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Private Resources and Educational Quality:
The Case of Primary Education in Thailand

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ABSTRACT

This paper studies the characteristics and determinants of private resources to primary education in Thailand. Three categories of private resources to education are considered: direct private costs of education, household contributions to school, and indirect private costs of education. The paper finds that: (1) private resources to primary education are substantial and are an important source for financing educational inputs that are directly related to student learning, (2) there are significant variations in such resources among different types of school and students of different backgrounds, (3) in general, private resources to education are related to both family and school factors, and (4) the economic burdens of private resources to education are heavier for lower-income, less wealthy, and agricultural households. The implications of private resources to education for policy and research on education quality are also explored.

Educational Quality and Private Resources to Education

In the past two and a half decades, education systems all over the world have expanded rapidly, as reflected in large increases in enrollments and public educational expenditures. But as education systems develop quantitatively, problems of low educational quality have become more evident. In many countries, there are high drop-out and repetition rates in education, especially at the primary level (UNESCO, 1984). Some recent studies argue that investment in educational quality is just as important as investment in educational quantity (Heyneman and White, 1986).

For many countries, especially the poor ones, the need to improve educational quality presents a formidable fiscal challenge. Unmet social demand for education and stagnant economic growth indicate that interventions to improve school have to be undertaken under very tight government budget. This has prompted education decision-makers to seek alternative sources, including private resources, to fund education and to reexamine the allocation of financial resources within education.

This paper considers three categories of private resources to education: direct private costs of education, household contributions to school, and indirect private costs of education. Direct private costs of education are expenditures by parents on a student's schooling, such as expenditures on tuition, other school fees, uniform, textbooks, writing supplies, school bag, and transportation. Household contributions to school are contributions, in cash or in kind, from families to school and/or school personnel (e.g., teachers). Indirect private costs of education refer to the economic value of the opportunities foregone (such as income from production) as a result of schooling. The first two categories constitute the direct private resource while the third category is an indirect private resource.

For purposes of improving education quality, there are at least four reasons for considering private resources to education. First, direct private costs and household contributions are direct private resources that augment public resources to education. Some of these direct private resources (such as school fees and household contributions) can be used by the school on interventions to raise quality. Second, how parents allocate their resources to schooling is also relevant. Parents may be encouraged to spend more on items (such as textbooks and other learning materials) directly related to student learning. Third, differences in private resources to education among

social groups may exacerbate educational inequalities among social groups. A good understanding of the variations in private resources to education will inform educational policies designed to mitigate educational inequalities. And fourth, the omission of private resources can significantly underestimate the true costs of education and may lead to erroneous estimates of the costs of quality-improvement interventions.

To date, there are very few studies of private resources to education in developing countries; and information on private resources to education in these countries is either lacking or fragmentary (Tsang, 1988). However, the available evidence indicates that private resources to education are very substantial (Tilak, 1985; Tan, 1985; Paulsen, 1981); they also vary significantly among countries and type of school (Wolff, 1985; Schiefelbein, 1986). These preliminary findings indicate the potential of private resources to education as a policy option for educational decision-makers for influencing educational quality.

This paper is a study of private resources to primary education in Thailand. Thailand is a country with universal primary schooling and for which the quality of primary education is a major concern of educational decision-makers. Four research questions are addressed in this paper: (1) How much are Thai parents spending on primary education and how do they spend their resources? (2) How do private resources to primary education vary by family background and type of school? (3) What is the level of economic burden (defined as private resources as a percentage of household income) for different social groups? And (4) What are the key determinants of private resources to primary education? The purposes of the paper are to provide an in-depth understanding of the characteristics of private resources to primary education in Thailand, and to explore the financial and equity implications of such resources for raising school quality.

Compared to previous studies which examine some subsets of the three categories of private resources to education, this study is more comprehensive in that it considers all three categories. The question of economic burden has not been addressed previously. This study also employs household-level data with detailed cost information.

Data and Sample Characteristics

Data for this study came from a survey of parents in 1988 in Thailand.

Based on a multi-stage sampling strategy, 12,000 grade 6 students were first selected. The parents of a representative subsample of 2,305 students were then asked to respond to a questionnaire. The questionnaire raised information on (1) the parents' education, personal, and other family background, (2) parental involvement in school activities and expectations about their child's educational and occupational attainment, and (3) private resources to primary schools in 1987.

Among the 2,305 students, 83% attend government schools and 17% attend private schools. Among the government-school students, most students (84%) are from schools administered by Office of the Primary Education Commission (ONPEC); most of these schools are in the rural or semi-rural areas. The rest of government schools are in the Bangkok metropolitan area (10%) and in other municipal areas (6%). On the average, fathers have 6.7 years of schooling and mother have 5.8 years of schooling. 93% of the parents are Buddhists, 6% are Muslims and 1% are Christians. With regard to fathers' occupation, 56% work in agriculture, 9% are traders, 12% are manual workers, 7% are clerical and government workers, 6.5% are professionals and executives, and 5.5% are craftsmen. The average household income was 4420 Bahts (about US \$175) per month in 1987.

There are also correlations between family-background characteristics and enrollments in different types of schools. Compared to government schools, private schools have a proportionally larger enrollments of students from higher income, more wealthy, more educated, and white-collar backgrounds. For example, for households with monthly income in the lowest 40% of the sample, 98.3% have children in government schools and 1.7% have children in private schools. For households with monthly income in the highest 20% of the sample, 36.7% have children in government schools and 63% have children in private schools. The household asset of government-school parents averages about 33,000 Bahts, compared to 181,000 Bahts for private-school parents. Also, for fathers with primary education, 92.3% send their children to government schools while 7.7% have their children in private schools. On the other hand, for parents with education at the college level or beyond, 39.6% have children in government schools and 60.4% have children in private schools. Finally, most of the agriculturalists send their children to government schools, especially ONPEC schools (95.6%). For clericals and government workers, enrollments in government schools and private schools are 46.9% and 53.1% respectively; and

for professionals and executives, the corresponding numbers are 39.3% and 60.7%.

Patterns of Private Resources to Primary Education

Consider the measurement of private resources to primary education in Thailand. Direct private costs consist of tuition cost and non-tuition costs. In Thailand, only private schools charge tuition; government schools charge no tuition. Non-tuition costs include household expenditure on students' uniform, school bag, textbook, writing supplies (such as pencil, ruler, notebook, eraser, color pencil, and pen), transportation, school fees (for lunch program and other school activities), shoes and sportswear. It may be pointed out that not all the costs of shoes and sportswear are related to schooling since these items are often used by students outside school. It is not possible to obtain accurate information about the utilization of these items between schooling and non-schooling purposes. Such costs are not adjusted downwards in this study.

In Thailand, parents make contributions, in cash or in kind, to school in various ways. These include contributions made to the school (through the principal, the education committee of the school, a temple which then makes contribution to a school), or to a teacher. There is a rather close relationship between the school, the temple, and the community. Contributions in kind are estimated in monetary value by parents themselves.

The indirect private costs of primary education are difficult to estimate precisely, because of measurement problems of foregone opportunities. In this study, the opportunity cost of primary schooling was estimated to be the additional number of hours which parents would like children to help them per day if their children were not in school. As a reasonable approximation, the monetary value of one hour of a grade-6 student's time is set at 25% of the minimum wage of an adult. The minimum wage was about 7.5 Bahts per hour in urban areas and 6.5 Bahts per hour in rural areas in 1987. The total indirect private cost per year is the product of 25% of the minimum wage, the opportunity cost (in hours per school day) and the number of school days per year. Obviously, the estimate of indirect private cost is sensitive to the assumption regarding the monetary value of an hour of a grade 6 student's time. Most of the parents who responded to this item said that they wanted their children to help them with house work, and/or their family production. It is not inappropriate to estimate a monetary value for the time of a grade-6

student because, in Thailand, children leave school early (especially after grade 6) to work.

To address the first research question, Table 1 presents data on the three categories of private resources by type of school. It provides information on the amount for each item of private resources and on the percentage distribution among items in a category. Consider first the magnitude of private resources. Two observations can be made: first, private resources vary significantly among different types of school, and second, they are rather substantial when compared to school expenditures.

Private-school parents spent about 2.3 times (1586.3/695.2) the amount by government-school parents directly on the non-tuition items of students' schooling. With tuition included, the ratio becomes 4.7 (3262.3/695.2) between private schools and government schools. The difference in non-tuition direct private cost is still very large among government schools; ONPEC-school parents spent much less than parents in Bangkok and other municipal areas.

With respect to total household contribution (row Y in table), the difference between government schools and private schools is rather small, but the difference is large between ONPEC and Bangkok school on the one hand, and municipal schools on the other hand.

As for indirect private cost, the order of the relative costs among schools is almost the reverse of that for direct private cost. Government-school parents have much higher indirect private cost than private-school parents, and ONPEC-school parents have the highest indirect private cost. In short, large differences in the amounts of private resources exist among different types of schools, but the ranking by school type varies with the category of private resources.

The total private resources shown Table 1 can be compared to the per-student total school expenditure (sum of recurrent and capital costs) of primary schools in Thailand. In 1987, schools spent an average of 3855 Bahts per student. Thus total private resources represent 35.2% and 97.2% of average per student school expenditure for government schools and private schools respectively. For all schools, the ratio of total private resources to average per-student school expenditure is .457, indicating that private resources constitute a substantial economic source of support for primary schools in Thailand. Even when indirect private cost is excluded, direct private

resources (direct private costs plus household contributions) still stand for one-third of school expenditure.

Consider next the question of how Thai parents allocate their resources within and between cost categories. For non-tuition costs, shoes and sportswear, textbook and writing supplies are the major items for all parents. Interestingly, parents of both government and private schools spent about an equal percentage (40%) of total non-tuition cost on items directly related to learning (i.e., textbook and writing supplies). Private-school parents spent 615 Bahts per student on learning materials compared to 282 Bahts per student for government-school parents. Private expenditures on these learning materials amounted to 8.8% of total school expenditure in 1987. Since only 2.8% (based on school data collected by this study) of the total school expenditure was spent on instructional materials and teaching aids in Thai primary schools in 1987, private expenditures on learning materials increased the total expenditure on learning materials by over three times of that made by the school. Besides these items, transportation cost was a relatively large item for private schools, but not for government schools. Finally, tuition cost accounted for over 50% of the total private cost of private-school parents.

For all parents, household contributions in 1987 went primarily to the school, rather than teachers. While most of these contributions were in cash, contributions in kind were also a very significant part (39%) of the total household contribution. In contrast to the large differences in direct private costs between government schools and private schools, household contributions were quite similar for these schools. Thus government-school parents devoted a much higher percentage of their direct private resources to household contributions than private-school parents (18.1% to 4.3%). On the average, household contributions amounted to 4.0% of school expenditure, which was 43% larger than the 2.8% school allocation to instructional materials and teaching aids in 1987.

Indirect private cost was quite significant compared to total direct private cost for government-school parents, and it accounted for 37.4% of the total private resources to school for these parents. Private-school parents had lower indirect private cost which was only 9.0% of their total private resources to school. If the hourly wage rate for grade 6 students were doubled, indirect private cost would constitute about 54% and 16% of the total

private resources to government schools and private schools respectively; and if the wage rate was halved, the corresponding percentages would be 23% and 4.7%. Thus the value of the ratio of indirect private cost to total private resources is affected by the assumption about the wage rate for grade 6 students.

In short, direct private resources to school were an important source to support the provision of quality-related educational inputs; and parents of different types of school varied significantly in their allocation of resources among the three cost categories.

To address research question 2, Table 2 presents information on the three categories of private resources by type of school for students of different backgrounds. Consider first the gender of students. For both total direct private cost and indirect private cost, differences between the two sexes are quite small, from less than 1% to 10%, for both types of school. But for household contributions, parents of female students contributed 117% and 43% more than parents of male students to government schools and private schools respectively.

For household income, both total direct private cost and household contributions exhibit an upward trend. Note in particular the relatively large contributions made by the highest-income group (top 10%) to school. Yet the lower-income families had the highest indirect private cost, because of the greater need of these families for children to take part in family production and household work. These observations hold true for both types of schools.

In general, more educated fathers spent more on direct private cost and household contributions; the exceptions were fathers with diploma education, and fathers without education and with children in private schools. There appears to be no correlation between fathers' education and indirect private cost.

On the average, fathers working in white-collar jobs (clerks, professionals, executives, and government workers) spent more on direct private cost and contributions than fathers in blue-collar jobs (manual workers and craftsmen). Blue-collar fathers had higher direct private cost than agriculturalists and traders, but they contributed less to schools than the latter. Except for professionals, agriculturalists and traders had the highest indirect private cost. It can be pointed out that agriculturalists had lower income than blue-collar workers who had lower income than white-collar workers.

Private resources to school also vary with the religion of the parents. For all three cost categories and for both types of school, Muslims had the least private resources to education. Christians contributed a relatively large amount of resources to private schools, they also had the highest indirect private cost.

Using the total value of household possessions (rice cooker, gas oven, radio, television, refrigerator, electric fan, bicycle, motorcycle, motor car, air conditioner, sewing machine, and others) as a measure of family wealth, it can be seen that more wealthy families spent more direct private resources on school; they also had lower indirect private cost because of the lower demand for children's time. Finally there is no consistent pattern between the number of children in a family and the amount of private resources to education.

To sum up, more educated, higher income, and more wealthy families devoted more direct private resources to primary education; while lower income, poorer, and agricultural families had higher indirect private cost. Differences in total private resources between male and female students are quite small.

Although private resources can be used to augment school expenditures in general and to support quality-oriented interventions in particular, from the concern for equity among social groups, it is important to assess the level of economic burden of private resources to education for different social groups. One measure of economic burden is to express private resources to education as a percentage of household income. Table 3 presents information on economic burden by type of school for different student backgrounds.

For government schools, total economic burden (i.e., total private resources as a percentage of household income), amounted to 14.4% in 1987; indirect private cost accounted for half of this amount. For private schools, the total economic burden was only 4.8%, most of which came from total direct private cost. For all households, total direct private cost represented 5.5% of household income and it would drop to 4.0% if expenditures on shoes and sportswear were excluded from total direct private cost; in either case, it was a non-trivial amount.

The inverse relationship between total economic burden on the one hand, and household income as well as family wealth on the other hand, is striking. The total economic burden was especially heavy for the poorest families; but at the same time, they had less direct private resources spent on their children's education, in Bahts per year, (see Table 2). Other patterns are also obvious.

For example, more educated families had lighter burdens; agricultural families had heavier burdens than non-agricultural families; and within the non-agricultural sector, blue-collar families had heavier burdens than white-collar families. With regard to family religion, the ranking was Islam, Buddhism, and Christianity, in order of increasing economic burden. Finally, differences in total economic burden for the two sexes and for families with different number of children were relatively small.

Determinants of Private Resources to Primary Education

To determine the key factors affecting private resources to primary education and to find out their independent effects on these resources (research question 4), this study employs an ordinary-least-squares (OLS) regression model. The explanatory variables consist of four groups of variables (see Tables 4-6). The first group includes nine family-background variables. Here parents' educational attainment is measured in years of schooling, both household income (Bahts per month) and family wealth (asset in Bahts) are expressed in logarithmic scale. There are two occupational dummy variables, the control group being agriculturalists and traders. There are also two dummy variables on the religion of the father, the control group being fathers who are Buddhists. Finally there is a variable on the number of children in a family.

The second group consists of two variables on parental engagement with children's education. The first variable measures parents' expectation of children's educational attainment (in years of schooling). The second variable measures parents' participation in school activities (in number of days in 1987).

The third group are the three dummy variables on the type of school. The fourth group is a dummy variable on the gender of a student.

Table 4 presents OLS estimates for three dependent variables, total direct private cost, total household contribution, and indirect private cost, all measured in Bahts in 1987. For each dependent variable, three equations were estimated, one for government schools, one for private schools, and one for all the schools. Consider first total direct private cost (Equations 1-3). Most of the variables have the expected signs. Parents' education, household income, family wealth, parental expectation and type of school are all significant factors; that is, total direct private cost is affected by both

school and non-school factors. Student's gender, parents' religion, and parents' occupation (except for Equation 1) have no independent significant effects on total direct private cost. The model explains about 44% of the variation in total direct private cost for the entire sample, an encouraging result.

While the model explains variation in total direct private cost among government-school parents much better than that for private-school parents, the reverse is true for total household contribution (see Equations 4 and 5). Although most of the coefficients have signs consistent with data on household contribution in columns 3 and 4 of Table 2, the only significant factors are family wealth and parental participation in the private-school subsample. In particular, there are no significant school effects on total household contribution, and student gender is not a significant factor. The model explains variation in total household contribution rather poorly.

School variables and family background variables are both significant determinants of indirect private cost (see Equations 7-9). But parental engagement variables are insignificant. Again, student gender has no significant effect on indirect private cost.

Looking at the impact of explanatory variables across the three dependent variables, a number of interesting observations can be made. First, school variables are significant factors of both total direct private cost and indirect private cost, but their impacts operate in opposite direction. The same pattern holds for mother's education and number of children in the family-background group. Second, regarding parental engagement, when parents have higher expectations of educational attainment for their children, they spend more on their children's schooling directly; but they do not significantly increase their contribution to school. However, if they are more active in school activities, they contribute significantly more to school (a finding reinforced in Equations 4-6 in Table 5), but they do not significantly spend more directly on their children's schooling. Third, although there are large variations in direct private resources among occupational and religious groups, (see columns 1-4 in Table 2), the occupation and religion dummy variables had no independently significant effects on direct private resources, after controlling for other family background and school variables.

Table 5 presents OLS estimates of the same set of variables except that the dependent variables are in logarithmic scale. While most of the findings in

the two tables are similar, in terms of the sign and statistical significance of the estimated coefficients, the logarithmic form does increase the R^2 value for six of the nine equations, especially for equations on total household contribution.

In the logarithmic form, household income, being a Muslim, and blue-collar occupation are significant factors for all three categories of private resources. The results indicate that, other things being equal, higher-income families have significantly higher costs. Compared to Buddhist fathers, Muslim fathers have significantly lower costs. And compared to agriculturalists and traders, blue-collar fathers have significantly higher direct private cost, but significantly lower household contributions and indirect private cost.

It is instructive to compare the estimated coefficients for household income and family wealth. The coefficients are income elasticities and wealth elasticities of private resources which measure the responsiveness of private resources to changes in household income and family wealth respectively. Equations 1-6 in Table 5 indicate that direct private resources respond more to wealth than income. But for indirect private cost (see Equations 7-9), family wealth is not a significant factor and household income has a larger elasticity in two of the three equations.

We can also get some insight into how the income elasticity of private resources changes as income increases, by comparing income elasticities for government schools and private schools. For all three categories of private resources, household income is a significant factor for government schools, but not for private schools; and for direct private cost and indirect private cost, government schools had significantly larger elasticities. Since government-school families generally have much lower average income (3124 Bahts/month) compared to private-school families (10477 Bahts/month), the above findings indicate that private resources respond much more to increase in household income at low-income level than at high-income level.

Finally, Table 5 confirms that parental expectation is a significant and positive factor of direct private cost, that parental participation is a significant and positive factor of household contribution, but that both of these factors have insignificant effect on indirect private cost.

To complete the multivariate analysis, Table 6 presents the OLS estimates of the determinants of the economic burden of private resources to primary education on households in Thailand in 1987. In Table 6, there are four

measures of economic burden, for total direct private cost, total household contribution, indirect private cost, and total private resources, respectively. Three equations were estimated for each measure of economic burden. Consider the effects of each of the four groups of explanatory variables on the four measures of economic burden across Table 6.

Consistent with the findings in previously tables, Table 6 indicates that the gender of a student makes no significant difference in economic burden on the household, but family background does. A number of observations can be made on the family-background variables. First, mother's education is a more significant predictor of economic burden than father's education. Mother's education has significant but opposite effects on the direct-private-cost burden and the indirect-private-cost burden; these effects appear to cancel each other out in the total-economic-burden equations. This pattern of effects is also found for the variable on the number of children. Second, for the entire sample, higher income families had significantly lighter economic burden. Thus even though higher-income families devote more private resources to education, such resources exert less financial strain on them. Third, in contrast to their rather similar effects on the amount of private resources, household income and family wealth have different effects on economic burden. For example, the direct-private-cost burden decreases with household income but increases with family wealth. Family wealth is not a significant factor of the other three measures of economic burden, while household income is. Fourth, the two occupation dummy variables have dissimilar effects. Compared to agriculturalists and traders, blue-collar families have significantly lighter indirect-private-cost burden and lighter total economic burden; but there are no significant differences between white-collar families and agriculturalists and traders on these two measures. The pattern is somewhat reversed for the other two measures of economic burden. Fifth, while Tables 4 and 5 indicate that Islamic families spend significantly less resources on education compared to Buddhist families, Table 6 indicates there is no significant differences in economic burden between them (probably because Islamic families had lower income). But in private schools, Christian families have significantly heavier economic burden than Buddhist families.

With regard to the parental-engagement variables, parental expectation is a significant factor of economic burden for the entire school sample. Expectedly, parents who want higher educational attainment for their children

have heavier burden related to direct private cost and household contribution, but lighter burden related to the demand for children's labor. Interestingly, parental participation is a significant factor for private schools only.

It is noteworthy that, after controlling for student, family, and parental engagement factors, school variables are relevant only for the direct-private-cost burden. In other words, total economic burden, household-contribution burden, and indirect-private-cost burden are determined primarily by family-background and parental engagement factors.

Summary and Implications for Improving Educational Quality

This last section of the paper summarizes the major findings of the study and explores the implications for policy and research on educational quality.

This paper presents findings on all three categories of private resources made by parents for purposes of their children's schooling. It shows that private resources to primary education are quite substantial, either as a proportion of school expenditure or household income. It corroborates the general findings of previous studies which focus on a subset of these private resources. In primary education in Thailand, private expenditure is the major financial source of learning materials. Through school and community organizations, parents contributed an additional 150 Bahts per student in resources to the school which represented 1.43 times the school expenditure on instructional materials and teaching aids in 1987. The non-trivial amount of household contribution was also reported for rural primary schools in Colombia (Paulsen, 1981).

This study documents the large variations in the amount of private resources to primary education among different type of school and among students of different family backgrounds. Compared to public-school parents, private-school parents spend much more directly on their children's education, have less demand for their children's labor, and contribute the same amount of private resources to school. In general, families with higher income, more wealth, and more educated parents devote more direct private resources to schooling; but poorer families (in terms of income and wealth) have higher demand for the children's labor, thus higher indirect private cost. Compared to non-agricultural families, agricultural families spend much less directly on their children's schooling, have a higher demand for their children's labor, and contribute an equal amount to school. Differences between male and female

students are generally small. Significant differences in direct private costs for different schools and family backgrounds were also found in secondary schools in Tanzania (Tan, 1985). But in secondary schools in Tanzania, female students had significantly higher expenditures than male students.

The study also finds that even though poorer families spend much less on education, private resources account for a much higher proportion of their household income; the same is true for agricultural families when compared to non-agricultural families. It is important not to ignore the economic burden of indirect private cost which accounted for half of the total burden. The demand for child labor in the rural area could lead to parents withdrawing their children from school (Psacharopoulos and Woodhall: 1985, Chapter 5).

Multiple-regression analysis indicates that, in general, school, family and parental factors all have significant effects on the amount of private resources, but their effects vary with the category of private resources. In contrast, except for the direct-private-cost burden, economic burden is significantly affected by family and parental engagement factors, not school factors.

The findings of this study have a number of implications for public policies and research on educational quality. First, direct private expenditure is a very important financial source of support for educational inputs directly related to quality. Parents should be encouraged to spend a larger proportion of direct private cost on such inputs. Second, household contributions to school are attractive to school administrators because they have direct control over the utilization of these contributions. These contributions can be used to augment the revenue of a school or for interventions related to quality improvement. Such contributions can be encouraged by strengthening the school-community relationship (as in Thailand), which may involve using existing or establishing new community/school organizations and encouraging parental involvement in school activities. Third, our findings also clearly indicate that private financing of education is inequitable and that it contributes significantly to inequalities in resources for students from different family background or regions. Thus, with regard to private resources, the policy concerns for resource mobilization, and for equity and equality may not be compatible. To mitigate the negative effects of private financing, one policy option to consider is to redirect some public resources to education from the affluent urban population to the poor

and rural population. The objective is to encourage more direct private resources from families who can afford them so that additional public resources can be spent on schools attended by students of poor and rural backgrounds. It may be noted that the political feasibility of this strategy can vary from one country to another. Fourth and finally, the findings indicate that it is important to consider private resources in the study of educational quality. The omission of private resources significantly underestimates the real cost of education in general and the financial implications for educational quality in particular. Also, to the extent that student learning is related to the utilization of learning materials which is affected by financial resources devoted to such materials, private resources are part of the family factors which influence student learning, besides school factors. The amount of private resources devoted to learning inputs may likely affect student learning. Further research is needed to demonstrate the linkages between private resources and student achievement. Also related to this research is the comparative study of student achievement in government schools and private schools. This paper shows that, in Thailand, the two types of schools are attended by students of very different backgrounds and that private-school students have significant advantages in terms of higher non-tuition direct expenditures and lower opportunity costs. Thus a comparative study of different types of schools should also take into account the potential impact of private resources on student achievement.

Finally, this study considers a relatively well-to-do developing country, Thailand. While some of the general findings of this study are supported by studies in other developing countries, the design of specific quality-improvement policies based on private resources for a country must take account of the special contextual factors in that country. In particular, research on private resources to education in very poor countries (e.g., per capita GNP less than US \$400) should be encouraged, to provide a comparative analysis.

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Table 1 Private Resources to Primary Education, Thailand, 1987
by Type of Schools

	Amount					Distribution (%)		
	Government Schools				Private schools (5)	All Govt. schools		Private schools (7)
	ONPEC schools (1)	Municipal schools (2)	Bangkok schools (3)	All Govt. schools (4)		(6)	(7)	
<u>Direct Private Costs</u> (Bahts per student per year)								
Non-tuition costs:								
uniform	24.6	37.7	39.1	26.8	48.4	3.9	1.5	(3.1) ^a
school bag	50.8	107.9	132.7	61.9	155.9	8.9	4.8	(9.8)
textbook	108.0	202.3	232.5	124.7	353.4	17.9	10.8	(22.3)
writing supplies	150.0	217.0	182.5	156.8	261.2	22.6	8.0	(16.5)
transportation	16.9	78.0	165.6	33.4	288.6	4.8	8.8	(18.2)
school fees	63.5	201.8	144.2	78.1	32.2	11.2	1.0	(2.0)
shoes and sportswear	189.2	368.4	330.6	213.5	446.6	30.7	13.7	(28.2)
Subtotal	600.9	1213.1	1227.2	695.2	1586.3	100.0	48.6	(100.0)
Tuition:	0.0	0.0	0.0	0.0	1676.0	0.0	51.4	---
TOTAL (X)	600.9	1213.1	1227.2	695.2	3262.3	100.0	100.0	---
<u>I. Household Contribution</u> (Bahts per household per year)								
To school in cash	93.6	39.8	121.4	92.2	89.1	59.9	60.2	
To school in kind	55.8	38.9	46.9	54.0	42.7	35.1	28.9	
To teachers in cash	2.4	2.1	3.7	2.5	1.5	1.6	1.0	
To teachers in kind	5.5	5.5	2.7	5.2	14.7	3.3	9.9	
TOTAL (Y)	157.3	86.3	174.7	153.9	148.0	100.0	100.0	
<u>II. Indirect Private Cost</u>								
In hours per school day per student	1.6	1.3	.82	1.5	.95	---	---	
In Bahts per school year per student (Z)	535.4	457.1	288.8	506.7	335.9	---	---	
Total Private Resources (X + Y + Z in Bahts per year)	1293.6	1756.5	1690.7	1355.8	3747.2	---	---	
Note: ^a numbers in parentheses are percentages based on non-tuition costs for private schools								

Table 2 Private Resources to Primary Education, Thailand, 1987
by Family Background and Type of School

	Total direct private cost (Bahts per student per year)		Total household contribution (Bahts per year)		Indirect Private Cost (per student basis)			
					(Hour per day)		(Bahts per year)	
	Govt. schools (1)	Private schools (2)	Govt. schools (3)	Private schools (4)	Govt. schools (5)	Private schools (6)	Govt. schools (7)	Private school (8)
Entire Sample	695	3262	154	148	1.5	.95	507	356
<u>Gender of student</u>								
male	689	3398	90	119	1.6	.90	528	319
female	701	3127	196	170	1.4	1.0	489	354
<u>Household income</u> (Bahts per month)								
less than 650	421	474	57	0	1.9	1.0	610	325
651-1,600	484	1192	94	96	2.0	2.6	661	840
1,601-3,000	654	2269	83	53	1.5	.76	494	274
3,001-6,000	809	2905	163	91	1.4	.92	478	327
6,001-10,000	927	3119	75	104	.89	.88	312	313
above 10,001	1091	3434	2021	319	1.3	.98	449	349
<u>Father's education</u>								
no education	365	3177	43	72	1.6	.20	531	75
some primary	613	2443	86	34	1.4	.96	454	333
primary graduate	555	2501	148	89	1.6	1.3	531	456
lower secondary	821	3321	187	169	1.2	.59	400	207
upper secondary	1190	3402	263	156	.99	.78	352	282
diploma level	815	3094	202	136	1.5	.91	565	341
bachelor or higher	1227	3548	365	275	1.7	1.1	643	392
<u>Father's occupation</u>								
agriculturalist	498	1491	173	58	1.7	2.0	552	650
trader	700	3254	113	227	1.2	1.1	375	365
clerk	920	3461	195	181	1.5	.42	553	159
manual worker	837	2396	55	37	1.1	.63	411	237
govt. employee	1119	3465	85	90	.89	.50	329	188
craftsman	779	2815	91	23	1.0	1.2	383	443
professional	1045	2976	316	102	2.0	1.3	767	500
executive	1327	3608	382	366	.38	.65	144	243
<u>Father's religion</u>								
Buddhism	621	3046	156	130	1.6	.98	521	347
Islam	434	2100	31	0	.93	0.0	306	0.0
Christianity	999	2775	37	513	2.6	1.0	915	328
<u>Family asset (Bahts)</u>								
less than 25,000	535	2579	156	67	1.6	1.2	534	403
25,001-50,000	807	2636	104	38	1.6	.73	550	257
50,001-100,000	846	2904	175	125	1.6	1.0	560	369
above 100,000	1067	3745	216	298	1.0	1.1	351	372
<u>Number of children</u>								
1	643	3302	156	146	1.1	.65	387	216
2	698	2917	123	167	1.6	1.0	539	373
3	599	3258	121	136	1.4	.89	478	319
4	566	2816	297	172	1.8	1.3	596	447
5	527	3212	105	35	1.7	.61	572	204

Table 3 Private Resources to Primary Education as a Percentage of Household Income, Thailand, 1987

	Total Direct private cost as % of household income		Total household contribution as a % of household income		Indirect private cost as a % of household income		Total private resources as a % of household income	
	Govt. schools (1)	Private schools (2)	Govt. schools (3)	Private schools (4)	Govt. schools (5)	Private schools (6)	Govt. schools (7)	Private schools (8)
							[1+3+5]	[2+4+6]
Entire Sample	5.79	4.01	1.39	.164	7.19	.623	14.4	4.80
<u>Gender of student</u>								
male	6.12	3.98	2.10	.132	6.85	.463	15.1	4.58
female	5.52	4.04	.832	.200	7.49	.810	13.8	5.05
<u>Household income</u> (Bahts per month)								
less than 650	16.3	6.58	4.25	.000	25.9	4.51	46.5	11.1
651-1,600	3.84	10.5	.781	.799	5.43	8.21	10.1	19.5
1,601-3,000	2.42	7.20	.313	.150	1.89	.930	4.62	8.28
3,001-6,000	1.57	5.20	.316	.156	.963	.586	2.85	5.94
6,001-10,000	1.00	3.14	.083	.114	.340	.323	1.42	3.58
above 10,001	.589	1.68	1.09	.137	.274	.162	1.95	1.98
<u>Father's education</u>								
no education	7.14	2.83	.804	.041	12.0	.125	19.9	3.00
some primary	5.62	5.43	.595	.053	8.27	.536	14.5	6.02
primary graduate	6.32	4.27	1.63	.137	7.80	1.42	15.8	5.83
lower secondary	3.71	4.71	1.61	.335	3.09	.268	8.41	5.31
upper secondary	2.52	3.45	.537	.088	.885	.237	3.94	3.78
diploma level	1.18	2.33	.306	.070	.747	.418	2.23	2.82
bachelor and higher	1.15	2.28	.221	.144	.721	.289	2.09	2.71
<u>Father's occupation</u>								
agriculturalist	7.41	5.34	1.92	.084	10.1	4.74	19.4	10.2
trader	2.14	3.58	.268	.407	1.08	.335	3.49	4.32
clerk	1.40	5.43	.296	.105	.959	.166	2.66	5.70
manual worker	3.13	4.26	.195	.072	1.90	.357	5.23	4.69
government employee	1.59	4.31	.114	.069	.805	.366	2.51	4.75
craftsman	2.51	4.81	.695	.032	1.44	.448	4.65	5.33
professional	1.40	2.76	.254	.089	1.29	.486	2.94	3.33
executive	1.09	2.42	.101	.130	.107	.119	1.30	2.67
<u>Father's religion</u>								
Buddhism	5.88	3.92	1.47	.127	7.29	.526	14.6	4.57
Islam	4.50	3.37	.266	.000	5.93	.000	10.7	3.37
Christianity	10.7	5.13	1.59	.996	10.6	3.39	22.9	9.52
<u>Family asset (Bahts)</u>								
less than 25,000	6.65	5.25	1.82	.126	9.06	1.50	17.5	6.88
25,001-50,000	3.81	4.48	.387	.196	2.71	.345	6.91	5.02
50,001-100,000	3.15	3.39	.471	.158	1.64	.372	5.26	3.92
above 100,000	2.54	3.25	.377	.194	1.48	.290	4.40	3.73
<u>Number of children</u>								
1	5.55	4.47	.772	.273	5.06	.261	11.4	5.00
2	5.45	4.19	1.02	.109	6.88	.762	13.4	5.06
3	6.26	4.21	.600	.204	7.49	.464	14.4	4.88
4	5.65	3.39	.974	.207	6.66	1.18	13.3	4.78
5	5.92	3.60	1.00	.060	10.3	.183	17.2	3.84

Table 4 Determinants of Private Resources to Primary Education, Thailand, 1987

	Total Direct Private Cost (Bahts/student/year)			Total Household Contribution (Bahts/year/household)			Indirect Private Cost (Bahts/student/year)		
	Govt. (1)	Private (2)	All (3)	Govt. (4)	Private (5)	All (6)	Govt. (7)	Private (8)	All (9)
Student is male	-19.4 (-.80)	225.5 (.86)	7.66 (.16)	-112.0 (-1.2)	-84.6 (-1.4)	-104.3 (-1.4)	46.8 (1.3)	-33.8 (-.46)	42.0 (1.3)
<u>FAMILY BACKGROUND</u>									
Father's education	11.9* (2.1)	12.3 (.28)	14.8 (1.4)	12.2 (.57)	7.69 (.76)	11.2 (.68)	8.85 (1.1)	25.6* (2.0)	13.6* (2.0)
Mother's education	14.5* (2.6)	35.2 (.84)	24.9* (2.5)	-1.20 (-.058)	11.1 (1.2)	2.08 (.13)	-38.7* (-4.9)	-29.0* (-2.4)	-33.6* (-5.1)
Log (household monthly income)	16.2* (3.7)	50.7 (1.2)	25.9* (3.1)	28.5 (1.8)	14.0 (1.4)	25.8 (1.9)	17.5* (2.8)	2.08 (.17)	14.6* (2.6)
Log (family asset)	25.0* (6.6)	51.0 (1.5)	32.1* (4.6)	10.1 (.71)	15.3* (2.0)	9.59 (.84)	-2.30 (-.43)	14.4 (1.5)	.863 (.19)
Father is a blue-collar worker	107.9* (3.0)	-191.0 (-.51)	104.7 (1.6)	-150.5 (-1.1)	-52.0 (-.62)	-152.4 (-1.5)	-66.7 (-1.3)	-59.6 (-.56)	-126.2* (-2.9)
Father is a white-collar worker	82.4 (1.4)	74.3 (.21)	142.4 (1.5)	-191.3 (-.86)	-64.2 (-.82)	-165.3 (-1.1)	9.42 (.11)	-151.2 (-1.5)	-76.6 (-1.2)
Father is a Muslim	-35.4 (-.68)	-702.1 (-.90)	-105.7 (-1.0)	-112.9 (-.59)	-21.0 (-.12)	-99.1 (-.60)	-286.4* (-3.9)	-418.8 (-1.9)	-278.7* (-4.1)
Father is a Christian	476.2 (1.9)	-672.7 (-.97)	-316.0 (-1.2)	-78.0 (-.083)	311.0 (1.9)	220.6 (.50)	526.3 (1.4)	11.9 (.061)	130.2 (.73)
Number of children	-20.5* (-2.4)	13.9 (.13)	-15.8 (-.92)	11.7 (.36)	1.154 (.068)	9.82 (.36)	45.7* (3.7)	1.29 (.042)	41.1* (3.6)
<u>PARENTAL ENGAGEMENT</u>									
Parent's expectation of student's educational attainment	18.2* (5.8)	76.5 (1.4)	22.2* (3.6)	17.3 (1.5)	4.03 (.33)	14.9 (1.5)	7.47 (1.67)	4.10 (.27)	3.19 (.78)
Parental participation in school activities	1.06 (.53)	7.84 (.28)	-.0239 (-.006)	2.30 (.31)	20.3* (3.2)	4.35 (.68)	.478 (.20)	6.29 (.78)	1.37 (.59)
<u>TYPE OF SCHOOL</u>									
Municipal schools	189.3* (3.5)	---	---	-119.6 (-.60)	---	---	-57.7 (-.75)	---	---
Bangkok schools	313.4* (6.9)	---	---	-29.7 (-.18)	---	---	-255.4* (-3.9)	---	---
Private schools	---	---	2089.5* (27.6)	---	---	-112.1 (-.92)	---	---	-150.1* (-3.0)
Intercept	-22.9 (-.39)	479.9 (.51)	-238.3* (-2.2)	-279.0 (-1.3)	-273.8 (-1.3)	-261.5 (-1.5)	410.8* (5.0)	219.2 (.82)	392.9* (5.4)
R ²	.202	.0517	.439	.00700	.0914	.00754	.0449	.0047	.0399
Number of cases	1777	353	2130	1761	349	2110	1799	355	2154

Note *significant at 5% level

Numbers in parentheses are t-values

Table 5 Determinants of Private Resources to Primary Education, Thailand, 1987. Dependent Variables in Logarithmic Scale.

	Log (Total Direct Private Cost)			Log (Total Direct Household Contribution)			Log (Indirect Cost)		
	Govt. (1)	Private (2)	All (3)	Govt. (4)	Private (5)	All (6)	Govt. (7)	Private (8)	All (9)
Student is male	-.0906 (-1.7)	.183 (1.4)	-.0795 (-1.4)	-.0586 (-.55)	.188 (.74)	.00424 (.043)	.0265 (.17)	-.281 (-.85)	.0164 (.11)
FAMILY BACKGROUND									
Father's education	.0108 (.83)	.0213 (.97)	.0125 (1.0)	.0358 (1.4)	-.000487 (-.011)	.0281 (1.3)	.0467 (1.2)	.0903 (1.6)	.0527 (1.7)
Mother's education	.0215 (1.7)	-.0109 (-.53)	.00672 (.67)	.0109 (.45)	.0478 (1.2)	.0188 (.91)	-.138* (-3.7)	-.103 (-1.9)	.117* (-3.9)
Log (household monthly income)	.0349* (3.6)	.000011 (.001)	.0372* (3.9)	.0455* (2.4)	.0736 (1.7)	.0513* (3.0)	.0696* (2.4)	.029 (.52)	.0626* (2.5)
Log (family asset)	.101* (12.0)	.0859* (5.2)	.105* (13.0)	.0599* (3.6)	.0957* (2.9)	.0618* (4.2)	.0253 (1.0)	.0790 (1.9)	.0348 (1.6)
Father is a blue-collar worker	.230* (2.9)	.0805 (.43)	.280* (3.7)	-.218 (-1.4)	.183 (.50)	-.300* (-2.2)	-.476* (-2.0)	-.345 (-1.2)	-.795* (-4.0)
Father is a white-collar worker	.163 (1.2)	.0590 (.34)	.105 (.95)	-.255 (-.88)	.306 (.90)	-.148 (-.75)	-.558 (-1.4)	-.848 (-1.9)	-.788* (-2.7)
Father is a Muslim	-.596* (-5.1)	-.700 (-1.8)	-.770* (-6.5)	-.766* (-3.4)	-.966 (-1.3)	-.815* (-3.8)	-.810* (-2.4)	-2.10* (-2.1)	-.868* (-2.7)
Father is a Christian	.469 (.82)	-.124 (-.36)	.0900 (.29)	.343 (.31)	1.32 (1.9)	1.00 (1.8)	2.04 (1.2)	.0748 (.085)	.497 (.60)
Number of children	.00741 (.38)	.0599 (1.1)	.0261 (1.3)	.0382 (1.0)	-.0704 (-1.67)	.0249 (.70)	.185* (3.2)	.0105 (.077)	.166* (3.2)
PARENTAL ENGAGEMENT									
Parent's expectation of student's educational attainment	.020* (2.9)	.0194 (.72)	.0202* (2.8)	.0170 (1.2)	.0241 (.45)	.00340 (.26)	.0393 (1.9)	.00789 (.11)	.0134 (.71)
Parental participation in school activities	.00702 (1.6)	.00996 (.71)	.00768 (1.6)	.0507* (5.7)	.0778* (2.8)	.0550* (6.5)	.0156 (1.4)	.0243 (.67)	.0194 (1.8)
TYPE OF SCHOOL									
Municipal schools	.129 (1.1)	---	---	-1.17* (-5.0)	---	---	-.436 (-1.2)	---	---
Bangkok schools	.236* (2.3)	---	---	-.166 (-.84)	---	---	-1.44* (-4.8)	---	---
Private schools	---	---	1.33* (15.1)	---	---	-.713* (-4.5)	---	---	-.868 (-3.7)
Intercept	4.54* (35)	6.19* (13.2)	4.48* (35.3)	.826* (3.2)	-.835 (-1.90)	.845* (3.7)	2.22* (5.8)	1.42 (1.2)	2.26* (6.8)
R ²	.175	.113	.311	.0619	.102	.0589	.0439	.0526	.0448
Number of cases	1777	353	2130	1796	355	2151	1799	355	2154

Note *significant at 5% level
Numbers in parentheses are t-values

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Table 6: Determinants of Economic Burden of Private Resources to Primary Education on Households in Thailand, 1987.

	Total Direct Private Cost as % of Household Income			Total Household Contribution as % of Household Income			Indirect Cost as % of Household Income			Total Private Resources as % of Household Income		
	Govt. (1)	Private (2)	All (3)	Govt. (4)	Private (5)	All (6)	Govt. (7)	Private (8)	All (9)	Govt. (10)	Private (11)	All (12)
Student is male	.187 (.40)	.205 (.51)	.179 (.45)	.975 (.86)	-.114 (-1.4)	.781 (.83)	-.460 (-.36)	-.297 (-1.2)	-.233 (-.22)	.871 (.47)	-.401 (-.80)	.918 (.59)
FAMILY BACKGROUND												
Father's education	-.00555 (-.050)	-.0541 (-.77)	.0162 (.19)	.121 (.45)	.0195 (1.4)	.130 (.64)	-.0897 (-.29)	-.0122 (-.30)	-.0140 (-.060)	-.144 (-.26)	-.163 (-1.9)	-.104 (-.31)
Mother's education	.319* (3.0)	.0434 (.66)	.263* (3.2)	.136 (.53)	.00235 (.18)	.134 (.69)	-.822* (-2.8)	-.0398 (-1.0)	-.520* (-2.3)	-.798 (-1.9)	-.154 (-1.9)	-.520 (-1.6)
Log (household monthly income)	-6.16* (-29)	-2.71* (-9.4)	-5.77* (-31)	-4.07* (-7.9)	-.0662 (-1.1)	-3.62* (-8.2)	-.678* (-2.6)	.00945 (.21)	-.543* (-2.6)	-1.49* (-4.0)	.293* (3.2)	-1.14* (-3.7)
Log (family asset)	.257* (3.4)	.105 (1.9)	.228* (3.7)	.250 (1.4)	.0130 (1.1)	.205 (1.4)	-.305 (-1.5)	.00640 (.21)	-.266 (-1.7)	-.311 (-1.1)	.0783 (1.2)	-.268 (-1.2)
Father is a blue-collar worker	.247 (.36)	-.00629 (-.011)	.495 (.90)	.479 (.29)	-.129 (-1.1)	.612 (.47)	-.474* (-2.6)	-.476 (-1.4)	-5.52* (-3.8)	-8.17* (-3.0)	-.205 (-.28)	-9.06* (-4.2)
Father is a white-collar worker	2.42* (2.2)	.437 (.82)	1.46 (1.9)	1.28 (.46)	-.217* (-2.0)	.445 (.24)	-.811 (-2.6)	-.464 (-1.4)	-1.46 (-1.68)	-4.66 (-1.0)	.330 (.49)	-3.99 (-1.3)
Father is a Muslim	.287 (.30)	-.616 (-1.42)	.0159 (.018)	.527 (.22)	-.156 (-.54)	.264 (.13)	-3.98 (-1.5)	-.438 (-1.62)	-3.31 (-1.4)	-6.45 (-1.7)	-.109 (-.74)	-6.01 (-1.8)
Mother is a Christian	3.09 (.69)	-.734 (-.71)	-.437 (-.21)	-1.15 (-.11)	.668* (3.2)	-.433 (-.086)	5.60 (.43)	3.09* (4.9)	3.04 (.51)	13.0 (.68)	4.32* (3.3)	5.31 (.62)
Number of children	-.453* (-2.6)	-.130 (-.75)	-.377* (-2.5)	-1.16* (-2.7)	.0106 (.31)	-.971* (-2.7)	.881 (1.9)	-.0109 (-.11)	.808* (2.1)	.431 (.65)	-.111 (-.54)	.433 (.76)
PARENTAL ENGAGEMENT												
Parent's expectation of student's educational attainment	.131* (2.2)	.0128 (.15)	.152* (2.9)	.280 (1.9)	-.0137 (-.784)	.290* (2.3)	-.194 (-1.2)	.0418 (.83)	-.317* (-2.3)	-.210 (-.88)	.00235 (.022)	-.410* (-2.0)
Parental participation in school activities	.00606 (.19)	.0356 (.86)	-.000428 (-.105)	-.0157 (-.21)	.0406* (4.9)	-.0220 (-.33)	-.0187 (-.21)	.0991* (3.8)	-.00766 (-.099)	.00346 (.027)	.248* (4.6)	.0297 (.26)
TYPE OF SCHOOL												
Municipal schools	1.35 (1.3)	---	---	1.34 (.53)	---	---	-3.23 (-1.1)	---	---	-5.54 (-1.3)	---	---
Bangkok schools	2.03* (2.3)	---	---	2.03 (.94)	---	---	-4.01 (-1.7)	---	---	-6.00 (-1.7)	---	---
Private schools	---	---	4.98* (7.7)	---	---	1.44 (.94)	---	---	-1.80 (-1.1)	---	---	-2.08 (-.84)
Intercept	46.3* (28)	27.1* (10.1)	43.7* (31.2)	27.1* (6.7)	.753 (1.4)	24.0* (7.2)	20.7* (6.6)	.556 (.63)	18.3* (7.3)	34.5* (7.6)	3.93* (2.1)	31.5* (8.6)
R ²	.386	.294	.374	.0459	.159	.0417	.0388	.150	.0423	.0427	.171	.0442
Number of cases	1504	304	1808	1483	302	1785	1698	344	2042	1698	344	2042

Note: *Significant at 5% level
Numbers in parentheses are t-values