

# ERSA Research Brief

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## Measuring the impact of educational interventions on the academic performance of academic development students in second-year microeconomics

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The poor academic performance of students at South African tertiary institutions is cause for concern and is reflected in low graduation rates across the sector. Of particular concern is the low graduation rate achieved by students who come from socially and educationally disadvantaged backgrounds. In response to this situation tertiary institutions have introduced a variety of academic development (AD) programmes and courses designed to enable such students to realise their full academic potential.

### Research question

Do the educational interventions made in the first- and second-year microeconomics courses improve the final mark obtained by AD students in the second-year course, relative to the performance of mainstream students?

We examined this question using OLS analysis and propensity score matching (PSM), comparing the academic performance of AD and mainstream students employing the usual range of controls (specification). The Heckman two-step is used to account for the sample-selection problem that arises as not all students who start a course write the final examination, and the effect of the educational interventions on the throughput rate for second-year course is calculated for the AD cohort.

The study is conducted for two time periods, which include six cohorts and over 5000 observations covering the years 2000–2005. In the first period the effect of the interventions in the first-year course on AD students' performance in the second-year course is identified. In the second period the effect of the voluntary workshops offered to second-year AD students is determined.

### Principal findings

The overall pass rate for the second-year course is 89.6% for mainstream students in the first period, which is 22.6 percentage points greater than that achieved by the AD cohort. In the second period the difference is 25.5 percentage points. In both periods a greater proportion of the AD cohort did not write the final examination, and a smaller proportion passed the course at the first attempt. Also, the AD cohort's mean final mark for the second-year course is 8.1 percentage points lower than that achieved by mainstream students in the first period and 10.2 percentage points lower in the second period. Finally, a much smaller proportion of the cohort who started the AD course passed the second-year course relative to mainstream students. These findings are not surprising given that AD students have a lower level of academic preparedness as measured by their performance in the matriculation examination.

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The results of the OLS analysis suggest that the educational interventions, designed primarily to improve AD students quantitative, comprehension and writing skills in first-year microeconomics, also improved their performance in the second-year course by 2.2 percentage points in the first period relative to mainstream students and conditional on the control variables.

As regards the second period the workshops have a strong and positive effect (0.49 percentage points per workshop) on AD students academic performance relative to mainstream students. This result suggests that the educational interventions, specifically the focus on improving students' understanding of mathematical concepts and the application of mathematical techniques, enabled those students who attended the workshops to outperform their peers, conditional on the independent variables.

As a result of the AD premium in the first-year course the pass rate for the first-period cohort in the second-year course increased by 11.4 percentage points. In the second-period the effect of the workshops was to increase the pass rate of the AD cohort by 15.8 percentage points. We suggest that relatively small increments in the course mark have a disproportionate effect on the pass rate achieved by AD students as they lack the requisite skills to achieve above-average results.

The results of the OLS estimations lend some support to the view that the AD first-year course contributes positively towards academic performance in second-year course in the first period, which suggests that the educational interventions incorporated in the AD course; to improve students' learning, English language, writing, quantitative and study skills, may have played a positive role in improving students' academic performance. Furthermore, the results suggest that workshop attendance, in the second period, enabled the AD cohort to overcome some of the disadvantages they experienced in respect of their relative under-preparedness in mathematical techniques and applications.

### **Policy inferences**

The results suggest that AD courses contribute to the improved academic performance of socially and educationally disadvantaged students. Therefore, the results of this study support the view that it is worthwhile to invest in AD courses, and that perhaps a greater investment should be undertaken in the second- and third-year courses to improve the relatively poor graduation rates of AD students.