DM/83/32

INTERNATIONAL MONETARY FUND

Fiscal Affairs Department

Sectoral Adjustment in Government Expenditure in the 1970s: The Educational Sector with Particular Emphasis on Latin America*

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April 29, 1983

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*The authors wish to thank Vito Tanzi, Ernst Conrad, Nancy Birdsall, and George Psacharopoulos for valuable suggestions, but, naturally, all errors remain the responsibility of the authors. Miss Adrienne Cheasty was a 1982 summer intern in the Fiscal Affairs Department.

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I. Introduction

The economic climate in the 1970s has been particularly unstable, not only because of oil price rises but also because of wide-ranging fluctuations in commodity prices and induced changes in patterns of world demand. One of the consequences of this relative economic stagnation has been an increasing difficulty for governments to finance their customary budgets.

As debt-service costs have risen and revenue has leveled off or declined, governments have been forced to re-evaluate programs in an effort to curtail government spending. This paper attempts to examine the character of the sectoral adjustment that took place in one functional area of government expenditure: education. The education sector is of particular interest for several reasons. It is a significant sector simply in terms of the magnitude of government expenditure. In a sample of 27 middle-income countries, the share of spending on education in total central government expenditure was more than 16 per cent on average in the mid-1970s, and in 8 of these countries, it averaged more than 20 per cent. Thus, one might expect a sizable amount of governments' forced adjustment to have taken place in spending on education. Yet it is also a sector of high political, social, and economic priority in most countries, and thus one of the more difficult sectors within which to make adjustments. This paper focuses on the pattern of development in educational spending during the 1970s. Is there any evidence that the education sector suffered because of government cutbacks? Even if total spending was not curtailed, has there been a reordering of expenditure priorities between the different levels of education--primary, secondary, or tertiary? Has there been any pattern of technological adjustment, for example, in the pattern of expenditure per student, in the relationship between wage and nonwage spending, or in the funding of the recurrent costs associated with capital projects?

Given the focus of the symposium, the study is based on the experience of 27 middle-income countries, mainly from Latin America, for which data were most readily available. These include Costa Rica, the Dominican Republic, El Salvador, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Trinidad and Tobago, Argentina, Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, and Venezuela, as well as 9 Asian and European countries for purposes of comparison (Cyprus, Korea, Malaysia, Pakistan, the Philippines, Singapore, Thailand, Malta, and Portugal). 1/ The study covers the period from 1965 to 1978, with data

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1/ Most of these countries come under the classification "middle-income country" as used by Tanzi (1982).

for 1965, 1970, 1975, and 1978. This allows a comparison of the period before and after the adjustment in the 1970s. 1/

After a discussion of the data in Section II, Section III examines how educational spending has evolved at each educational level during this period. Section IV evaluates the form these expenditure adjustments have taken. Section V concludes with some remarks on the pattern of development of educational expenditure in the late 1970s.

II. A Note on Data

The most complete and comparable data on the financing of education are available from the Statistical Yearbook of the United Nations Educational, Scientific and Cultural Organization (UNESCO). 2/ However, because education systems differ, even this information must be presented with some caveats. For example, it is obviously important to compare the allocation of resources among the different levels of education across countries. However, the amount spent on primary education will depend in part on the number of years of schooling defined to be education at the primary level.

A further complication is that school systems are continually evolving, so that the number of years required for primary education has changed within the sample period for some countries, which means that aggregate spending figures are not comparable from year to year, even within the same countries.

To minimize these problems, this paper focuses primarily on expenditure per student at each level. The reallocation of students previously described as primary students to the secondary level will result in a change in the total number of students in each level and may be expected to affect expenditure per student only marginally. 3/ At worst, it might imply that there would be, in some countries, a slight drop in the likely expenditure per student at the "primary level," reflecting the exclusion of higher grades, and thus, slightly less costly education within the primary sector.

1/ Of course, it has not been possible to follow this rule exactly for all countries. In some cases, for example, 1977 data were the latest available. This has been noted in the country tables, where applicable.

2/ UNESCO (1974-81).

3/ This is an assumption that would not be true if, for example, the government had a given fund earmarked for each level. In this case, the greater the number of students at the primary level, the less money would be spent on each.

Another complication in the data arises because very little distinction is made in the UNESCO tables between public and private education, and some countries mingle data for public schools and private institutions. (For example, in El Salvador in 1975, the figure given for the total number of students enrolled includes students in private institutions, while the figure for total teaching staff includes only public school teachers.) Beyond checking that no incompatible teacher/pupil ratios were presented, it has not been possible to correct this problem in our study.

Another problem that clouds the available information is the hazy distinction between primary and preprimary education in some countries. Some countries include spending on preprimary education with primary spending, some list it separately, and for some it does not exist or the distinction in funding is not noted. It is assumed that the share of preprimary education in total spending is small enough for the error this may engender to be ignored.

III. The Evolution of Educational Spending, 1965-78

1. Trends in the allocation of expenditure within the education sector and growth in enrollment

Table 1 presents the share of total current expenditure allocated to the primary, secondary, and tertiary levels of education (for individual country statistics, see Appendix II, Table I). The trends are fairly clear. There was a steady decline in the share allocated to primary education during the period 1965-78--from 55 per cent to 46 per cent of total current expenditure, though there were some exceptions (e.g., Bolivia, Colombia, and Portugal). The principal beneficiary was the secondary school level, with its share rising from 20 per cent to 26 per cent. The share allocated to tertiary level education rose between 1965 and 1975 in most countries but then fell back between 1975 and 1978. Shifts in the allocation of expenditure can occur in two ways: through differential rates of growth in enrollment across levels and through changes in the relative expenditure per student across the three levels of education.

There has been a dramatic growth in enrollment at all levels in almost all of the countries in the sample. The largest increase took place at the tertiary level, in some countries reaching 1,575 per cent (Ecuador) in the period 1965-78 (Table 2 and Appendix II, Table II); the smallest growth was in Singapore, which nevertheless witnessed a 74 per cent growth. In virtually every country in the sample, tertiary enrollment grew more rapidly during the period than did primary and secondary enrollment. While not as dramatic in their growth pattern, secondary enrollments also grew rapidly over the period, doubling in most countries, and in many cases tripling or quadrupling. Primary enrollment grew more slowly in all countries. In Singapore, Malta, and Cyprus, primary enrollments actually fell. The dramatic change in overall enrollment cannot be explained by the past growth of population.

Table 1. Mean Share of Current Educational Expenditure Allocated to Different Educational Levels: Means and Standard Deviations

(In per cent; standard deviations in parentheses)

	1965	1970	1975	1978
Primary	54.5 (10.6)	49.6 (11.7)	44.75 (12.9)	45.83 (10.2)
Secondary	19.9 (6.5)	23.6 (9.2)	25.2 (11.4)	25.8 (11.5)
Tertiary	13.8 (7.3)	14.0 (5.9)	17.3 (8.2)	15.1 (6.5)
Other	11.8 (...)	12.8 (...)	12.7 (...)	13.3 (...)

Table 2. Growth in Enrollment Within the Education Sector, 1965-78

(In per cent)

	Primary	Secondary	Tertiary
Costa Rica	28	235	666
El Salvador	107	17	659
Haiti	92	...	160
Honduras	85	326	804
Jamaica	14	...	...
Mexico	97	290	423
Nicaragua	82	266	...
Panama	69	200	373
Trinidad and Tobago	...	65	...
Argentina	18	63	151
Bolivia	86	34	205
Brazil	107	13	659
Colombia	88	304	519
Ecuador	71	357	1,575
Guyana	5	60	...
Peru	64	232	165
Venezuela	64	194	509
Cyprus	-25	51	405
Korea	13	207	196
Malaysia	33	155	198
Pakistan	108	105	...
Philippines	41	138	114
Singapore	-17	62	75
Thailand	50	177	496
Malta	-40	107	...
Portugal	37	53	147

The fiscal implications of this pattern of enrollment growth could have been extremely expensive. In 1965, expenditure per student at the three levels was in the ratio of 0.06:0.43:1. Since the share of total expenditure allocated to the tertiary level was barely increased and the growth of the secondary share was limited, equally significant changes were occurring in either the technology or quality of education provided at the tertiary level of education and, perhaps, at the secondary school level as well.

2. Trends in expenditure per student by level of education

Not surprisingly, spending per student in nominal dollars at all levels of education has risen from 1965 to 1978 in most countries. The variance in spending has also grown. However, while the rise was consistent and large for the Asian and European countries in the sample, it has been erratic in Latin America, and nominal expenditure per student actually fell between the mid-1970s and the late 1970s in a few countries (Appendix II, Table III), for example, at the tertiary level in Haiti, Honduras, and Ecuador. However, large movements in price indices make nominal measures unreliable for analytical purposes, and expenditure per student in real dollars provides a better comparison (see Table 3 and Appendix II, Table IV).

On average, there has been a real increase in expenditure per student at the primary-school level from 1965 to 1978, from $69.4 per student to $84.5. However, this masks the fact that, since the mid-1970s, there have been quite divergent trends in both real primary school expenditure per student and in the variance of spending between the Latin American and the other middle-income countries in the sample. In Latin America, average real spending has been dropping since 1970, while primary-school spending elsewhere has increased by about 150 per cent from 1965 to 1978. On the other hand, country-to-country discrepancies, as measured by the normalized deviation, has remained almost constant for the rest of the world, while it has quadrupled in Latin America. The main exceptions in Latin America were Haiti, which spent 11 real dollars per student in the late 1970s; Panama, which spent 147; Brazil, which spent 95; and Peru, which spent 29.

Real secondary spending per student also fell from 1965 to 1978, notwithstanding a real increase in all regions up to the mid-1970s. Again, the interregional differences are marked. Negligible real spending increases occurred in Latin America in 1965-75, with a sharp decline between 1975 and 1978, while the other middle-income countries exhibited a steady pattern of increase in secondary-school spending during the entire period. Therefore, the apparent large rise in variance can be explained almost entirely by the divergence in spending patterns between the two regions, as variance within each region did not change very much.

Table 3. Average Real Spending per Student, 1965, 1970, 1975, and 1978 1/,2/,3/

(In U.S. dollars)

		Primary		Secondary		Tertiary	
		Latin America	Other middle-income countries	Latin America	Other middle-income countries	Latin America	Other middle-income countries
1965	μ	71.8	64.6	168.4	111.0	1,133.5	510.6
	σ/μ 4/	(0.15)	(0.62)	(0.58)	(0.48)	(0.72)	(0.72)
1970	μ	90.2	81.7	166.1	128.5	970.4	943.5
	σ/μ	(0.88)	(0.73)	(0.55)	(0.59)	(0.80)	(0.82)
1975	μ	82.6	115.7	171.5	163.6	766.1	892.6
	σ/μ	(0.48)	(0.69)	(0.62)	(0.68)	(0.82)	(0.71)
1978	μ	50.2	152.9	81.8	246.5	361.2	762.0
	σ/μ	(0.60)	(0.71)	(0.51)	(0.65)	(0.49)	(0.79)

1/ In this table, and all tables following, the calculations were made only for those countries for which data were available. Hence, for instance, average tertiary-level spending per capita was estimated from fewer observations than was average primary spending per capita, because four countries did not provide information on tertiary education to the UNESCO.

2/ These calculations omit data for Argentina, because adjusting for price movements did not seem to capture erratic movements in spending.

3/ 1975 = 100.

4/ σ/μ equals the ratio of the standard deviation to the mean.

At the tertiary (or postsecondary) level, the overall average in expenditure per student again reflects the Latin American pattern of a consistent decline since 1965, while masking the rise in such spending by the Asian and European middle-income countries. However, from 1975 to 1978, the period of fiscal retrenchment and the period in which Latin American spending fell most sharply, the other middle-income countries did cut back on their real tertiary expenditure per student.

This suggests that the fiscal choices at the university level were the most difficult. In a period of fiscal adversity and with the sharp growth in demand for university enrollment, sharp cutbacks were necessary in the level of expenditure per student. Political factors also may have contributed to the cutback in expenditure at the tertiary level in some of the Latin American countries. 1/ How these cutbacks occurred will be examined in more detail later. The hypothesis of parsimony at the tertiary level becomes more plausible when one considers that a given amount of funding can be withdrawn while hurting a smaller number of students at this level than in either primary or secondary education, where funding per student is lower.

A country-by-country comparison of real dollar expenditure may reflect unfairly on the poorer countries in the sample. Perhaps more important, shifts in the dollar exchange rate may have affected different countries differently in the 1970s, particularly an oil exporting country such as Venezuela. Hence, it may be more sensible to look at spending per student normalized by gross domestic product (GDP) per capita (see Table 4). This measure has two main advantages. It removes the exchange rate problem and the question of how accurate it is to deflate educational spending (largely composed of payments for services, i.e., teachers' pay) by the consumer price index (which is mainly a basket of goods).

From 1965 to 1978, primary spending per student remained fairly constant in all countries, at about 9 per cent to 10 per cent of GDP per capita. Between 1965 and 1970, there emerged a clear divergence in this ratio between the Latin American countries and the other middle-income countries, which was never eliminated. In both groups of countries, the ratio fell between 1970 and 1978, though the decline occurred earlier in Latin America. As seen already, however, primary-school spending was much more buoyant in the mid-1970s in the other middle-income countries than it was in Latin America, implying that for Latin American countries, real primary expenditure per student grew less rapidly than GDP per capita. The rise from 1965 to 1970 in this ratio was larger in other middle-income countries and the 1970 level prevailed through 1975, while in Latin America, primary spending per student fell below its 1965 level. The constancy of primary spending per student holds at the country level, except for Haiti, where spending per capita fell from 12 per cent of GDP per capita in 1965 to 4 per cent in 1978, and Portugal, where it rose from 5 per cent to 15 per cent.

1/ Puryear (1983) has argued that the change in political regimes in such countries as Chile, Uruguay, and Argentina may have led to a serious retrenchment in university expenditure.

Table 4. Ratios of Average Expenditure per Student Relative to Per Capita Income 1/

		Primary		Secondary		Tertiary	
		Latin America	Other middle-income countries	Latin America	Other middle-income countries	Latin America	Other middle-income countries
1965	μ	0.096	0.098	0.202	0.164	1.405	0.937
	σ/μ 2/	(0.31)	(0.36)	(0.40)	(0.40)	(0.57)	(0.77)
1970	μ	0.095	0.117	0.187	0.190	1.004	1.489
	σ/μ	(0.62)	(0.36)	(0.43)	(0.33)	(0.85)	(0.79)
1975	μ	0.086	0.117	0.155	0.169	0.825	1.063
	σ/μ	(0.26)	(0.39)	(0.26)	(0.38)	(0.58)	(0.61)
1978	μ	0.083	0.103	0.133	0.187	0.612	0.424
	σ/μ	(0.04)	(0.35)	(0.38)	(0.22)	(0.39)	(0.58)

1/ Gross domestic product per capita.
2/ σ/μ equals the ratio of the standard deviation to the mean.

At the secondary level again, there was a great discrepancy between the Latin American countries and the other middle-income countries. Secondary spending per student as a percentage of GDP per capita fell significantly during the period in the Latin American countries, while rising, albeit erratically, throughout the 1970s in the European and Asian countries and in a few of the Latin American countries (for example, Mexico and Guyana). The dispersion across countries in their level of spending declined in both regions.

Tertiary spending per student as a percentage of GDP per capita dropped significantly in both mean and variance. The pattern of decline was fairly uniform among regions, although spending did not begin to fall in the other middle-income countries until after 1970, and then showed a steeper decline from 1975 to 1978 than in Latin America, which had been adjusting more gradually throughout the 1970s. Therefore, as before, the conclusion is that tertiary-level spending per student fell in order to accommodate the sharp increase in enrollment in this component of the education sector; primary-level spending seems to have been most immune from cutbacks, 1/ though its overall growth was limited by the lower rate of expansion in enrollments.

As an alternative indicator of the nature of the change in the allocation of the funds to each sector, we shall examine the ratios of secondary-level expenditure per student to primary-level expenditure per student, tertiary-level expenditure per student to primary-level expenditure per student, and tertiary-level expenditure per student to secondary-level expenditure per student and determine how these have changed during the 1970s (see Table 5).

In Latin America, there was a clear convergence in the spending per student across all levels of education. During the entire period, but particularly from 1970 to 1978, there was a 20 per cent decline in the mean of the ratio of secondary-level expenditure per student to primary-level expenditure per student. There was also an unambiguous drop in the gap between tertiary-level and secondary-level expenditures per student, with the ratio dropping by 40 per cent during the period. By implication, the differential in expenditure per student between the tertiary and primary levels fell by more than 53 per cent. In the other middle-income countries, the spread between the expenditure per student at the secondary and primary levels barely changed, with the major adjustment borne by cutbacks in the level of tertiary expenditure per student compared with the other levels of education.

1/ This conclusion is not as innocuous as it may appear. For instance, motivation for tertiary-level cutbacks may not have derived wholly from the need for fiscal retrenchment. In the 1970s policymakers in many countries may have decided that tertiary-level education was a luxury when jobs requiring that amount of human capital were not readily available. Hence, even if no budget had ever been curtailed, government subsidy to higher education might have dropped by the same amount.

Table 5. Mean Expenditure Ratios, 1965, 1970, 1975, and 1978

		Secondary Expenditure per Student / Primary expenditure per student		Tertiary Expenditure per Student / Primary expenditure per student		Tertiary Expenditure per Student / Secondary expenditure per student	
		Latin America	Rest of the world	Latin America	Rest of the world	Latin America	Rest of the world
1965	μ	2.04	1.80	16.60	9.10	7.90	5.20
	σ/μ 1/	(0.40)	(0.34)	(1.20)	(0.56)	(0.75)	(0.42)
1970	μ	2.40	1.70	13.60	13.10	7.10	8.60
	σ/μ	(0.39)	(0.40)	(0.72)	(0.76)	(0.97)	(0.67)
1975	μ	1.80	1.50	11.50	9.30	5.10	6.00
	σ/μ	(0.35)	(0.27)	(0.92)	(0.56)	(0.65)	(0.38)
1978	μ	1.60	1.70	7.80	3.90	4.80	3.10
	σ/μ	(0.34)	(0.28)	(0.60)	(0.35)	(0.58)	(0.22)

1/ σ/μ equals the ratio of the mean to the standard deviation.

The marked convergence of payments per student at higher levels of education toward the basic provision for primary education corroborates the trends shown by the other expenditure indicators. For whatever reason, governments have been forced to make adjustments in the quality or technology of provision in specialized higher education. This convergence may have led to some erosion in the quality of higher levels of education. As will be seen, spending at the primary level is almost wholly allocated to teachers' salaries. At the secondary and tertiary levels, other types of expenditure are typically more significant components of total expenditure, such as for teaching materials, scholarships, and other related needs. The more closely spending per student at the higher levels approaches primary spending, the less likely it is that money is being spent on such "tools of higher learning" other than teachers' salaries. Specialized texts, laboratory equipment, field trips, audiovisual aids, etc., must be assumed to receive far less emphasis, a hypothesis that will be examined in the next section. The drop in country variation that is indicated in these summary measures shows that reduced emphasis on higher levels of education has been a common trend across countries.

In sum, the trend in the 1970s has been an emerging consensus on the need to restructure the technology or quality of expenditure across the three principal levels of education. In Latin America, the differential between payments on behalf of primary students and payments at both the secondary and tertiary levels of education has been sharply eroded. The difference among regions lies primarily in the weight attached to secondary education in the other middle-income countries, which have continued to allow a real growth in secondary school expenditure per student during the period.

IV. Conjectures on the Implications of Educational Expenditure Adjustment for Educational Quality

Given the pattern of overall sectoral adjustment, is it possible to determine the form in which increases or decreases in expenditure on a given level of education took place? Did increases principally reflect a growth in teachers' salaries (which may have been associated with the recruitment of high-quality teachers), or were they accompanied by smaller class sizes or additional teaching materials? When there were cutbacks in expenditure per student, did these reflect decreases in wages, cutbacks in the teacher/pupil ratio, or in other nonwage expenditure? Were there cutbacks in the share of expenditure allocated to capital spending in the educational sector? In principle, to make this assessment, one would need a breakdown of educational expenditure by level of schooling and by type of expenditure. Unfortunately, UNESCO has only begun to provide

such statistics as of the late 1970s. 1/ Lacking these data, we are forced to infer the character of expenditure change through the assumptions of a simple model of educational expenditure.

At every level, teachers' salaries make up by far the greatest part of total current educational spending. For those countries where one can obtain a cross-classification of expenditure by level of education and economic type of expenditure, this share declines from the primary sector upward, averaging 92 per cent at the primary school level in our sample of countries, 83 per cent at the secondary level, and only 75 per cent at the tertiary level. Because primary teachers' wages are by far the largest component in current primary educational spending per student, it is reasonable to explain changes in such spending by changes in class size and changes in teachers' wage rates. In other words, we shall assume that:

$$(1) \qquad \dot{x}_i = \dot{w}_i + \dot{c}_i$$

where x_i = expenditure per student at the ith level, and where

$i = p$ = primary education,

s = secondary education,

t = tertiary education,

w_p = wage rates per teacher,

c_p = the teacher/pupil ratio at the primary level,

and where a dotted term reflects the percentage rate of change in a variable. Since the UNESCO data base allows calculation of both $\dot{x}_p$ and $\dot{c}_p$, the percentage change in nominal wages per teacher, $\dot{w}_p$, may be readily calculated and compared with the change in the consumer price index to evaluate whether there were real increases in teachers' salaries.

1/ UNESCO (1981), p. IV-1. UNESCO characterizes educational expenditure in terms of the following components: (1) teachers' wages; (2) administration: emoluments of administrative staff and other expenditure of the central and local administration; (3) teaching materials: expenditure directly related to instructional activities such as the purchase of texts, books, and other scholastic supplies; (4) scholarships: scholarships and all other forms of financial aid granted to students for studies in the country or abroad; (5) welfare services: boarding costs, school meals, transportation, medical services, etc.; and (6) not distributed: expenditure that cannot be classified in one of the above categories and other expenditure associated with the operation and maintenance of buildings and equipment.

For higher levels of education, one cannot as readily assume that teachers' salaries absorb the entire amount of spending per student. The share of teachers' wages in total spending clearly falls after primary school, and the change in the expenditure per student at the higher levels may reflect changes in the provision of the other outlays mentioned, as well as of textbooks, school meals, maintenance of equipment, etc. For some faculties in the tertiary sector, one would expect that the share of other nonsalary expenditure is likely to play a more significant role in determining the quality of education.

To examine the expenditure adjustment of these higher educational levels, we have assumed that the increase in the average wage rate is the same for teachers at all levels of the educational system. Clearly, professors at the university are better paid than primary school teachers. However, as public sector employees, their rate of salary increase is likely to be the same, i.e., existing wage differentials are likely to be maintained, or

$$(2) \qquad \dot{w}_p = \dot{w}_s = \dot{w}_t$$

where $\dot{w}_s$ and $\dot{w}_t$ equal the percentage wage increase at the secondary and tertiary levels. Thus, at the secondary level (or, analogously, at the tertiary level), the percentage change in nonwage spending (o_i) equals the percentage change in expenditure per student less the percentage change in the teacher/pupil ratio less the percentage wage change (equal to the $\dot{w}_p$ calculated above), or $\dot{o}_t = \dot{x}_s - \dot{c}_s - \dot{w}_s$ and $\dot{o}_t = \dot{x}_t - \dot{c}_t - \dot{w}_t$. Since $\dot{x}_s$, $\dot{x}_t$, $\dot{c}_s$, and $\dot{c}_t$ are available from UNESCO statistics, and $\dot{w}_s$ and $\dot{w}_t$ are derived by assumption and from (2) above, $\dot{o}_s$ and $\dot{o}_t$ may be readily calculated.

Thus, the share of wage change, the share of teacher/pupil ratio change, and the share of nonwage change explain the percentage change in total current expenditure per student at each level. The relative sizes of these changes tell us something about the changing characteristics of educational spending.

Four questions may be asked, each of which may indicate a problem faced by the educational sector:

(1) Have teachers' wages kept pace with inflation? While one might argue in favor of some kind of indexation of teachers' pay so that high-caliber teachers are attracted to the profession, if teachers' wages rise by more than the consumer price index, teachers may be pre-empting a part of the education budget that could be better spent on other aspects of education. It is recognized that quality of teaching is extremely difficult to measure, and this study does not attempt to do

so. Thus, overindexation of teachers' pay may reflect productivity increases, but in the absence of a satisfactory measure, this cannot be assumed, particularly over the short periods examined here.

Table 6 shows the percentage of countries where teachers' pay has grown faster than the price index during the subperiods listed. In only three countries of the sample was there an overall decline in real wages during the period--Brazil, Peru, and Malta. For the total sample, teachers' real wages rose in 79 per cent of those countries for which data were available. In Latin America, this rise was least prevalent from 1975 to 1978, with the most frequent increase in real wages occurring between 1970 and 1975.

(2) Have teachers' wages grown at a faster rate than the growth of total expenditure per student at each level? If so, either some other component of the budget must have suffered, or there was an increase in the average class size, with possibly deleterious effects on the quality of education in either case. The first two columns of Table 7 show the percentage of countries (for which data were available) where the average wage per teacher rose faster than expenditure per student at each level. The individual country data are shown in Appendix II Table V. At the primary level, this occurred in 25-27 per cent of all the countries in the sample from 1970 to 1978. From 1965 to 1970 the problem was greater, with 53 per cent of Latin American countries and 33 per cent of the other countries in the sample experiencing an erosion in the share of nonwage spending on education or an increase in class size.

The above model assumed that at the primary level, changes in expenditure per student reflected either changes in class size or changes in teachers' wages. While class sizes did on balance decline, almost 90 per cent of the change in expenditure per student was due to changes in teachers' wages during 1970-78. Clearly, if expenditure on other nonwage inputs per student increased at all, the wage rate increase would be somewhat smaller (and conversely, if such expenditure declined per student).

At the secondary level, the situation was more serious. From 1970 to 1978, crowding-out of nonwage spending or increasing class size occurred in 78 per cent of the Latin American subsample, in contrast to only 25 per cent of the other middle-income countries. In all the countries in the sample, the most rapid deterioration on nonwage recurrent spending per student occurred during 1970-75. In the Latin American countries, this deterioration was not significantly reversed in 1975-78, in contrast to the pattern observed in the other middle-income countries.

At the tertiary level, the limited growth in expenditure per student was more than completely absorbed by the increase in the wage rates of

Table 6. Percentage of Countries Where Teachers' Wage Grew More Rapidly than the Consumer Price Index, 1965-78 1/

(In per cent)

	Latin America	Other Middle-Income Countries	Total Sample
1965-70	71	83	75
1970-75	73	86	78
1975-78	57	83	67
1970-78	73	75	79

1/ The percentages refer to the number of "unfavorable" observations over the number of total available observations in each category, that is, where observations are few, the description made of the state of education may not be accurate.

Table 7. Potential Indicators of Quality Change in Education, by Level of Education, 1965-78 1/

(In per cent)

	Percentage of Countries Where Wage Rates Increased more Rapidly Than Expenditure per Student 2/		Percentage of Countries Where the Percentage Change in Nonwage Expenditure per Student, o_i, Decreased		Percentage of Countries Where There was an Increase in the Class Size per Teacher	
	Latin America	Other middle-income countries	Latin America	Other middle-income countries	Latin America	Other middle-income countries
y education						
-70	53 (67)	33	... 3/	... 3/	47	50
-75	27 (55)	--	...	...	27	--
-78	29 (71)	20	...	...	29	20
-78	27	25	...	...	23	12
ry education						
-70	43	40	17	40	57	44
-75	70	71	55	71	75	44
-78	60	20	80	20	44	12
-78	78	25	83	25	78	57
y education						
70	69	40	50	50	70	37
75	50	50	50	50	57	37
78	60	50	75	66	57	50
78	80	100	100	100	80	57

he percentages refer to the number of "unfavorable" observations over the number of total
e observations in each category, i.e., where observations are few, the description here
tate of education may not be accurate.
gures in parentheses refer to percentages in cases where wages increased at least at the
expenditure.
sumed not to be applicable for primary education.

teachers. During 1970-78, this was the case in 80 per cent of the Latin American countries of the sample and 100 per cent of the other middle-income countries studied. This leads to the impression that, under our assumptions, tertiary level education fared poorly in the 1970s.

(3) If real wage growth pre-empted a larger and larger part of the education budget in so many countries during the 1970s, where did the cutbacks come from? One obvious way of cutting back is by increasing the number of pupils per teacher, so that a given wage "goes further." It can be seen from the last two columns of Table 7 that there was some rise in the number of pupils per teacher at each level of education. The primary sector fared best, with only 23 per cent of the Latin American sample and 12 per cent of the other middle-income countries allowing growth in class size. At the secondary level there was a more significant increase in class size, particularly in Latin America during 1970-75. During 1970-78, class size increased in 78 per cent of the Latin American countries. Comparable class size increases occurred at the tertiary level. At all educational levels, the increase in class size was more common in Latin America than in the other middle-income countries. The differences between the subsamples is significant--more than 20 percentage points more at the secondary and tertiary levels, in both of which class sizes increased in almost 70 per cent of the sample for which data had been collected.

The quality implications of this change cannot be unequivocally answered. One could assert that the larger the class size, the less time the teacher can devote to the average student, so a fall in the teacher/pupil ratio might serve as an indicator of a drop in the quality of education. On the other hand, a recent review of the literature at the World Bank suggests that "it cannot be concluded that an increase in class size will necessarily lead to a decrease in the level of academic achievements of pupils. . . . What seems to be more important is what the teacher does with the opportunities provided by the size of the class." 1/ Moreover, in the case of some of the countries in the sample, the pupil/teacher ratio in 1965 was as low as 5 (see Appendix II, Table VI). One would suspect that an increase from 5 to 10 pupils per teacher would, in most cases, be far less deleterious for educational quality than an increase from 15 to 30 pupils per teacher; in fact, such changes might be construed as an improvement in the allocation of resources, if the resource savings were shifted to more pressured elements of the educational sector.

(4) Another test of potential quality erosion is whether there was a deterioration in the share of nonwage recurrent expenditure as a share of expenditure per student. At the primary education level, where teachers' pay made up about 90 per cent of total spending, it was assumed that changes

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1/ Wadi' D. Haddad (1978), p. 1.

in nonwage input expenditure per student were too small to influence total expenditure per student significantly. Our model estimates the percentage change in nonwage expenditure per student, o_i. At the secondary and tertiary levels, a significant proportion of countries in the sample allowed a deterioration in the share of expenditure per student on nonwage recurrent inputs. This occurred in 83 per cent of the Latin American countries (for which data were available) from 1970 to 1978 at the secondary level and to a more limited extent in the other middle-income countries. The deterioration became more obvious in 1970-78 in all the countries in the sample. At the tertiary level, deterioration in the real supply of complementary inputs probably became more prevalent as the decade progressed, but even from 1965 to 1970, the share of expenditure on nonwage inputs in expenditure per student was being cut back for half of the countries in our sample.

In summary, the potential implications of these expenditure patterns for the quality of secondary and higher education during the 1970s was not auspicious. All the indicators examined to uncover the possibility of quality changes suggested significant quality erosion in some countries at all levels of education. At the second and third levels (and particularly the latter) this was partially evident in well over 50 per cent of those countries for which data were available. It must, of course, be stressed that this "quality erosion" depends on our assumptions, and the percentages given do not preclude the possibility that, in several countries, education has been proceeding from strength to strength.

Linked to these other measures of recurrent expenditure adjustment is the question of whether there has been any deterioration in the capacity of countries to operate and maintain the stock of educational institutions. The observed squeezing of nonwage recurrent expenditure is one indication that this has occurred. An alternative test is to evaluate whether countries have adequately provided recurrent financing for their new capital projects in the education sector. To examine this issue, a recurrent expenditure model previously developed by one of the authors was used. 1/

It relies on the simple assumption that a capital project implemented in period t generates a flow of recurrent expenditure needs in the subsequent period $t+1$. At the same time, the effects of inflation in any year generate a demand for augmenting the previous year's recurrent budget for education by the inflation rate, independent of any demand for upgrading in the overall quality of existing programs and independent of any capital expenditure program. These two factors would suggest that the change in recurrent expenditure in a period would be a function of capital expenditure in the previous period and the amount of additional recurrent expenditure required to maintain the real recurrent expenditure level of the previous period, or:

1/ Heller (1974).

$$\Delta R_{t,t-1,i} = f(K_{t-1,i}, \dot{p}R_{t-1,i}, \varepsilon)$$

where $R_{t,i}$ = total recurrent expenditure in educational subsector i in period t (i = primary, secondary, or tertiary);

$\dot{p}$ = the rate of inflation (using the consumer price index); and

$K_{t,i}$ = capital expenditure in educational subsector i in period t.

The data for this type of analysis are harder to obtain and it was therefore necessary to estimate this model using a broader sample than in the previous analyses, reflecting the countries for which data on sectoral capital and current expenditure were available for most of the years in the period 1970-77. 1/ A cross-section time series estimation method was used. 2/ The results are indicated in Table 8.

Table 8. Determinants of Recurrent Expenditure in Education

(t-statistics in parentheses)

Change in Recurrent Expenditure in:	Constant	Capital Expenditure in Subsector i, t-1	Inflation Factor in Subsector i 1/	R^2 (N)
Primary	-0.12	0.98	1.88	0.72
	(-1.22)	(1.12)	(16.45)	(108)
Secondary	-0.03	0.50	1.09	0.85
	(-0.67)	(2.72)	(22.29)	(107)
Tertiary	-0.08	0.12	0.82	0.66
	(1.65)	(0.66)	(14.31)	(109)

1/ That is, $\dot{p}R_{t-1,i}$.

1/ Barbados, Jamaica, Mexico, Nicaragua, Panama, St. Lucia, Argentina, Brazil, Colombia, Ecuador, Venezuela, Malta, Cyprus, Iran, Turkey, Korea, Malaysia, Pakistan, Singapore, Thailand, Botswana, Egypt, Ghana, Ivory Coast, Kenya, Lesotho, Malawi, Mauritius, and Nigeria.

2/ The variables for any given country were weighted by the inverse of current expenditure in 1975, in order to correct for heteroscedasticity in the unweighted estimation.

The results are consistent with the results discussed in the previous sections. First, the tendency to adjust for inflation is clearly the strongest in the primary education sector and the weakest in the tertiary sector; in fact, there is overcompensation for the effects of inflation at the level of primary education, just adequate compensation at the secondary level, and real deterioration at the tertiary level, with the coefficient in the latter sector equaling only 0.82. Second, there appears to have been negligible funding of the marginal recurrent costs of new capital projects in the tertiary educational sector, though this may reflect the fact that capital expenditures in this sector have longer gestation periods such that a one-year lag is inadequate. The most significant funding of capital projects occurred at the secondary level, with 50 per cent of the capital expenditure reflected as additional recurrent costs in the subsequent budget year. At the primary level, the recurrent expenditure coefficient is significantly higher, 0.98, but the coefficient is significant at only the 73 per cent probability level. In summary, the results suggest that the adjustment in the tertiary sector also took the form of the underfinancing of the recurrent costs of new capital projects as well as underadjustment for the effects of inflation.

A final measure of the nature of development in the education sector is the extent to which there were increases in the capital stock within the sector. While there has been a general increase in class size across the educational sector, the increases have not been dramatic. The sharp increases in the enrollment rate would then suggest either that the utilization rate of the capital plant has been sharply increased or that the size of the capital plant in the education sector itself has been increased. Measures of capital plant in education are not readily available, but estimates of capital expenditure are.

If there had been a squeezing of capital expenditure in education, one sign would have been a decline in its share of GDP. Table 9 presents educational capital expenditure relative to GDP for the period 1965-78. While there is considerable variation in any given year there is no clearly observable pattern of erosion. The increase in enrollments clearly necessitated and called for additional capital expenditure in the education sector.

Capital allocation within the education sector appears to have been weighted toward the secondary and tertiary levels (Table 9). UNESCO data on the countries in the sample, available for the period 1970-77, suggest that the secondary and tertiary levels received 73 per cent and 71 per cent of total capital expenditure in the Latin American and other middle-income countries, respectively. Whereas secondary and tertiary education received comparable shares in Latin America, there was a clear bias toward secondary education in most of the other middle-income countries of the sample.

Table 9. Share of Capital Expenditure on Education in GDP and Subsectoral Distribution

(In per cent)

	Share in Gross Domestic Product				Distribution Between Sectors		
	1965	1970	1975	1978	Primary	Secondary	Tertiary
Costa Rica	0.7	0.3	0.4	...	...	...	...
Dominican Republic	0.04	0.2	0.4	0.2	...	...	...
El Salvador	0.4	0.2	0.3	0.2	...	...	...
Haiti	0.2	0.1	0.1	0.3	...	...	...
Honduras	0.2	0.1	...	0.4	...	...	...
Jamaica	0.3	1.0	1.3	...	35	55	10
Mexico	--	0.9	1.4	1.5	27 1/	43 1/	30 1/
Nicaragua	0.1	--	...	0.6	...	...	...
Panama	0.5	0.4	0.3	0.5	32	40	28
Trinidad and Tobago	0.4	0.6	0.3	1.0	...	...	...
Argentina	0.2	...	0.2	0.4	19	36	45
Bolivia	...	0.1	0.1	0.2	...	...	...
Brazil	...	...	...	...	12 2/	19 2/	69 2/
Colombia	0.2	0.4	...	0.6	23 3/	28 3/	49 3/
Ecuador	0.4	0.9	...	0.1	35 2/	44 2/	21 2/
Guyana	0.3	0.8	0.8	1.0	...	...	...
Peru	0.3	0.1	0.2	--	...	...	...
Venezuela	0.2	0.3	0.2	--	31 4/	29 4/	40 4/
Cyprus	0.3	0.6	0.4	0.3	40	46	14
Korea	0.2	0.8	0.6	...	51	35	14
Malaysia	0.8	...	...	...	21	46	33
Pakistan	0.6	0.7	0.7	0.6	14	48	38
Philippines	...	...	0.4	0.4	...	...	...
Singapore	0.5	0.1	0.4	0.2	16	53	31
Thailand	0.6	1.0	1.0	1.1	39	38	23
Malta	1.4	0.5	0.2	--	25	63	12
Portugal	0.2	0.2	0.3	0.3	...	...	...

1/ 1972-77.
2/ 1970-71.
3/ 1970-73.
4/ 1970-74.

V. Conclusion

The analysis in this paper suggests that the tightening fiscal pressures of the last decade did have an impact on the education sector. The nature of that impact is not obvious from examining simple ratios of educational expenditure to GDP. Rather, the impact arose from the way in which the authorities in many countries resolved the conflict between the budgetary pressures confronting all elements of the public sector and the political pressures for expanding enrollments and the attendant fiscal implications of such expansion. Enrollments were allowed to expand, often at dramatic rates in the secondary and tertiary levels, but this could only be achieved by a significant squeezing of expenditure per student at these higher educational levels. Significant underfinancing of the recurrent costs associated with newly completed capital projects also appears to have occurred. If one accepts the assumption that real wages increased at the secondary and tertiary levels at the same rate as in the primary sector, then there was also a clear deterioration in the share and level of real expenditure per student on nonwage recurrent inputs.

On the other hand, primary education continued to have high priority and at least in the sample of countries discussed in this paper, increasing enrollments were accompanied by the necessary real expenditure per student. In effect, while there was a shift in the allocation of aggregate educational expenditure away from primary education and toward the higher levels, particularly secondary, this was not matched by a growth in the resources allocated per student. In that respect, there was a narrowing of the differential in expenditure per student across the three levels.

It is hard to assess adequately the implications of these changes for the quality of education. Perhaps the 1965 level of expenditure per student at the university level was excessive, and increases in class size and cutbacks in nonteaching expenditure were warranted and were not associated with any loss in productivity or deterioration in the quality of teachings, but this remains to be seen. One cannot not readily assess from this type of macroeconomic sectoral analysis whether it was more beneficial, in terms of political or economic profitability, to pursue this type of strategy in contrast to an alternative that would have limited enrollment growth and maintained a higher expenditure per student. These are obviously the types of questions that warrant more in-depth analysis by the countries concerned.

Notes on Data and Methodology

1. Unless otherwise stated, all variables were taken from the UNESCO Statistical Yearbooks, from 1974 to 1981, where the 1981 edition was used in preference, and, failing it, reference was made to the 1978-79 edition (the latest edition which contains 1965 data).

2. Variables from International Financial Statistics Yearbook, 1982: the consumer price index (base = 1975), the exchange rate (line ae or ag), the government deficit (line 80), GDP (line 99b), population (line 99z), and total government expenditure (line 82).

3. Variables from World Tables, 1980 and 1981 (IBRD): Income of the richest 5 per cent as percentage of total national income, urban population and percentage of total population between the ages of 0 to 14 years.

Notes to variables in the UNESCO Yearbooks

Our study has not corrected for differences in educational systems. Some, in particular, should be noted. All the countries in our sample, except Pakistan and Singapore, have compulsory education, in most cases from 6 years to 15 years of age. This means that, in theory at least, enrollment rates can be ignored at the primary level and for about the first three grades at the secondary level. In most countries, primary education lasts for six year, and secondary education for another six. However, primary education takes nine years in El Salvador, eight years in Bolivia and Brazil, seven years in Argentina and Thailand, and five years in Colombia and Pakistan.

No distinction is made between special education and normal education. Our assumption is that special education is equally relevant to whichever category, and that it is very small in all countries.

For Cyprus, the data refer to Greek schools only. However, this is consistent for all the data in all the tables. Reform in some countries means that some data are not comparable from year to year. These breaks occurred as follows: El Salvador (a change in 1971 from six required years to nine); Haiti (a change in 1976 from seven required years to six); Brazil (a change in 1971 from four required years to eight); Bolivia (a change in 1969 from six required years to eight); and Malta (a change in 1970 from a two-tier system of six to nine years to a single-tier system of six years).

TABLE I. PERCENTAGE OF TOTAL CURRENT EXPENDITURE ALLOCATED TO PRIMARY, SECONDARY, AND TERTIARY EDUCATION

(IN PERCENT)

	PRIMARY				SECONDARY				TERTIARY			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
COSTA RICA	60	51	37	...	17	19	22	...	12	11	24	...
DOMINICAN REPUBLIC	45	41	38	34	16	18	20	20	25	21	20	11
EL SALVADOR	67	58	58	55	10	12	7	5	12	21	24	23
HAITI	64	65	63	61	20	18	18	16	8	9	11	8
HONDURAS	71	64	...	57	15	15	...	17	10	12	...	17
JAMAICA	49	45	34	...	28	36	32	...	10	9	20	...
MEXICO	40	48	43	37	13	27	31	23	13	10	13	25
NICARAGUA	61	58	...	50	17	18	...	29	7	10	...	13
PANAMA	52	39	39	46	24	19	24	23	9	11	13	16
TRINIDAD AND TOBAGO	54	53	43	37	22	24	20	27	14	14	21	9
ARGENTINA	50	29	27	40	24	30	31	29	17	21	30	21
BOLIVIA	56	60	60	61	16	13	7	7	18	11	15	18
BRAZIL	...	...	...	...	...	...	...	...	24	26	30	30
COLOMBIA	40	37	...	51	13	17	...	21	25	24	...	20
ECUADOR	41	46	...	36	21	41	...	33	32	10	...	17
GUYANA	71	47	45	35	13	34	33	32	3	15	16	20
PERU	42	40	41	38	18	21	21	27	14	3	3	4
VENEZUELA	43	38	22	...	18	21	18	...	20	26	37	...
CYPRUS	59	47	43	38	38	40	49	49	1	7	3	6
KOREA	66	64	62	61	22	23	26	32	11	8	12	7
MALAYSIA	...	50	41	39	...	26	34	29	...	14	13	16
PAKISTAN	...	40	41	40	...	33	30	32	...	16	17	17
PHILIPPINES	...	83	66	58	...	4	7	7	...	13	22	20
SINGAPORE	58	44	38	39	25	34	34	37	13	15	18	15
THAILAND	66	54	63	60	17	20	16	21	9	14	11	12
MALTA	59	42	25	31	20	29	49	51	15	13	14	10
PORTUGAL	40	...	57	51	31	...	25	27	11	...	11	11

TABLE II. NUMBER OF PRIMARY, SECONDARY, AND TERTIARY STUDENTS

(IN THOUSANDS)

	PRIMARY				SECONDARY				TERTIARY			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
COSTA RICA	277	349	361	354	40	61	112	134	7	15	33	55
DOMINICAN REPUBLIC	557	764	903	--	65	120	207	--	7	24	--	--
EL SALVADOR	398	531	759	823	55	88	52	65	4	10	28	31
HAITI	284	391	487	546	--	--	--	--	2	--	3	4
HONDURAS	284	382	461	525	24	40	52	103	3	--	12	23
JAMAICA	324	376	372	371	40	73	216	--	4	7	--	--
MEXICO	6916	9248	11461	13614	1003	1584	2939	3914	133	248	562	698
NICARAGUA	206	285	342	375	27	51	80	97	3	9	--	--
PANAMA	203	255	335	343	55	78	133	164	7	9	26	34
TRINIDAD AND TOBAGO	212	226	199	--	46	53	33	76	2	2	5	--
ARGENTINA	3125	3386	3579	3680	789	977	1243	1288	247	275	597	620
BOLIVIA	495	679	880	923	95	80	130	128	17	35	50	52
BRAZIL	9923	12810	19549	20567	2154	4086	1936	2438	156	430	1090	1182
COLOMBIA	2274	3286	3911	4266	434	750	1371	1752	44	86	187	275
ECUADOR	801	1016	1216	1367	117	217	384	535	14	39	170	235
GUYANA	131	130	130	138	47	60	71	75	--	1	3	--
PERU	1901	2341	2841	3126	328	546	813	1090	79	126	196	210
VENEZUELA	1453	1770	2108	2379	267	425	669	787	46	101	214	282
CYPRUS	73	69	57	54	32	42	49	49	--	1	1	1
KOREA	4941	5749	5599	5604	1201	1907	3112	3693	142	201	297	419
MALAYSIA	1235	1430	1594	1637	355	542	792	905	13	14	32	38
PAKISTAN	3155	3993	5236	6564	1053	1463	1936	2155	70	115	128	--
PHILIPPINES	5816	6969	7597	8179	1183	1719	2292	2820	528	652	770	1129
SINGAPORE	357	364	328	297	116	149	183	188	14	14	23	24
THAILAND	4630	5635	6686	6956	414	695	1194	1147	36	55	131	217
MALTA	54	40	30	32	13	24	32	27	1	2	1	--
PORTUGAL	893	992	1205	1220	326	446	466	500	35	50	80	85

TABLE III. NOMINAL EXPENDITURE PER STUDENT, BY LEVEL OF EDUCATION

(IN U.S. DOLLARS)

	PRIMARY				SECONDARY				TERTIARY			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
COSTA RICA	53	70	125	...	101	149	244	...	385	326	900	...
DOMINICAN REPUBLIC	...	21	...	...	67	60	...	...	...	346	...	...
EL SALVADOR	31	30	42	57	32	37	71	70	531	626	464	633
HAITI	11	...	9	11	...	...	...	...	219	...	270	182
HONDURAS	34	35	...	61	85	81	...	93	538	...	...	411
JAMAICA	30	41	121	...	141	168	200	...	461	442	...	...
MEXICO	21	29	80	83	45	98	227	180	345	240	480	1108
NICARAGUA	29	35	...	60	64	59	...	134	212	182	...	...
PANAMA	60	77	113	147	101	121	171	151	289	614	463	496
TRINIDAD AND TOBAGO	48	62	...	...	92	121	...	...	1630	1557	...	...
ARGENTINA	83	35	4 1/	77	158	126	135	162	357	310	279	237
BOLIVIA	18	30	57	72	27	54	47	56	167	103	250	393
BRAZIL	...	131	89	95	...	...	...	...	...	...	665	963
COLOMBIA	9	9	...	45	16	16	...	45	288	225	...	269
ECUADOR	15	20	...	68	53	86	...	160	673	116	...	186
GUYANA	44	34	61	72	...	54	83	121	630	1258	990	...
PERU	44	38	67	29	110	86	119	58	341	...	...	...
VENEZUELA	86	108	146	...	198	242	383	...	1234	1263	2412	...
CYPRUS	72	92	198	317	105	130	260	453	369	1348	1483	1702
KOREA	7	26	38	...	9	28	28	...	38	96	139	...
MALAYSIA	...	50	100	...	...	70	164	...	...	1454	1593	...
PAKISTAN	10	10	14	17	...	22	27	42	...	143	235	...
PHILIPPINES	...	20	...	35	...	...	...	...	...	34	...	87
SINGAPORE	60	69	158	243	78	127	255	367	350	602	1063	1145
THAILAND	12	16	36	...	34	46	52	97	213	411	323	...
MALTA	74	148	145	258	103	170	258	498	943	996	1615	...
PORTUGAL	20	...	237	237	44	...	265	307	142	...	691	715

1/ THE DROP BETWEEN 1970 AND 1975 REFLECTED A FAILURE TO ADJUST NOMINAL EXPENDITURES RELATIVE TO THE SHARP CHANGE IN THE EXCHANGE RATE.

TABLE IV. REAL EXPENDITURE PER STUDENT, BY LEVEL OF EDUCATION

(IN U.S. DOLLARS)

	PRIMARY				SECONDARY				TERTIARY			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
COSTA RICA	113	133	125	--	216	282	244	--	827	618	900	--
DOMINICAN REPUBLIC	--	35	--	--	119	101	--	--	--	580	--	--
EL SALVADOR	49	46	42	47	51	56	71	58	847	946	464	529
HAITI	21	--	9	10	--	--	--	--	447	--	270	164
HONDURAS	50	48	--	50	126	109	--	77	796	--	--	341
JAMAICA	75	79	121	--	349	321	200	--	1144	846	--	--
MEXICO	44	52	80	47	94	173	227	103	716	424	480	631
NICARAGUA	--	--	--	50	--	--	--	112	--	--	--	--
PANAMA	92	109	113	129	155	171	171	134	444	868	463	437
TRINIDAD AND TOBAGO	109	115	--	--	206	225	--	--	3655	2888	--	--
ARGENTINA	--	--	--	--	--	--	--	--	--	--	--	--
BOLIVIA	61	75	57	69	92	137	47	54	567	263	250	376
BRAZIL	--	341	89	46	--	--	--	--	--	--	665	472
COLOMBIA	33	20	--	24	58	35	--	24	1052	509	--	142
ECUADOR	36	38	--	58	125	161	--	136	1595	218	--	158
GUYANA	72	49	61	61	--	78	83	103	1034	1818	990	--
PERU	127	69	67	10	318	156	119	20	983	--	--	--
VENEZUELA	123	142	146	--	282	319	383	--	1763	1666	2412	--
CYPRUS	113	131	198	265	166	186	260	378	583	1931	1483	1422
KOREA	24	53	38	--	33	58	28	--	141	196	139	--
MALAYSIA	--	71	100	--	--	100	164	--	--	2068	1593	--
PAKISTAN	26	22	14	14	--	49	27	34	--	311	235	--
PHILIPPINES	--	41	--	28	--	--	--	--	--	70	--	71
SINGAPORE	104	113	158	230	137	209	255	346	613	993	1063	1080
THAILAND	22	25	36	--	60	74	52	87	383	655	323	--
MALTA	108	197	145	223	150	226	258	430	1374	1324	1615	--
PORTUGAL	56	--	237	158	121	--	265	204	390	--	691	475

TABLE V.4 RATIO [illegible]

	PRIMARY				SECONDARY				TERTIARY			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
COSTA RICA	0.133	0.124	0.125	...	0.253	0.261	0.244	...	0.968	0.573	0.900	...
DOMINICAN REPUBLIC	...	0.058	...	...	0.244	0.164	...	...	...	0.944	...	...
EL SALVADOR	0.114	0.102	0.094	0.084	0.117	0.124	0.158	0.104	1.953	2.095	1.038	0.941
HAITI	0.116	...	0.049	0.040	...	...	...	...	2.423	...	1.507	0.655
HONDURAS	0.145	0.128	...	0.115	0.364	0.294	...	0.175	2.306	...	...	0.777
JAMAICA	0.060	0.055	0.085	...	0.278	0.224	0.140	...	0.911	0.589	...	...
MEXICO	0.045	0.045	0.061	0.060	0.096	0.149	0.172	0.130	0.731	0.363	0.365	0.801
NICARAGUA	0.084	0.083	...	0.067	0.186	0.139	...	0.149	0.613	0.434	...	...
PANAMA	0.112	0.106	0.098	0.116	0.190	0.166	0.147	0.120	0.544	0.839	0.400	0.393
TRINIDAD AND TOBAGO	0.064	0.074	...	...	0.121	0.144	...	...	2.153	1.854	...	...
ARGENTINA	0.096	0.035	...	...	0.183	0.126	0.155	...	0.413	0.310	0.321	...
BOLIVIA	0.129	0.130	0.113	0.126	0.193	0.236	0.092	0.097	1.195	0.453	0.493	0.683
BRAZIL	...	0.289	0.078	0.073	...	...	...	...	...	...	0.583	0.747
COLOMBIA	0.036	0.027	...	0.053	0.064	0.047	...	0.052	1.156	0.680	...	0.315
ECUADOR	0.068	0.088	...	0.071	0.238	0.369	...	0.167	3.048	0.499	...	0.194
GUYANA	0.130	0.089	0.102	0.133	...	0.142	0.139	0.224	1.881	3.299	1.657	...
PERU	0.120	0.083	0.084	0.057	0.300	0.186	0.149	0.114	0.927	...	...	...
VENEZUELA	0.088	0.096	0.060	...	0.202	0.215	0.157	...	1.261	1.123	0.989	...
CYPRUS	0.110	0.102	0.191	0.141	0.160	0.145	0.250	0.201	0.564	1.504	1.427	0.755
KOREA	0.063	0.100	0.065	...	0.086	0.108	0.048	...	0.370	0.367	0.238	...
MALAYSIA	...	0.132	0.137	...	...	0.184	0.226	...	...	3.825	2.197	...
PAKISTAN	0.096	0.114	0.085	0.076	...	0.255	0.170	0.187	...	1.638	1.457	...
PHILIPPINES	...	0.110	...	0.068	...	...	...	...	...	0.188	...	0.168
SINGAPORE	0.117	0.075	0.075	0.070	0.153	0.139	0.121	0.105	0.684	0.661	0.505	0.328
THAILAND	0.092	0.088	0.102	...	0.257	0.260	0.148	0.223	1.630	2.309	0.923	...
MALTA	0.160	0.212	0.116	0.113	0.222	0.243	0.206	0.218	2.038	1.422	1.286	...
PORTUGAL	0.048	...	0.163	0.148	0.104	...	0.183	0.191	0.336	...	0.476	0.446

TABLE VI. FACTORS EXPLAINING EROSION OF QUALITY OF EDUCATION

		PERCENT CHANGE IN									
			PRIMARY			SECONDARY			TERTIARY		
		CONSUMER PRICE INDEX	EXPENDITURE PER STUDENT	TEACHERS' WAGE RATES	TEACHER - PUPIL RATIO	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE
COSTA RICA	1965-1970	13.3	33.4	44.5	-11.1	47.6	10.5	-7.4	-15.3	...	...
	1970-1975	89.8	129.7	126.4	3.3	112.2	-35.3	21.1	257.0	...	...
	1975-1978	24.8	...	...	6.9	...	21.7	...	...	...	...
	1970-1978	136.8	...	...	10.0	...	-5.9	...	...	...	...
DOMINICAN REPUBLIC	1965-1970	6.4	...	...	-3.8	-9.6	...	...	...	...	...
	1970-1975	67.8	...	...	9.1	...	...	...	...	...	...
	1975-1978	26.0	...	...	...	...	...	...	...	...	...
	1970-1978	111.4	...	...	...	...	...	...	...	...	...
EL SALVADOR	1965-1970	5.6	-1.9	6.9	-8.8	17.1	-38.9	49.1	17.9	-85.7	96.8
	1970-1975	51.1	38.1	62.4	-24.3	89.8	28.0	-0.6	-25.9	--	-88.3
	1975-1978	19.7	35.2	...	...	-1.1	...	...	36.5	-30.8	...
	1970-1978	80.8	86.7	...	...	87.6	...	...	1.1	-30.8	...
HAITI	1965-1970	20.0	...	...	-79.3	...	...	...	...	...	...
	1970-1975	70.1	...	...	21.2	...	...	...	...	...	...
	1975-1978	11.0	27.0	27.0	--	...	...	...	-32.6	-14.3	-45.3
	1970-1978	88.8	...	...	21.2	...	...	...	...	...	...
HONDURAS	1965-1970	8.9	3.7	24.4	-20.7	-5.1	...	...	...	...	...
	1970-1975	35.9	...	...	-5.7	...	...	...	...	...	...
	1975-1978	20.6	...	...	2.7	...	...	...	...	-6.7	...
	1970-1978	63.9	73.8	76.6	-2.9	14.9	...	...	...	...	...
JAMAICA	1965-1970	29.8	58.8	41.3	17.5	39.4	-13.0	11.2	12.0	...	...
	1970-1975	91.2	220.1	203.1	17.0	29.9	-26.9	-146.3	...	...	...
	1975-1978	64.7	...	...	...	...	...	...	...	...	...
	1970-1978	214.9	...	...	...	...	...	...	...	...	...

TABLE VI (CONTINUED). FACTORS EXPLAINING EROSION OF QUALITY OF EDUCATION

		PERCENT CHANGE IN									
			PRIMARY			SECONDARY			TERTIARY		
		CONSUMER PRICE INDEX	EXPENDITURE PER STUDENT	TEACHERS WAGE RATES	TEACHER - PUPIL RATIO	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE
MEXICO	1965-1970	17.4	39.6	37.5	2.1	117.2	-7.7	87.4	-30.4	...	...
	1970-1975	76.7	171.9	169.7	2.2	130.9	-21.4	-17.4	100.0	...	...
	1975-1978	75.5	87.6	78.7	8.9	44.6	--	-34.1	319.4	--	240.7
	1970-1978	210.1	410.0	399.2	10.9	234.0	-21.4	-143.7	738.8	...	...
NICARAGUA	1965-1970	...	19.0	37.2	-18.2	-9.0	-62.5	16.3	-14.1	-100.0	48.7
	1970-1975	...	...	...	--	...	-19.2	...	...	...	...
	1975-1978	19.8	...	...	2.6	...	...	...	...	...	...
	1970-1978	...	73.6	71.1	2.6	128.1	...	...	...	...	...
PANAMA	1965-1970	8.4	29.6	19.6	10.0	19.9	--	0.3	112.0	--	92.3
	1970-1975	41.4	46.0	46.0	--	40.9	-9.5	4.4	-24.5	15.0	-85.5
	1975-1978	13.3	29.7	26.0	3.7	-11.3	-21.7	-15.5	6.9	17.6	-36.7
	1970-1978	60.3	89.4	85.7	3.7	25.0	-33.3	-27.3	-19.2	30.0	-134.9
TRINIDAD AND TOBAGO	1965-1970	20.9	49.5	49.5	--	54.8	-8.3	13.6	11.8	14.3	-52.0
	1970-1975	85.5	...	...	8.8	...	...	...	...	...	...
	1975-1978	36.2	...	...	...	...	...	...	...	...	...
	1970-1978	152.7	...	...	...	...	...	...	...	...	...
ARGENTINA	1965-1970	144.1	-11.5	-16.5	5.0	67.5	--	84.0	82.6	25.0	74.1
	1970-1975	1104.8	80.1	74.9	5.3	1539.1	-14.3	1478.5	1271.2	-8.3	1204.7
	1975-1978	1399.6	...	...	--	1073.8	12.5	...	734.2	-23.1	...
	1970-1978	...	...	...	5.3	...	--	...	...	-33.3	...
BOLIVIA	1965-1970	33.3	64.7	61.1	3.6	99.5	...	...	-38.2	...	...
	1970-1975	155.1	224.3	209.5	14.8	46.0	...	...	307.5	...	...
	1975-1978	4.5	27.0	...	...	20.2	...	...	57.6	...	...
	1970-1978	166.6	311.8	...	...	75.5	...	...	542.3	...	...

TABLE VI (CONTINUED). FACTORS EXPLAINING EROSION OF QUALITY OF EDUCATION

		PERCENT CHANGE IN									
			PRIMARY			SECONDARY			TERTIARY		
		CONSUMER PRICE INDEX	EXPENDITURE PER STUDENT	TEACHERS' WAGE RATES	TEACHER - PUPIL RATIO	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE
BRAZIL	1965-1970	237.7	...	...	--	...	13.3	...	...	-100.0	...
	1970-1975	159.7	24.3	2.9	21.4	...	...	...	...	10.0	...
	1975-1978	104.1	88.1	92.7	-4.5	...	...	...	156.0	...	...
	1970-1978	430.1	133.8	116.0	17.9	...	-7.7	...	...	...	...
COLOMBIA	1965-1970	61.3	39.6	45.2	-5.6	38.7	-30.8	24.3	10.8	-14.3	-20.1
	1970-1975	126.2	...	...	15.8	...	-11.8	...	...	-12.5	...
	1975-1978	88.7	...	...	-3.1	...	-10.5	...	...	-22.2	...
	1970-1978	326.9	979.3	966.1	13.2	515.9	-23.5	-426.7	155.2	-37.5	-773.4
ECUADOR	1965-1970	26.1	88.4	91.1	-2.7	126.4	-7.7	42.9	-76.1	-62.5	-104.7
	1970-1975	88.0	...	...	--	...	-14.3	...	...	...	...
	1975-1978	17.9	...	...	5.3	...	-6.3	...	...	...	...
	1970-1978	121.6	233.5	228.2	5.3	86.4	-21.4	-120.4	60.6	-69.2	-98.4
GUYANA	1965-1970	13.6	-9.1	2.4	-11.5	...	10.3	...	134.0	...	...
	1970-1975	44.5	127.5	137.8	-10.3	94.5	15.4	-58.7	--	...	...
	1975-1978	17.9	18.2	15.1	3.1	46.0	18.2	12.7	...	...	...
	1970-1978	70.4	169.0	175.9	-6.9	183.9	30.8	-22.7	...	...	...
PERU	1965-1970	59.1	25.7	22.9	2.8	12.2	-13.3	2.7	...	-33.3	...
	1970-1975	81.2	102.4	113.9	-11.4	61.3	-41.2	-11.4	...	-41.7	...
	1975-1978	190.9	89.0	91.5	-2.6	111.2	-20.8	40.5	...	...	...
	1970-1978	427.0	282.5	296.8	-14.3	240.6	-70.6	14.3	...	...	...
VENEZUELA	1965-1970	8.3	25.2	28.2	-2.9	22.4	--	-5.8	2.4	-20.0	-5.8
	1970-1975	31.9	30.1	15.8	14.3	52.5	5.6	31.1	83.9	-16.7	84.8
	1975-1978	24.3	...	...	3.3	...	--	...	...	14.3	...
	1970-1978	64.0	...	...	17.1	...	5.6	...	...	--	...

TABLE VI (CONTINUED). FACTORS EXPLAINING EROSION OF QUALITY OF EDUCATION

		PERCENT CHANGE IN									
			PRIMARY			SECONDARY			TERTIARY		
		CONSUMER PRICE INDEX	EXPENDITURE PER STUDENT	TEACHERS' WAGE RATES	TEACHER - PUPIL RATIO	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE
CYPRUS	1965-1970	10.1	49.2	34.9	14.3	44.0	4.5	4.5	325.8	...	...
	1970-1975	43.3	103.9	93.9	10.0	89.1	4.8	-9.6	3.8	18.2	-108.3
	1975-1978	19.7	43.1	32.0	11.1	55.8	15.0	8.8	2.5	11.1	-40.6
	1970-1978	71.5	191.9	171.9	20.0	194.6	19.0	3.7	6.5	27.3	-192.7
KOREA	1965-1970	79.9	366.0	357.9	8.1	266.9	-2.9	-88.1	191.7	5.0	-171.2
	1970-1975	103.7	121.1	112.4	8.8	50.1	-2.8	-59.5	121.1	--	8.7
	1975-1978	45.3	...	...	5.8	...	2.7	...	...	-31.6	...
	1970-1978	195.9	...	...	14.0	...	--	...	...	-31.6	...
MALAYSIA	1965-1970	6.8	...	...	-14.3	...	-8.3	...	...	-66.7	...
	1970-1975	42.2	67.0	67.0	--	96.5	-7.7	37.2	-7.9	...	...
	1975-1978	12.8	...	...	3.1	...	3.6	...	...	...	...
	1970-1978	60.5	...	...	3.1	...	-3.8	...	...	33.3	...
PAKISTAN	1965-1970	23.8	4.1	1.8	2.4	...	-5.3	...	...	-22.2	...
	1970-1975	118.3	184.3	181.9	2.4	153.9	10.0	-38.0	239.7	27.3	30.5
	1975-1978	25.9	26.0	31.0	-5.0	54.9	5.6	18.4	...	...	...
	1970-1978	174.9	258.2	260.6	-2.4	293.3	15.0	17.7	...	...	...
PHILIPPINES	1965-1970	33.7	...	...	6.5	...	-6.5	...	...	4.3	...
	1970-1975	108.3	...	...	--	...	6.1	...	...	-9.1	...
	1975-1978	23.2	...	...	...	...	...	...	...	-25.0	...
	1970-1978	156.7	102.4	...	...	...	...	...	195.7	-36.4	...
SINGAPORE	1965-1970	6.1	15.8	19.2	-3.4	62.9	16.7	27.0	73.1	25.0	28.9
	1970-1975	65.0	86.8	86.8	--	63.1	-15.0	-8.7	42.8	-33.3	-10.7
	1975-1978	6.0	33.5	30.2	3.3	24.9	--	-5.2	-6.4	6.3	-42.8
	1970-1978	74.9	149.4	146.1	3.3	103.7	-15.0	-27.3	33.7	-25.0	-87.4

TABLE VI (CONCLUDED). FACTORS EXPLAINING EROSION OF QUALITY OF EDUCATION

		PERCENT CHANGE IN									
			PRIMARY			SECONDARY			TERTIARY		
		CONSUMER PRICE INDEX	EXPENDITURE PER STUDENT	TEACHERS' WAGE RATES	TEACHER - PUPIL RATIO	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE	EXPENDITURE PER STUDENT	TEACHER - PUPIL RATIO	OTHER / NONWAGE EXPENDITURE
THAILAND	1965-1970	13.2	32.2	32.2	--	39.1	5.9	1.1	95.0	30.0	32.8
	1970-1975	59.2	121.1	101.1	20.0	8.6	-68.8	-23.7	-23.7	-100.0	-24.8
	1975-1978	12.1	...	...	--	88.3	11.1	...	...	-21.4	...
	1970-1978	78.5	...	...	20.0	104.6	-50.0	...	...	-142.9	...
MALTA	1965-1970	9.6	134.1	179.1	-45.0	92.9	--	-86.2	23.2	--	-155.9
	1970-1975	33.0	-5.2	-32.8	27.6	47.3	13.3	66.7	57.1	--	89.9
	1975-1978	15.9	60.2	60.2	--	73.6	7.7	5.7	...	...	...
	1970-1978	54.1	51.9	24.4	27.6	155.8	20.0	111.4	...	...	...
PORTUGAL	1965-1970	35.9	...	...	-6.3	...	15.0	...	...	-6.3	...
	1970-1975	101.6	...	...	41.2	...	5.9	...	...	41.2	...
	1975-1978	50.6	45.0	40.0	5.0	67.7	-43.8	71.5	50.2	--	10.2
	1970-1978	203.6	...	...	44.1	...	-35.3	...	...	41.2	...

Table VII. Teacher/Pupil Ratios, by Level of Education, 1965, 1970, 1975, and 1978

	Primary Level				Secondary Level				Tertiary Level			
	1965	1970	1975	1978	1965	1970	1975	1978	1965	1970	1975	1978
sta Rica	27	30	29	27	19	17	23	18	12	...	...	...
minican Republic	53	55	50	...	...	26	...	...	16	...	...	...
Salvador	34	37	46	...	18	25	18	...	7	13	13	17
iti	29	52	41	41	...	...	...	...	7	...	7	8
nduras	29	35	37	36	9	...	17	...	...	...	15	16
maica	57	47	39	...	23	26	33	...	...	12	...	...
xico	47	46	45	41	13	14	17	17	8	...	12	12
caragua	33	39	39	38	16	26	31	...	8	16	...	...
nama	30	27	27	26	21	21	23	28	20	20	17	14
inidad and Tobago	34	34	31	...	24	26	...	...	7	6	...	...
gentina	20	19	18	18	7	7	8	7	16	12	13	16
livia	28	27	23	...	17	...	18	...	7	...	...	...
azil	28	28	22	23	15	13	...	14	5	10	9	...
lombia	36	38	32	33	13	17	19	21	7	8	9	11
ador	37	38	38	36	13	14	16	17	8	13	...	22
yana	26	29	32	31	29	26	22	18	5	...	...	...
ru	36	35	39	40	15	17	24	29	9	12	17	...
nezuela	34	35	30	29	18	18	17	17	10	12	14	12
prus	35	30	27	24	22	21	20	17	...	11	9	8
rea	62	57	52	49	35	36	37	36	20	19	19	25
laysia	28	32	32	31	24	26	28	27	9	15	...	10
kistan	42	41	40	42	19	20	18	17	27	33	24	...
lippines	31	29	29	...	31	33	31	...	23	22	24	30
ngapore	29	30	30	29	24	20	23	23	16	12	16	15
iland	35	35	28	28	17	16	27	24	10	7	14	17
ta	20	29	21	21	15	15	13	12	6	6	6	...
tugal	32	34	20	19	20	17	16	23	16	17	10	10

References

Danière, André, The Recurrent Cost Problem of Education: Investment Projects in the Third World, unpublished (Boston College, January 1982).

Haddad, Wadi' D., "Educational Effects of Class Size," World Bank Staff Working Paper No. 280 (June 1978).

Heller, Peter S., "Public Investment in LDCs with Recurrent Cost Constraint: The Kenyan Case," Quarterly Journal of Economics, LXXXVIII (May 1974), pp. 251-77.

Izquierdo, Carlos M., and Patricia Restrepo de Cepeda, "Analysis and Projection of Educational Expenditures in Latin America," in Inter-American Development Bank and Government of Mexico, Seminar on the Financing of Education in Latin America (Washington D.C., 1979).

Puryear, Jeffrey, "Higher Education, Development Assistance and Repressive Regimes," Studies in Comparative International Development (forthcoming, 1983).

Rezende, Fernando, "The Public Sector and Educational Expenditures in Latin America," in Inter-American Development Bank and Government of Mexico, Seminar on the Financing of Education in Latin America (Washington, D.C., 1979).

Tanzi, Vito, "Redistributing Income Through the Budget in Latin America," Banca Nazionale del Lavoro Quarterly Review, XXVII, Nos. 108-111 (1974), pp. 65-87.

___, "Tax Policy in Middle-Income Countries: Some Lessons of Experience," Bulletin for International Fiscal Documentation (International Bureau of Fiscal Documentation, Amsterdam, 1982), pp. 411-20.

___, "Taxation, Educational Expenditure, and Income Distribution" in Financiamento de la Educación en America Latina, ed. by M. Brodersohn and M.E. Sanjurjo (Mexico: Fondo de Cultura Economica, 1978).

United Nations Educational, Scientific and Cultural Organization, Statistical Yearbook (Geneva, 1974-81).