The mediating role of academic achievement in the socioeconomic dropout gap: evidence from São Paulo, Brazil

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Executive summary

In this document I summarize the results of exploratory data analysis about socioeconomic inequalities in high school dropout. I describe the gap in dropout rates between lower and higher income students enrolled in state high schools from São Paulo. I also investigate the role of academic performance in explaining this dropout gap. The key findings of this analysis are:

- For students from lower socioeconomic backgrounds, the odds of dropping out of high school are 1.76 times larger than the odds for higher income students.
- The performance of students in classroom exams declines gradually for a few years prior to the actual dropout. This gradual academic disengagement is similar between dropout students from lower and higher social backgrounds.
- In relative terms, dropout students tend to have lower academic performance than non-dropout students. In absolute term, the academic achievement of dropout students is not necessarily low: most dropout students—about 67 percent—score above the Basic achievement level in the São Paulo standardized test.
- For students who scored below the Basic achievement level, the odds of dropping out of high school were 2.22 times larger than for students performing above the Basic achievement level. The odds ratio is larger for high income students (2.32) than for low income students (1.88).
- Only 18 percent of the relationship between social background and dropout seems to be associated with primary effects—that is, unequal performance among students with differing social origins.

Introduction

Brazil has one of the highest dropout rates in Latin America (UNESCO – Global Education Digest 2012) and the percentage of children leaving school has remained high over time, in particular among middle and high school students (Klein, 2006). Evidence shows that school dropout disproportionately affects students from lower social backgrounds (Goldschmidt

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1 This document summarizes the results of my Qualifying Paper required by the PhD program of the Stanford Graduate School of Education. I wish to thank Professor Michelle Jackson and my advisors Dr. Martin Carnoy and Dr. Eric Bettinger for their valuable feedback. I also want to thank prof. Ricardo Madeira for providing me with data used in this study.
and Wang, 1999; Cardoso and Verner, 2006; Hunt, 2008). In a country with particularly high levels of income inequality, the school dropout rate is a source of concern given that wage differences between high school graduates and dropouts have substantially increased over the past 20 years (Barbosa Filho and Pessoa, 2009).

This report summarizes the results of an exploratory study of the socioeconomic differentials in school dropout. Moreover, it provides evidence about the primary effects of socioeconomic background on dropout. Primary effects refer to the extent to which the socioeconomic dropout gap is associated with the unequal academic performance among students with differing social origins. Analyses are based on the Center for Innovative Design and Evaluation of Anti-Poverty Solutions (C-IDEAS) data, from the Department of Economics at the University of São Paulo (FEA-USP). The C-IDEAS data have comprehensive information on the education system of São Paulo, including the enrolment records of k-12 students; students’ transcripts with their scores on classroom assessments; and data from the SARESP, a low-stakes assessment from the state of São Paulo. To investigate socioeconomic inequalities in dropout, I use the sample of state school students who, in 2009, were enrolled in the 1st and 2nd years of high school.

**Study Findings**

Among all state school students enrolled in the first years of high school in 2009, 10 percent drop out of school in 2010.² For students from lower socioeconomic backgrounds, the odds of dropping out of high school are 1.76 times larger than the odds for higher income students. Students’ socioeconomic level was measured using survey items from the SARESP questionnaires including household possessions and family income. In this study, low

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² Here dropout indicates whether students enrolled in school in 2009 did not enroll in school for the 2010 school year, or were enrolled in 2010 but abandoned school before the end of the first quarter.
socioeconomic students are in the bottom quarter of the wealth distribution; whereas high socioeconomic students are in the highest quantile.

Dropping out is considered to be the final stage of a cumulative process of disengagement (Rumberger, 1995). Withdraw from school can be manifested in different ways, including disengagement from academic life (i.e. less involvement in classroom activities and lower performance in classroom tests) (Tinto, 1987). Figure 1 shows the average classroom test scores on quarterly evaluations over a period of three years—from 2007 through 2009—for students who drop out of school in 2010 and for students who remained enrolled in school in the same year. The graph also shows the trajectory of achievement by socioeconomic group.

Figure 1. Academic engagement over time by dropout status and socioeconomic level

![Graph showing academic engagement over time by dropout status and socioeconomic level.](image)

Figure 1 demonstrates the gradual process of academic disengagement among dropout students. Observe that this process of disengagement is similar for both low and high income students. Figure 1 also shows that non-dropout students outperform dropout students even three
years prior to the actual dropout. This evidence supports the claim in the literature that academic struggle is an important predictor of dropout (Rumberger, 1995; Boyle et al., 2002; Hanushek et al., 2006). Figure 2 shows the distribution of academic performance in the 2005 SARESP math test between dropout and non-dropout students.

Figure 2. Academic achievement by dropout status

The academic achievement of dropout students is lower relative to their peers who remained in school. In absolute terms, however, the academic achievement of dropout students is not necessarily low: most dropout students—about 67 percent—score above the Basic achievement level in the São Paulo standardized test. For students who scored below the Basic achievement level, the odds of dropping out of high school were 2.22 times larger than for students performing above the Basic achievement level. The odds ratio is larger for high income students (2.32) than for low income students (1.88). This means that the likelihood of dropping

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3 This analysis uses data from the 2005 SARESP math test, whose scores range from 0 to 100 and represent the percentage of correct answers in the test. The cutoff score for Basic achievement is 40, which is correlated with the official math cutoff score of “225” used by later SARESP editions, whose test scores are represented in an Item Response Theory scale.
out of school is larger for high income students who are below the Basic achievement level than for low income students who are below the Basic achievement level.

Finally the goal of this study was to focus on the mechanisms driving the generation of inequalities in dropout. Drawing on Boudon’s (1974) conceptual framework for studying inequality of educational opportunity, I argue that part of the inequalities in educational attainment is due to primary effects—that is, the effects of socioeconomic background on educational choices that are explained by unequal academic performance among students with differing social origins. Therefore, low income students may be more likely to drop out of school because they tend to struggle academically. Using the decomposition technique for non-linear probably models developed by Karlson, Holm, and Breen (2010), I found that only 18 percent of the dropout gap between lower and higher social background students seems to be associated with primary effects. That is, most of the socioeconomic inequalities in dropout might be explained by other factors—for example, higher direct and indirect costs of education for low income students.

**Conclusion**

Primary effects often play an important role in theories of educational inequalities. These theories claim that differentials in attainment are explained in great part by unequal academic performance among students with different social origins (Boudon, 1974). In fact, empirical studies have found that a high proportion of socioeconomic inequalities are attributable to primary effects (Erikson and Jonsson, 1996; Jackson et al., 2007; Schindler and Lörz, 2012). In this study, however, I found that only a small portion of the socioeconomic dropout gap is associated with performance differences.
This leads us to question why socioeconomic inequalities in dropout seem to be generated differently from the standard type of inequalities studied by traditional theories of educational inequality. I argue that these theories usually focus on socioeconomic inequalities at institutionalized transition points, in which students need to make an explicit educational decision (e.g. whether to go to college or not). Moreover, success at these transition points is conditioned by the student’s performance in a test. An example of institutionalized transition point is the transition from high school to higher education where students need to apply for college and their entrance depends on their scores in standardized tests such as the SAT. Because academic performance is a crucial factor in these institutionalized transition points, a large portion of the socioeconomic inequalities is explained by primary effects.

Dropout, on the other hand, is a non-institutionalized type of transition. The decision to continue in school is not necessarily dependent on students’ performance. Even grade progression is only loosely conditioned on ability—in conversation with teachers from São Paulo, I learned that marks on report cards are highly influenced by teachers’ subjective evaluation of the student, in particular of her or his behavior in the classroom. Other factors, therefore, might be more relevant to explain why low income students are more likely to drop out of school. These factors may include higher direct and indirect costs to education and lower expectations to further education.
References


