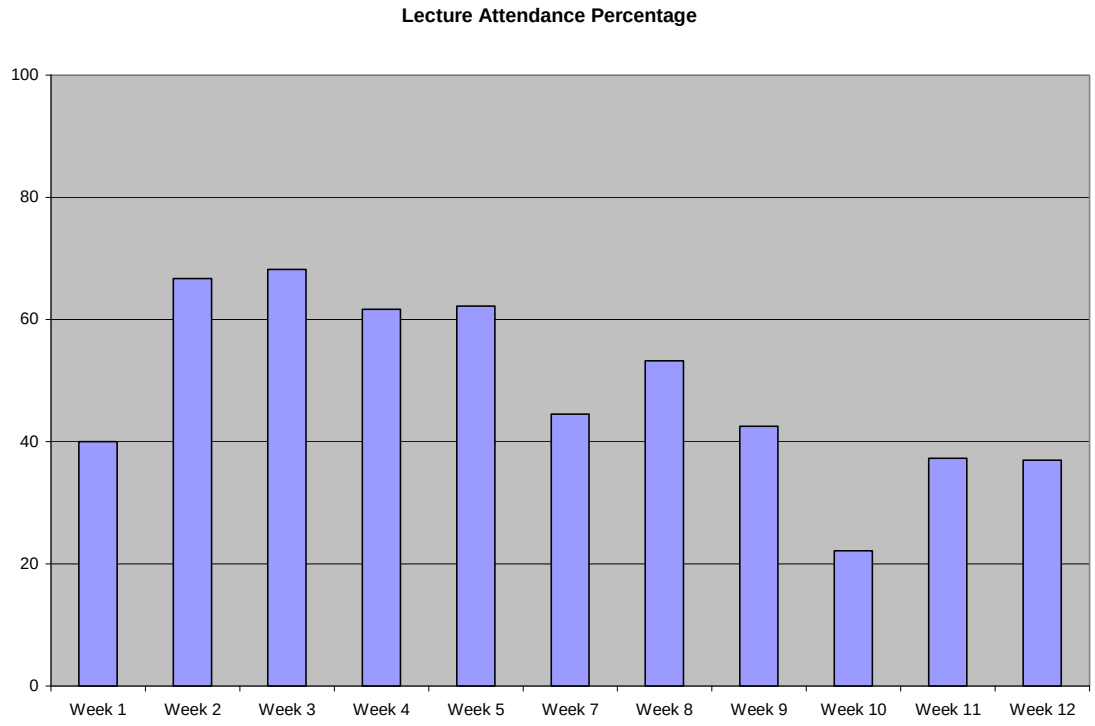

Figure 1 shows the percentage attendance rates on a weekly basis[6]. Lecture attendance throughout the semester averaged around 50%. If this result is typical of current attendance rates across other universities then the absenteeism problem identified by Romer (1993) appears to have intensified since then. Also, apart from week 1 during which many first year students are still finalizing their enrolments and getting acclimatized to the new university environment, attendance at lectures deteriorated overall throughout the semester, albeit with some slight recovery in week eight (the first lecture post publication of the mid session exam results) and weeks eleven and twelve.

[6] Lectures were scheduled on Monday mornings (100 minute class) and Wednesday afternoons (50 minute class). Hence in calculating weekly attendances, we weighted attendances to reflect these differences in lecture duration. No lectures were conducted in week six to allow for the conduct of the mid semester examination.

Our estimation results in Table 1 suggest that lecture attendance was not statistically significantly associated with exam performance for this sample of students, a result contrary to that found by Marburger.

Table 1: The Impact of Lecture Attendance on Exam Performance

Variable	**Coefficient**
CONSTANT	-0.311 (-1.771)
ATTEND	-0.013 (-0.568)
N	26130
Log Likelihood	-13632.56
McFadden R^2	0.172

Notes: t statistics are in parentheses. The dummy variable coefficients for individual students and test questions are available from the authors on request.

III Discussion

Our model has limited explanatory power and so any conclusions drawn from this exercise should be treated with some caution. Nevertheless, our result raises a number of issues. Firstly Marburger's conclusion, that student learning is positively affected by class attendance, may not apply across all types of classes. Indeed Marburger acknowledges this point (p.107), arguing that attendance impacts are likely to be institution, class and instructor specific. Our results are consistent with this view.

What may be driving this discrepancy between the results of Marburger and our findings? One possibility is inferior instruction on our part. If Marburger is a superior instructor to ourselves then, other things equal, attendance at his classes would have been be more effective at increasing academic performance than was attendance at our classes.

A second possibility is that the discrepancy was driven by the large difference in class sizes. As noted earlier, Marburger's class consisted of approximately 60 students whereas our class had over 400 students enrolled. Other things equal, attendance at smaller classes may be more effective at increasing student knowledge than attendance at very large classes. In large lecture theatres there exists greater scope for student inattention and minor disruptions, and the learning atmosphere is less personal. To test whether class absenteeism is more damaging to academic performance in a small class than it is in a large class, we would need to replicate this study with two groups of students, one large and one small, and hold constant the instructor, the subject content and the delivery methods. This is not a trivial logistical exercise but is the subject of a future study.

Whether due to differences in instructor quality or differences in class size, our result may cast some doubt on suggestions that class absenteeism should not be tolerated because of the adverse consequences that this has on student learning. In cases where attendance may not be positively related to performance then the costs of a mandated attendance policy will likely far outweigh the benefits. But even in circumstances where attendance is likely to impact positively on performance, we would caution against a mandated attendance policy for a number of other reasons. Firstly, attendance at all classes across the university would have to be similarly mandated. If not, then satisficing students could simply substitute increased attendance in one subject with decreased attendance in another. Any such scheme would also have to allow for legitimate cases of class absence due to illness, emergencies, etc. and so would likely create a substantial administrative workload for subject coordinators which could be counter-productive. Added to this is the logistical difficulty of obtaining attendance data in large lecture

theatres where several hundred students would be entering the theatre over a 5-10 minute period.

Also, we agree with Stephenson (2004) in that compulsory attendance requirements are likely to create more difficult teaching and learning environments. In our case, Macroeconomic Essentials for Business was a compulsory subject for all Bachelor of Commerce students at the University of Wollongong, the majority of which go on to major in accounting, management or marketing. Hence a policy of mandatory attendance would result in even larger numbers of less motivated students attending lectures. This would likely further reduce the productivity of the learning environment. Having said this, our challenge is to develop subject designs and instructional methods that impact positively on student learning in large lecture classes, a form of instructional delivery which, due to resource constraints, is unlikely to be modified in the near future.

References

Devadoss, S. and J. Foltz. 1996. 'Evaluation of Factors Influencing Student Class Attendance and Performance'. *American Journal of Agricultural Economics*, 78, pp. 499-507.

Durden, G. and L. Ellis. 1995. 'The Effects of Attendance on Student Learning in Principles of Economics'. *American Economic Review Papers and Proceedings*, May, pp. 343-346.

Marburger, D. 2001. 'Absenteeism and Undergraduate Exam Performance'. *Journal of Economic Education*, Spring, pp. 99-109.

Park, K. and P. Kerr. 1990. 'Determinants of Academic Performance: A Multinomial Logit Approach'. *Journal of Economic Education*, Spring, pp. 101-111.

Rodgers, J. 2002. 'Encouraging Tutorial Attendance at University Did Not Improve Performance'. *Australian Economic Papers*, September, pp. 255-266.

Romer, D. 1993. 'Do Students Go To Class? Should They?' *Journal of Economic Perspectives*, 7(3), pp. 167-174.

Stephenson, K. 1994. Correspondence. *Journal of Economic Perspectives*, 8(3), pp. 207-208.

Van Walbeek, C. 2004. 'Does Lecture Attendance Matter? Some Observations From a First-Year Economics Course At The University Of Cape Town'. *South African Journal of Economics*, September, pp. 861-883.