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Student Performance and School Costs in the Philippines' High Schools

Emmanuel Jimenez,
Vicente Paqueo,
and
Ma. Lourdes de Vera

Private schools in the Philippines are substantially more effective than their public counterparts in teaching language skills, marginally less effective in teaching mathematics skills, and much less costly per pupil than public schools.

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A key consideration in the policy debate on the appropriate role of private schools in predominantly public school systems is cost effectiveness. The questions are: Do private school students learn more than their public school counterparts? And is it more or less expensive to educate students in private schools?

Past studies in the Philippines and elsewhere have claimed that the educational achievement of students in the private schools is higher than that of students in public schools. These studies provide, however, only weak evidence regarding the relative cost effectiveness of public and private schools. A fundamental weakness is the potentially serious problem of selectivity due to unobserved differences between the student population of each type of school. Most of the studies do not compare costs in the two types of institutions.

Taking selectivity into account, the paper finds that controlling for the effects of students' socioeconomic background, individual motivation, and innate ability, the private schools show a significant edge over public schools in both English and Pilipino (about 15 percent of the sample mean achievement scores). Public schools, on the other hand, had a slight (roughly 4 percent) advantage in mathematics.

A comparison of cost per student reveals a substantial advantage for private schools: public schools in the Philippines spend on average roughly twice as much as private schools. These findings strongly suggest that private schools are an efficient purveyor of secondary education in the Philippines, a conclusion that should be taken into account in the formulation of policy measures that could threaten the existence of such schools.

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INTRODUCTION

Few analysts have challenged the notion that the public sector has a role to play in directing and stimulating education. However, the nature of that role has been the focus of a recent lively exchange in the literature.[1] In particular, it has been argued that, since private schools have built-in incentives to provide education efficiently, they should be allowed to compete with public schools on a (more or less) equal footing. Among developing countries, there is an added policy dimension: tightening fiscal constraints have limited the ability of the public sector to expand its provision of free public education (World Bank 1986). A greater reliance on the private sector may become a financial necessity if ambitious educational targets are going to be met in the near future.

The key empirical questions are: Do private school students learn more than their public school counterparts? Is it more or less expensive to educate students in private schools? The debate is fueled by controversy over methodology, interpretation and data. The most important methodological issue is the difficulty in attributing differences between the cognitive abilities of students in public versus private schools to school inputs alone, since a variety of non-school factors also affect achievement, such as socio-economic background, innate ability and individual motivation. Moreover, these non-school factors also affect school choices made by families. For example,

[1] In the United States, the debate was sparked by the Coleman, Hoffer and Kilgore (1982) report which concluded that private (Catholic) schools are more effective than public schools in helping students to acquire cognitive skills.

if children from privileged backgrounds only attended private schools, it would be difficult to infer how they would do in public schools. Thus, unless non-school factors are controlled appropriately, estimates of school effects will be contaminated by what has become known as "selectivity bias." The problem is that the researcher's measures of these factors, particularly those that act as proxies for ability and motivation, are far from perfect.[2] Modern statistical techniques help in controlling for this bias, although recent research has revealed that it is also important to keep track of one's assumptions in modelling (see Murnane, Newstead and Olsen, 1985, for a careful assessment of the results of Coleman et al. and their critics).

This paper contributes to the literature in several important dimensions. First, it extends the empirical evidence for developing countries by analyzing data secondary level from the Household and School Matching Survey (HSMS) conducted by the Educational Development Projects Implementing Task Force (EDPITAF) of the Philippines during the 1981-82 academic year. The only other rigorous comparisons of public/private schools in determining achievement in developing countries have been conducted in Kenya (Armitage and Sabot, 1987), Colombia and Tanzania (Psacharopoulos, 1987; Cox and Jimenez, 1987), and Thailand (Jimenez, Lockheed and Wattanawaha, 1988). The Philippines is a particularly apt extension because it has one of the highest rates of private school (about 40% of total secondary) enrollment in the world.

[2] Several studies have attempted to use direct measures of ability through the use of tests specifically designed to measure innate ability (e.g., an I.Q. test) rather than cognitive achievement (Psacharopoulos and Loxley, 1985; Boissiere, Knight and Sabot, 1984 among others). Many analysts have questioned the validity of these tests in distinguishing between ability and achievement. In any case, no one has ever suggested that such tests fully control for both ability and motivation.

Second, the paper also confronts the difficult methodological questions that have arisen in other studies. An individual's status as public or private school student is a choice made by student and parent. If this choice is systematically correlated with personal characteristics, there may be sample selection bias. We use some recent methodological advances to model and correct statistically for this bias.

Third, we use independently gathered data to compare unit costs of public and private schools, before reaching conclusions regarding the relative efficiency (as opposed to the relative productivity) of public and private schools.

In the next section of this paper, we outline the basic conceptual model and our approach in correcting for selection bias. Then, this is followed by sections on: data, results on school effects, results on relative costs and conclusions.

THE BASIC EMPIRICAL FRAMEWORK

Would a Filipino high school student, randomly selected from the general student population, do better in a public or private school? In the absence of experimental data, a reliable answer can be obtained from a cross-section comparison of public and private school students' performance in standardized tests -- if we control for student background, motivation and innate ability.

A standard method is to postulate the following reduced form model: the "ith" private school student's achievement score (A) is a function of a vector of observed background variables (X) and unobserved variables (e)[3]

$$(1a) \qquad A_{ip} = b_p X_{ip} + e_{ip},$$

where each component of b measures the marginal effect of a characteristic on achievement. The "jth" public (or government) school student's score can be be similarly expressed by replacing the subscript "p" with "g:"

$$(1b) \qquad A_{jg} = b_g X_{jg} + e_{jg}.$$

If the effects due to unobserved variables, e, are randomly and normally distributed, ordinary least squares regression techniques can be

[3]Alternatively, equations (1a) and (1b) can be estimated as one equation, with a dummy variable for private and public types of schools. However, statistical (F-) tests lead us to reject the hypothesis that the coefficients of all the other variables are equivalent in both types of schools. Results are available from the authors.

used to estimate the parameters of equations (1a) and (1b). Private/public comparisons can then be made using this information. The method would be to compare the predicted test score of a person with a given set of background characteristics in each of the public and private school systems by using equations (1a) and (1b).

A critical problem arises if the observed public and private subsamples are basically incomparable due to selection bias. This would be the case if students with a certain background systematically chose one type of school over another. For example, if privileged students chose only private schools, there would be no privileged students enrolled in public schools. Thus, it might be misleading to use equation (1b) to infer how privileged students would do in public schools. The error terms e are no longer normally distributed and OLS should not be used to estimate the above equations.

To correct for sample selection, we use Heckman's (1979) two-step technique. The first step in this methodology is to estimate what determines the choice of type of school. We assume that individuals will choose an educational plan, including the type of school, that maximizes the child's economic well-being, net of private costs. The solution to this problem can be shown to result in the following choice equation for the "ith" child (Cox and Jimenez 1987):

$$(3) \qquad I_i^* = k\, Y_i + w_i,$$

where I_i^* is an unobserved variable which characterizes the propensity of a household to choose a certain type of school for the child. Since

it is unobserved, we use the indicator variable:

$I_i = 1$ iff $I_i^* > 0$ and

$I_i = 0$ otherwise.

Y indicates the explanatory variables and w is a random error term.

The second st p is to use the results of the first step to correct for the selection bias in (1a) and (1b). With selection, the expected values of A_i are conditional on the choice of public and private sector. This means that the error terms e_i are correlated with w_i. The expected value of e_i will no longer be equal to zero and the estimated parameters in (1a-b) will be biased if OLS is applied. If we assume that (w_i, e_i) are jointly distributed normal with mean zero, then,

(4a) $E(e_{ip}|I_i>0) = a_p \lambda_{ip}$, and

(4b) $E(e_{ig}|I_i<0) = a_g \lambda_{ig}$,

where the λ_i's are (Mills) ratios of the ordinate of the standard normal at I_i to the probability of being in the sample. These are calculated from the first stage probit equation. Including the λ_i's in (3a) and (3b) would enable us to treat the selection bias as an omitted variables problem. The λ_i's times their OLS coefficients "a's" can then be interpreted as the direction and magnitude of selection bias in each of the public and private school achievement equations. The estimation of (1a) and (1b) with the inclusion of the λ_i's by OLS would be consistent (unbiased) because, in theory, the equations hold

constant for the probability of being selected in one subsample or another.

DATA

The Philippine context

Secondary education in the Philippines is geared mainly toward providing students with general academic education for college preparation, as well as vocational/technical training for employment preparation. The secondary education system provides for four years of high school after six years of elementary school. Students are generally 13-16 years old.

The various secondary schools comprising the system can be categorized in terms of funding as follows:

- Public national high schools funded by the national government. They include those administered by the Department of Education, Culture, and Sports (DECS), those attached to the State Colleges and Universities (SCUs), and the specialized schools.
- Public local schools funded mainly by local government units. They include the city, municipal, provincial, and barangay schools; and
- Private schools which are further classified into sectarian and non-sectarian institutions.

In school-year 1983, the year the our data were gathered, there were about 5,190 secondary schools nationwide. Of these, 62% were public and 38% private.

The public secondary school system derives support from two main types of sources: those generated within the school (6%-19%), such as tuition/school fees and funds from other sources, including income from business-type activities, grants, loans, and fund-raising activities; and aid from the national and local government units, by way of the general tax fund and other receipts. For the private schools, the financing process is relatively simple and direct. They retain all

income earned -- mainly from student fees, business-type activities, and grants -- and plow it back to the school, net of profits.

A recent study (Laya 1987) of secondary school expenditures shows that over all types of schools, unit costs come to about P666 (Philippine pesos) per student (See Table 1). The schools appear to be highly differentiated in their individual costs. The average private school is considerably cheaper (by about half) than the average public school. However, there is also a large difference between the two main types of public schools. Unit costs of local public schools are similar to (in fact, slightly lower than) those of private schools. However, national schools are three times more expensive than private schools.

Sample

The sample of children used in our regression analysis was obtained from data collected by the Household and School Matching Project (HSMS). These data, which were collected to provide integrated baseline information for policy analysis and the impact evaluation of the Program for Decentralized Educational Development (PRODED), include socioeconomic, demographic, and education-related information at the level of the community, school, household and individuals.

The data were collected nationwide between May 1982 and December 1983 from 260 barangays (villages) and 4990 households, which were chosen on the basis of a two-stage stratified random sampling scheme.

The identification of the barangay samples involved the stratified random selection of 20 barangays in each region across urban and rural and affected and unaffected strata. The households were, in turn, drawn randomly from the sampled barangays. Urban areas are

somewhat over-represented in the sample. From the listing of members in each sample households, the sample children for the study were identified.

About 62% of all sampled children aged 11-15 were administered an educational achievement test during the last quarter of the School Year 1982-1983. (The other children were not examined due to transfer of residence, refusal or failure to locate them.) The test employed to measure educational achievement was the Philippine Educational Placement Test (PEPT); it is the instrument developed by the National Educational Testing Center of the Ministry of Education for its annual Accreditation and Equivalency Program. It is a battery of tests designed to measure the grade (or year) level learning performance of early school leavers. The PEPT consists of sub-tests in Mathematics, English and Filipino, each of which consists of items that broadly cover the hierarchy of learning objectives as defined in the learning continuum from grade one to fourth year high school. In this type of test, called an "omnibus" test, all examinees are allowed to answer as many items as they can manage within the time allocation of 90 minutes per sub-test.

After deleting from the sample children who were not in high school and those who had incomplete information, we were left with a sample of 446 students for the analysis.

Achievement and student background

Of the 446 sample secondary students, 302 (68%) belong to public schools; 144 (32%) to private schools. Among the public school-going students, 57% live in urban communities; 43% in rural communities. Of the private school students, 63% come from urban communities and 37% from rural communities.

The mean characteristics of our sample secondary students, by school type, are presented in Table 2.

The table shows that the average grade equivalency for private school students, compared to public school students, is 34% higher overall. This trend does not vary by subject except for Pilipino where the public school students register an edge. However, this cannot be taken immediately as conclusive evidence that one school type is more or less effective than the other because the students in public and private schools differ in high school levels attained. As shown in the same table, almost a quarter of the private school students are already in their third or fourth year, compared to only about a tenth of the public school students. With respect to performance in Mental Ability Tests (MAT), the mean score for private students is likewise higher than for public school students but only slightly.

In terms of socio-economic standing, the private school students on the whole come from slightly advantaged backgrounds. Private school students come from households with income and assets almost double that of the public school students' households. The mothers of private school students also have, on the average, longer years of schooling over mothers of public school students. A lower percentage of private school students live in rural communities. Related to this could be the findings regarding media exposure, availability of electricity, and distance to school. Private school students have slightly more exposure to media than public school students. A greater percentage of them also live in communities where electricity is available, an amenity which can have an influence on

student achievement. Private school students live closer to both private and public schools probably because more schools of both types are situated in metropolitan areas. Proximity of private school students to both school types is about the same, although they have a slightly greater access to public schools. On the other hand, the difference in proximity of public school students to private versus that of public schools is more pronounced, with private schools considerably less accessible than public schools.

With respect to personal and other household characteristics of the students, on the average, private school students are slightly older than public school students. Both groups of students have about the same sex distribution with the females taking the majority. As to birth order, private school students tend to be slightly at the earlier line of siblings than public school students. There is, finally, a notable difference between the two groups of students, in terms of language used at home. A greater percentage of private school students use both English and Pilipino at home than public school students. This is significant because English and Pilipino are the two languages used for instruction in all secondary schools. One of these are used as medium of instruction in selected subjects.

THE EFFECT OF BACKGROUND ON ACHIEVEMENT IN PUBLIC AND PRIVATE SCHOOLS

Because the private and public subsamples are not necessarily a random draw from the student population, the assumptions of the basic linear model and could lead to biased estimates of the achievement effect. As noted earlier, the way to correct for this is to use the two-step technique: (i) estimate what determines the choice of school type and (ii) estimate the achievement functions holding constant for the probability of being in one type of school versus another.

What determines the choice of school type?

The first step in the estimation technique is to regress private school choice with variables that measure socio-economic characteristics. In specifying the regression equation, each household is assumed to maximize utility. Hence, it is expected to balance the gains and losses in deciding whether to send a child to private rather than public school. In this regard, although the private school charges higher fees, it may provide better and more educational services for which parents expect certain benefits.

Given that the decision has been made to enroll a child in school, the latent or unobserved variable (I^*) in equation 3 may be interpreted as the net utility gain of sending a child to a private instead of a public school. Consequently, if the net utility gain is positive ($I^*>0$), then private school will be chosen ($I=1$); otherwise, ($I^*<0$) the decision would be in favor of public school ($I=0$).

From this perspective the relative cost of public and private schools and ability to pay are of paramount importance. The tuition costs of private and public schools were not available. Moreover,

such costs are not appropriate explanatory variables of school choice since they may reflect school quality and would thus be endogenous variables. We, instead, use a measure of the other private costs of education. In particular, the relative distance of private vis-a-vis public school is expected to reduce the net gain of choosing private education and, hence, the probability of sending a child to private school. This is confirmed by the results presented in Table 3. The coef cient of the relative distance variable has the expected sign and is highly significant. At the mean values of the explanatory variables, an increase in the differential distance of private and public schools of 1 kilometer (i.e., private schools are 1 kilometer further away than public schools) will decrease the probability of being in private schools by two and one-half percentage points.[4]

Inasmuch as the value or willingness to pay by parents for the extra services (quality or quantity) offered by private schools depends on the household's ability to pay, the probability of choosing private education should also be positively related with income and household asset. This is borne out by the data. An increase in gross household income of one peso will increase the probability of being in a private school by a tenth of a percentage point. Parental education likewise increases the probability of private school choice. More educated parents may be assumed to put more value into the extra quality of educational services offered by private schools.

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4 For the j^{th} variable, this is computed from the formula $k_j \phi (\hat{k} \bar{y}_i)$ where $\hat{k}$ denotes the estimated probit coefficient and $\phi(.)$ refers to the standard normal density function.

Other relevant variables include media exposure and the age, sex and birth order of the child. These have no effect on choice of school type. It is possible that for some variables, conflicting effects wash out. For example, given the same total household resources, it is also plausible that higher order births may be at a disadvantage. It is also possible, however, that children born later may be going to school at the time when their parents are older and have more income; when older siblings are already contributing to household income. If these hypotheses are true, there may be no linear correlation between birth order and the choice of private school.

The parameters of the probit equation in Table 2 are used to estimate the term that will be used to correct for the selection bias. The average values of this term, called the λ's, which are used explanatory variables in equations (1a) and (1b), are shown in the penultimate row of Table 2.

How does socio-economic background affect school achievement?

The second step in the estimation is to use OLS to estimate the impact of background on achievement. The variables that are used to explain achievement, as measured by grade equivalency, in the Philippines (i.e., the vector X) include many of the same variables that are used in Table 3. These include assets, income, mother's education, media exposure, age, male and birth order. However, there are other variables which we expected would affect achievement, but not the choice of type of school. These include mental ability, the language used at home, community variables and the present year of schooling. Most importantly, there is one variable that is included in the

public/private choice equation but not in the achievement equation -- the relative distance of the student's home from private as opposed to public schools. This becomes our identifying restriction.[5] Finally, the achievement equation includes a term that holds constant for the selection bias --i.e., for the probability that a given student will be in private schools. This term is derived from parameters in the choice equation, as described earlier.

The estimated achievement equations are presented in Table 4, for private and public school students, respectively. These equations can be used to estimate whether or not a school achievement advantage exists in the public or the private sector, after holding constant for student background and selection.

As expected, the mental ability test score is significantly and positively correlated with the grade level equivalent (GLE) test score for all subjects. Another variable which consistently has significantly positive coefficients for all regression equations is sex. A female person compared to a male has an achievement score that is greater by about .63 - .95 of a year of GLE. This finding as it relates to mathematics is an interesting cultural phenomenon. It contrasts well with the U.S. experience. In a recent literature review of sex and

5 Without this restriction, the school choice and achievement equations may not be identified. Only the functional form would distinguish them. In many other studies, such a restriction is not available.

ethnic differences in middle school mathematics, Lockheed et al. (1985) have concluded that sex differences are not statistically significant. (Earlier, meta-analyses cited by the authors have concluded that boys performed better than girls.)

The asset and income variables, which perform extremely well in the probit equation, do not have statistically significant coefficient except in public schools for mathematics and English. And in the latter case the coefficient has a negative sign. Mother's education, which in the Philippines is very highly correlated with father's education, is statistically significant at customary levels only for English in private schools and mathematics in public schools. Exposure to mass media has a significant positive effect on English but a negative impact on mathematics. Not surprisingly, children from Tagalog-speaking families perform better in Pilipino, which is essentially a Tagalog based national language. Interestingly also, children from households that more frequently use English at home do worse in Pilipino, but do not score higher in the English test.

With regards to the effect of the community variables, the presence of electricity in the village turns out to have a very important effect on the child's achievement in mathematics and Pilipino. Children from communities that have electricity seem to score higher in these subjects by as much as .86 - 1.5 of GLE. On the other hand, holding other things constant, being in the rural area has a negative and significant effect only in the achievement score of children in English in public schools.

The coefficient of lambda times its coefficient can be interpreted as the selection term. Suppose that students are free to choose whichever type of school they prefer. One type of selection

results if student sort themselves into those institutions where they think they can perform the best. There would be positive selection in both private and public school samples. Another alternative is that students are hierarchically sorted. For example, if there is excess demand for places into the public schools and the best students are selected, there would be positive selection into public schools but negative selection into private ones. In either case, the analyst cannot observe the characteristics of private school students among the public school sample or vice versa.

The results shown that in math and pilipino achievement, the selection term is not significantly different from zero. However, in english language achievement the selection term is positive for both groups and significant for public school students. This is an indication (albeit a weak one) that students sort themselves according to comparative advantage in the choice of type of school, at least when it comes to language achievement.

Background constant, is there a private school effect?

The estimated differential in public and private school students' achievement score can be computed from the parameters presented in Table 4 to hold constant for the effect of background. Because private and public school achievement equations differ in terms of intercept and slope, the estimated differential could vary depending on the value of the independent variables. Hence, we estimate the private-public differential using alternative sets of assumptions regarding the value of the independent variables.

The first row in Table 5 presents the unconditional private school effects calculated at the average characteristics of the overall sample of public and private students. The estimates show that students in private school perform better in English and Pilipino. The private school effect is close to 15 percent of the average achievement scores of the sample students. In mathematics, on the other hand, private school students have a lower performance, although the disadvantage is relatively small -- the negative private school effect is only 4 percent of the sample average score for mathematics.

To examine the sensitivity of the private/public differentials to socioeconomic status (SES), we compare the above results with those for low and high SES students. These are shown in rows 2 and 3, respectively. The private school advantage persists for all the groups. However, its magnitude varies. The advantage of the private school increases with SES in English. The development of English-language skills is emphasized in many Philippine private schools. Children from higher status backgrounds will benefit more from these schools since they will tend to come from environments where English is used often and where they have better access to English-language media. In Pilipino there is no relationship between SES and the strength of the private school effect; in mathematics the private school effect diminishes with SES.

Our measure of academic performance reflects the cumulative achievement of students in the sample. The private/public differential may be sensitive to the number of years of secondary education completed. A comparison of the figures in rows 4 and 5 of Table 5 reveals that the private school effects in all three subjects are

positive for first and second year students. For third and fourth year students, this private school advantage persists in English and Pilipino. In mathematics the effect becomes negative, although its size is relatively small at about 6 percent of the sample mean score for mathematics. Furthermore, the estimates show that while the private school advantage decreased in English, it increased in Pilipino. This may reflect the relative emphasis of public schools in the quality of teaching in upper years relative to lower years.

In sum, the overall direction of the private school effect is the same for various socioeconomic groups and for different yeas of high school. However, the magnitude varies. The variation depends upon the measure of educational output -- whether math or language skills.

CONCLUSIONS

According to the data analyzed in this paper, private school students in the Philippines, on average, attain a higher grade equivalency than their public school counterparts in tests in mathematics (by 1.4 years, or 31%) and in English (by 1.6 years, or 42%). In Pilipino, the national language, public school students perform considerably better than their private school counterparts -- by almost double the grade equivalency.

Simple comparisons of averages do not necessarily measure the advantage of one type of school over another. Students may differ systematically and their characteristics also influence their performance in grade equivalency tests. In this paper we used regression analysis to control for the effect of these characteristics. The regressions were corrected for sample selection bias. Our conclusions differ from those deduced from the simple comparisons described in the preceding paragraph. There is a decided private school advantage in both English and Pilipino (by more than half a year, or roughly 15 percent of the sample mean achievement scores). The private school advantage in Pilipino is particularly remarkable because of the emphasis placed on this subject in public schools. Although public school students do better, they do so because of their background characteristics, rather than because of what they learn in school. In mathematics, one finds a relatively small difference favoring the public schools -- roughly four percent of the sample mean score in mathematics.

A comparison of cost per student reveals that on average public schools spend roughly twice as much as private schools. Yet, academic performance in English and Pilipino is better among the latter.

Moreover, even in mathematics where public school students did better, their advantage is slight and is unlikely to outweigh the substantial public/private cost differential.

These findings strongly suggest that private schools are an efficient purveyor of secondary education in the Philippines. This finding is consistent with the hypothesis that a more decentralized management of schools and greater accountability, which characterize private schools, are key factors in the internal efficiency of the education sector. It appears that what counts is not only the magnitude of available school resources but also the extent to which those responsible for influencing student achievement have the incentive to plan and manage these resources themselves. This finding should be considered in the formulation of policy measures which could threaten the existence of such schools -- such as overly restrictive fee ceilings and massive expansion of subsidized public schools.

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Table 1: The Size and Costs of Philippine Secondary Education, 1985

	Public Schools			Private Schools	All Schools
	National	Local	Overall		
Enrollment:					
Thousands	712	1,273	1,985	1,415	3,400
Percent of Total (%)	21	37	58	42	100
Cost Per Student (Pesos)	1,570	400	820	450	666
Sources of Revenues (%):					
Student Fees/Miscellaneous	6	19	-	100	-
General Fund	94	81	-	0	-
Total	100	100	-	100	-

Source: Laya (1987)

Table 2: Background and Achievement in Private and Public Schools' Philippines, 1981

Variable Description	Private		Public	
	Mean	Std.Dev.	Mean	Std.Dev.
Grade equivalency in achievement in:				
Mathematics	5.99	2.23	4.58	2.19
English	5.52	2.30	3.90	2.01
Pilipino	2.38	1.66	4.72	2.21
Household Assets ('000 of pesos)	90.12	161.01	47.60	111.79
Gross household income ('000 pesos)	34.78	61.60	16.78	40.87
Mother's education (years)	10.50	4.07	8.52	3.74
Exposure to media (1=frequent;0=other)	.64	.48	.51	.50
Age (years)	13.30	.79	12.85	.85
Male (1=male;0=female)	.45	.50	.46	.50
Birth order	3.27	2.22	3.48	2.24
Mental ability test score	57.10	14.27	51.63	14.84
Use of English (1=frequent;0=other)	.45	.50	.36	.48
Use of Pilipino (1=frequent;0=other)	.74	.44	.58	.49
Rural community (1=yes;0=no)	.37	.48	.43	.50
Electricity available (1=yes;0=no)	.96	.20	.83	.38
Year in high school:				
First or second	.76	.50	.89	.42
Third or fourth	.24	.43	.11	.31
Distance to school (kms.)				
Private	1.92	3.16	9.53	28.66
Public	1.80	2.32	2.42	3.53
Relative (private-public)	.12	2.77	7.11	28.93
Lambda	.98	.28	-.47	.26
Number of observations:	144		302	

Table 3: Choice of Private and Public Schools
Probit Equations (Private=1) for Philippines, 1981

Variables	Coefficients	t-statistics
Constant	-0.90351	-3.356
Relative distance	-0.06922	-4.234
Household Assets	0.00112	2.268
Gross household income	0.00278	2.169
Mother's education	0.05909	3.236
Exposure to media	-0.19886	-0.966
Age	0.04565	0.326
Male	-0.05754	-0.433
Birth order	-0.01598	-0.524
Log-likelihood	-248.05	

Table 4: Achievement Functions for Private and Public Schools in the Philippines

Variable	Coefficients (t-statistics)					
	Math		English		Pilipino	
	Priv.	Pub.	Priv.	Pub.	Priv.	Pub.
Constant	-1.987	1.661	-2.208	1.689	-1.921	0.611
HH Assets	0.0004	0.002	0.001	-0.0001	-0.001	-0.001
	0.321	2.327	0.614	-0.115	-0.658	-1.032
Gross HH income	-0.002	0.004	-0.001	-0.005	0.004	-0.004
	-0.628	1.374	-0.469	-2.366	1.345	-1.231
Mother's educ.	0.049	0.062	0.173	-0.042	-0.033	-0.010
	0.800	1.652	2.719	-1.156	-0.518	-0.251
Media exposure	-0.636	-0.194	-0.341	0.359	0.161	0.276
	-2.111	-0.924	-1.087	1.768	0.514	1.222
Age	0.099	-0.130	0.100	-0.104	0.069	0.008
	0.434	-0.933	0.420	-0.777	0.292	0.053
Male	-0.745	-0.708	-0.955	-0.630	-0.863	-0.819
	-2.531	-3.463	-3.112	-3.205	-2.820	-3.727
Birth order	-0.019	-0.043	0.006	0.034	-0.077	0.019
	-0.291	-0.910	0.082	0.754	-1.132	0.385
Mental ability	0.099	0.081	0.084	0.061	0.106	0.064
	8.894	11.424	7.273	9.055	9.153	8.419
Use of English	-0.410	-0.388	-0.109	0.028	-0.036	-0.705
	-1.169	-1.579	-0.298	0.120	-0.099	-2.669
Use of Pilipino	0.136	0.136	-0.105	-0.039	0.504	0.646
	0.391	0.559	-0.290	-0.166	1.393	2.482
Rural community	0.089	0.220	-0.438	-0.441	-0.158	-0.088
	0.288	0.958	-1.359	-1.991	-0.490	-0.359
Electricity	0.988	0.568	-0.433	0.246	1.497	0.862
	1.364	1.987	-0.578	0.884	1.984	2.809
3rd/4th yr. dummy	0.327	0.672	0.085	0.380	0.411	0.178
	1.585	1.847	0.514	1.121	1.923	0.478
Lambda	0.379	0.654	1.093	-1.689	0.112	-0.497
	0.353	1.160	0.986	-3.013	0.100	-0.823
R-squared	.488	.346	.474	.283	0.511	.296
F-stats	8.128	11.632	7.682	8.905	8.912	8.005

Table 5: Private School Effects After Holding Constant for Background Characteristics (expressed as a percent of the overall sample's mean achievement scores)

Background characteristics set at:	Math	English	Pilipino
1. Overall sample means	-3.9%	14.9%	13.7%
2. Low socioeconomic status (as in 1 except assets, HH income, mother's education set at 25% lower)	-2.1%	2.9%	13.8%
3. High socioeconomic status (as in 1 except assets, HH income, mother's education set at 25% higher)	-5.7%	26.8%	13.6%
4. First or second year HS (as in 1 except third/fourth year dummy set at 0)	0.6%	17.5%	18.5%
5. Third or fourth year HS (as in 1 except third/fourth year dummy set at 1)	-6.2%	10.8%	24.4%

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