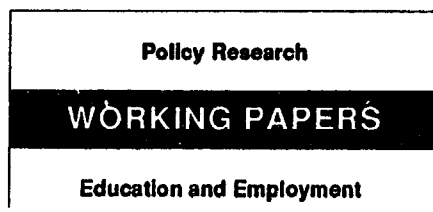


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Teachers' Salaries in Latin America

A Comparative Analysis

George Psacharopoulos
Jorge Valenzuela
and
Mary Arends

A comparison of teachers' salaries against the salaries of other workers did not support the position that teachers are either overpaid or underpaid in Latin America.

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This paper — a product of the Office of the Director, Technical Department, Latin America and Caribbean Region — is part of a larger effort to document the condition of teachers' salaries in the region. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Geroge Psacharopoulos, room I4-187, extension 39243 (February 1993, 37 pages).

Data from household surveys of 12 Latin American countries were used to assess how teachers' salaries compare with those of workers in other occupations.

The results show that salaries vary among countries, ranging from an apparent 35 percent underpayment in Bolivia (compared with the control group) to a 65 percent overpayment in Colombia.

But when statistical controls are introduced for differences in education, hours worked, and gender composition between the teachers group and the comparator group, much of the earnings differential disappears.

Psacharopoulos, Valenzuela, and Arends conclude that the data do not support the position that teachers are either overpaid or underpaid.

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A COMPARATIVE ANALYSIS**

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I. INTRODUCTION

Teachers are a fundamental input in the educational process. Beyond teacher headcount indices (such as the student-teacher ratios), it is the actual flow of teachers' services that determines how well students learn. The flow of these services links to teachers' qualifications on the one hand, and incentives on the other, such as teachers' salaries.

In this paper we first review the issues and associated literature regarding teachers' salaries. Then we conduct an empirical investigation on the qualifications and pay of teachers in twelve Latin American countries in 1989 based on a series of Household Surveys. We also report teachers' salaries circa 1980 and record changes in real teacher pay during the decade. A major purpose of this paper is to compare teachers' salaries to those of workers in similar professions. By doing so, it is hoped that further discussion will be stimulated on the alternative ways of allocating expenditure as well as methods for improving the quality of education in developing countries.

II. THE ISSUES

There has been an ongoing debate among researchers and education practitioners on whether teachers are underpaid or overpaid (e.g., see Cox 1989; Psacharopoulos 1987). This policy question is important since the diagnosis of one or the other situation can lead to quite different interpretations of an educational system's cost structure and its ability to meet its objectives.

The issue of teachers' salaries in developing countries became important during the decade of the 1980s in the midst of the economic crisis, when governments were forced to reduce expenditures in the social sectors. Faced with the need to invest in human resources and public pressures for delivery of quality services, governments looked for ways to control costs. These pressures were accentuated by growing school-aged populations which required additional investments in the expansion of facilities, and an increased teachers' salary bill in order to operate the schools. Teachers' remuneration is the largest expenditure item in education budgets -- approximately 50 percent of recurrent expenditures in Africa, 80 percent in Asia, and 95 percent in Latin America are allocated to teachers' salaries (UNESCO 1991).

On the other hand, there exists the view born in reaction to the public expenditure retrenchment, decrying cuts in teachers' salaries and arguing for equal pay between teachers and professionals with equal schooling (ILO 1991). Low pay is cited as a principal reason behind low teacher morale and attendance in developing countries (Lockheed and Verspoor 1991). It

is also responsible for the movement of those who were trained as teachers to other occupations in light of the prospect of future low wages as a teacher (ILO 1991). These factors have a strong reverberation on the quality of education provided.

Two important considerations regarding teachers' salaries are links to teacher strikes and the question of staffing. Teacher strikes are in most cases a result of disputes over low wages. Teacher strikes seriously limit time students devote to educational tasks. This in turn influences students' exposure time and ability to learn leading to increased grade repetition. It has been argued that higher wages for better teachers may contribute to lower repetition and, paradoxically, reduced educational costs in the long run (Harbison and Hanushek, 1992). In this case, raising teachers' salaries, if these were perceived to be "low," may be an effective way of improving the quality of education.

Lastly, many governments may hire more teachers as a public employment scheme or as an effort to lower student/teacher ratios. This extra hiring can easily turn into overstaffing. And given the public financing constraints, the only way this can be done is by offering lower teacher salaries -- a catch-22 situation.

III. REVIEW OF THE LITERATURE

Interest in the salaries of teachers in developing countries has grown enormously during the last fifteen years. Early studies were mostly concerned with the issue of overpayment of teachers. Wolff (1984) focused on East Africa where education inputs, especially teachers' salaries, were perceived to be too costly when measured as a ratio of national income per capita. International comparisons using this method revealed that these countries spend a very high ratio on teachers salaries when compared to other regions of the world.

A subsequent study by Cox (1985, 1989) demonstrated that cross-country comparisons of teachers salaries, measured as a ratio of income per capita, do not accurately reveal whether salaries are "above market conditions." This study argued that it is necessary to focus on more specific analyses regarding within-country labor markets. Zymelman and DeStefano (1989) looked at the status of teachers' salaries in Sub-Saharan African countries and outlined country-specific factors which affect them. Teachers' salaries were compared to those of other workers to determine that, relative to less trained personnel, they were better paid. Yet relative to those of equal training their salaries were deemed to be low. A forecasting model was developed which allows estimation of teacher wages (and the effect of salary scales) on future education costs. The costs in education and teachers' salaries were predicted to rise despite a noted trend of deterioration in real wages. This was mostly due to the growth in the total number of teachers.

Another study by Komenan and Grootaert (1990) surveyed teachers' salaries in the Côte d'Ivoire and found that teachers receive an economic rent which is largely an expression of government pay scales. But despite this, average teachers' salaries are still the same as those of non-teachers. Finally, a global study on teachers by the ILO (1991) revealed that in the early 1980s teachers' salaries in Africa, Asia, and Latin America were on average half that of professionals requiring comparable training.

For Latin America, most studies have concentrated on teachers' salaries in Brazil, possibly due to the availability of data and the number of researchers interested in its large education system. A study by Birdsall and Fox (1985) looked at teachers' salaries in Brazil with the aim of determining the causes of inequalities between male and female teachers. The study focused on the effect of personal characteristics, differences in location, training, and barriers to entry into higher paying teaching jobs for women. Psacharopoulos (1987) addressed the issue of whether teachers are overpaid in Brazil and found through the use of 1980 Census data that primary school and university teachers are underpaid relative to workers in other professions while secondary teachers showed mixed results. A detailed analysis of first grade teachers in Brazil by Rabelo Ferreira (1991) found, following comparisons to professionals with more or less similar schooling, that salaries are lower than those of professionals with less training and almost a third less than those with equal training. Large income disparities among teachers were also found between geographical regions favoring the southeast and urban areas at the expense of more rural zones. Harbison and Hanushek (1992) studied pay differences in the rural northeast of Brazil and found that these favor federal, state and private school teachers over

public and municipal school teachers. They also noted that wages in all schools were very low when measured as a proportion of the minimum wage and showed signs of decreasing significantly between 1981 and 1985.

There are two studies that have recorded teachers' salaries for other Latin American countries. Corvalan (1990) reported time series data for five countries (Argentina, Bolivia, Colombia, Costa Rica, and Guatemala) for the period 1980-1987. The data clearly show that, with the exception of Colombia, teachers' salaries have diminished for all teaching levels during the same period. In Argentina and Costa Rica salaries declined almost by half in real terms during this period. An ILO (1991) study on teachers compares their incomes with those of other occupations for 1982 and 1985 in seven Latin American cities --Bogota, Buenos Aires, Caracas, Mexico, Panama, Rio de Janeiro, and Sao Paulo. It was found that teachers earn more than workers holding less training (i.e., construction workers, and textile workers) except in the case of bus drivers, yet clearly earn much less than workers holding an equal amount of training (i.e., electric engineer, bank cashier, and executive secretary).

IV. TEACHERS' SALARIES IN LATIN AMERICA AND THE CARIBBEAN TODAY

The Data

The data for this study come from a series of Household Surveys circa 1989, as well as for an earlier year when available (see Annex). Information was collected on various characteristics of the individual such as years of schooling, hours worked, earnings in local currency at current prices, as well as occupation. For the purpose of our analysis, the teachers were disaggregated by level taught and urban-rural location when possible. The "All Teachers" category was used when disaggregation was not possible and includes pre-school and special education teachers, curriculum planners, instructors and other administrative staff. Any discrepancy between the number of teachers in the sample by school level and "All Teachers" relates to this category.

A comparator group was chosen in each country in order to provide a yardstick for comparing teachers' salaries. The comparator group consists of public and private sector employees above fifteen years of age excluding agricultural workers. The comparator group was chosen to include a large number of observations as to insure a reliable alternative salary base (see Annex).

Teachers in the Labor Force

Table 1 reports the percent of the labor force made up by teachers. Teachers form one of the largest single professional groups in all of the countries reported.

Table 1: Teachers in the Labor Force

Country	Year	Percentage of Teachers in the Labor Force
Argentina	1989	5.8
Bolivia	1989	7.2
Brazil	1989	3.6
Chile	1989	5.0
Colombia	1989	3.7
Costa Rica	1989	3.6
Ecuador	1987	5.1
Honduras	1991	3.7
Panama	1989	7.1
Peru	1990	4.9
Uruguay	1989	4.3
Venezuela	1989	5.0
Average		4.9

Source: See Annex

Teacher's Relative Pay

Table 2 reports the ratio of teachers' salaries and the comparator group. According to the latest figures, teachers earn on average 21 percent less than the comparator group in five out of the 12 countries (Argentina, Bolivia, Brazil, Peru, and Uruguay). It is interesting to note that all of these countries, with the exception of Uruguay, experienced periods of high inflation during the 1980s. In the remaining seven countries (Colombia, Costa Rica, Chile, Ecuador, Honduras, Panama, and Venezuela) teachers earned on average 31% more than the comparator group.

Table 2 permits an over-time comparison of salaries between teachers and the comparator group for eight countries. In five countries teachers' salaries declined (Argentina, Bolivia, Brazil, Uruguay, and Venezuela), in one they remained relatively unchanged (Panama), while in two they increased relative to the comparator group (Colombia and Honduras). The fact that teachers' salaries have declined in those countries suffering high inflation may be a sign that teachers do not benefit from cost of living adjustments comparable to those of the other professions.

In five of the seven countries for which we have data disaggregated by school level, primary school teachers earned less than the comparator group. In all of the other countries, with the exception of Uruguay where teachers of all levels earned less than the comparator group, teachers at the secondary and university level earned more than the comparator group.

Table 2: Mean Earnings Ratio of Teachers and Comparator Group

Country	circa 1979	circa 1989
Argentina	0.93	0.75
Bolivia	0.74	0.65
Brazil	0.92	0.88
Peru	n.a.	0.88
Uruguay	1.09	0.78
Colombia	1.37	1.65
Costa Rica	n.a.	1.33
Chile	n.a.	1.21
Ecuador	n.a.	1.24
Honduras	1.31	1.41
Panama	1.10	1.11
Venezuela	1.35	1.22
Average	1.10	1.09

Source: Table A-1

Teachers' Qualifications and Hours of Work

On the whole, the data reveals teachers are much better trained than the comparator group. From Table 3 we can see that the average differential in schooling between the two groups is 5 years. The country with the highest differential is Bolivia (6.26 years), yet teachers still earn less than the comparator group. The country with the smallest differential in schooling is Panama (3.67 years) where teachers earn more than the comparator group.

Table 3: Years of Schooling and Mean Hours Worked of Teachers and Comparator Group

Country	Level	Years of Schooling		Hours Worked	
		circa 1979	circa 1989	circa 1979	circa 1989
Argentina	All Teachers	12.62	13.41	29.27	28.01
	Comparator	8.73	9.32	45.00	43.59
Bolivia	All Teachers	14.49	14.35	25.47	27.88
	Comparator	9.45	8.09	44.58	49.67
Brazil	All Teachers	11.88	11.88	29.44	29.44
	Comparator	6.19	7.02	46.87	43.03
Colombia	All Teachers	14.17	14.01	36.17	38.14
	Comparator	8.07	8.93	48.20	48.27
Costa Rica	All Teachers	n.a.	14.61	n.a.	37.35
	Comparator	n.a.	9.11	n.a.	47.22
Chile	All Teachers	n.a.	15.50	n.a.	34.38
	Comparator	n.a.	10.16	n.a.	48.11
Ecuador	All Teachers	n.a.	15.32	n.a.	30.01
	Comparator	n.a.	10.24	n.a.	42.83
Honduras	All Teachers	13.24	12.51	34.06	36.79
	Comparator	8.08	7.87	46.90	46.69
Panama	All Teachers	14.13	15.08	36.36	37.47
	Comparator	9.50	11.41	41.98	42.66
Peru	All Teachers	n.a.	14.99	n.a.	27.78
	Comparator	n.a.	10.04	n.a.	47.83
Uruguay	All Teachers	14.62	14.36	25.91	25.63
	Comparator	7.97	9.01	45.91	45.53
Venezuela	All Teachers	12.06	13.04	33.60	33.36
	Comparator	7.39	8.38	43.17	42.80
Average	All Teachers	13.40	14.09	31.29	32.19
	Comparator	8.17	9.13	45.33	45.69

Source: Table A-2

An important factor which may perhaps help explain wage differentials between the two groups is hours worked. On average, the data show that the comparator group worked 13.5 hours a week more than teachers. Teachers at the primary level, whose earnings compared most unfavorably with the comparator group, averaged 4.4 years of more schooling, yet worked an average of 13.7 fewer hours.

In the four countries for which we have disaggregated data by school level (Brazil, Bolivia, Panama and Uruguay, see Table 3), all primary school teachers earned less than the comparator group in the earlier year. In the case of secondary teachers, they only earned less than the comparator group in Bolivia.

A look at the number of years of schooling of the two professional groups reveals no clear trends across countries, but important tendencies within countries. Years of schooling among teachers has improved in three of the eight countries in Table 3: Argentina, Panama, and Venezuela. In Brazil, years of schooling has remained constant, while in the remaining countries, Bolivia, Colombia, Honduras, and Uruguay, teachers schooling has declined. In contrast, schooling among the comparator group has remained constant in Venezuela, declined in Bolivia and Honduras, yet increased in the remaining countries.

Among teachers of different school levels we find in the three countries for which we have information (Brazil, Panama, and Uruguay) that, with the exception of University teachers whose

schooling has decreased, teachers in primary and secondary have more schooling in 1989 than in the earlier period.

Urban-Rural Discrepancies

A comparison between teachers in urban and rural areas reveals that rural teachers earn considerably less than their urban counterparts (see Table 4). In all five countries for which we have data rural teachers earn less while not always working more hours (see Table A-7). The difference is greatest in Brazil where teachers earn only 31% that of urban teachers.

Among primary school teachers urban-rural pay differentials exist, but they are not as marked as those for all teachers. Table A-7 shows that in all of the countries, with the exception of Costa Rica, urban teachers are paid more than rural teachers. Furthermore, the ratios between the two are not as low as those in Table 6 for all teachers. It is interesting to note that in the case of Panama, the discrepancies are diminishing. Between 1979 and 1989, the ratio of salaries between urban and rural teachers increased from 0.76 to 0.93. Unfortunately, in Brazil, the opposite trend seemed to be at work. An interesting characteristic of rural primary school teachers in all of the countries available is that although they are slightly less schooled than urban primary teachers, they work more hours (Table A-10, A-11).

Table 4: Teachers' Rural-Urban Earnings Ratio, 1989

Country	1979	1989
Brazil	0.38	0.31
Costa Rica	..	0.98
Honduras	..	0.82
Panama	0.76	0.78
Venezuela	..	0.83
Average	..	0.76

Source: Table A-8, A-9

In Panama, urban primary school teachers had two years less education in 1989 than they had in 1979. In rural areas primary school teachers had approximately one and one half fewer years of schooling between this same period.

Discussion

The data do not show a general and clear pattern of disparity or apparent over/under payment among teachers and the comparator group across the region. Countries which suffered from high levels of inflation do seem to have teachers whose salaries compare most unfavorably to those of the comparator group.

There is clear evidence that the salary for primary school teachers deteriorated over time vis-à-vis the comparator group. Two factors may account for this condition. First, countries

have made efforts to continue expanding school access or address the school quality problem by hiring more teachers. Increased hiring in schools began in the sixties and continued through the seventies. In the eighties it might have produced a large pool of trained teachers which pushed down their average wage. Second, primary school teachers are less trained than they used to be and thus receive lower pay. From our findings, this situation seems to exist only in rural areas. The first factor is one which may indicate that overstaffing may be a problem.

The salary differentials presented above between teachers and the comparator group are gross, in the sense that no standardization has taken place for the fact the two groups differ in hours worked, education, age and gender. In order to assess how much of the earnings differential between the two groups survives, we have fitted a standard earning function to the pooled (teacher plus comparator groups) sample of Chile, a country that has a 21 percent gross differential in favor of the teachers.

The dependent variable is the natural logarithm of earnings, and other explanatory variables include the number of years of schooling of the worker, the years of labor market experience (defined as "Age - Years of Schooling - 6", where "6" is the compulsory school starting age), experience squared, the logarithm of hours worked and two dummy variables to reflect the gender of the worker and the fact he/she is a teacher.

Table 5: The Determinants of Earnings in Chile

Variable	Coefficient	t - ratio
Teacher	.028	(1.55)
Years of Schooling	.115	(88.38)
Experience	.045	(43.33)
Experience-squared	-.0005	(24.71)
Log Hours Worked	.372	(18.08)
Male	.254	(27.07)
Constant	7.085	..
R ²	.368	..
N	18,552	..

Table 5 shows that this apparent differential of 21 percent is reduced to only 2.8 percent (coefficient of the "Teacher" dummy variable) and that it is not statistically significant even at $P < 0.05$.

Based on this evidence we cannot conclude that teachers are either underpaid or overpaid in Latin America.

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ANNEX: DATA SOURCES AND OCCUPATIONAL GROUPINGS

The comparator group excludes self-employed workers, employers, workers who live in rural areas, agricultural workers (except for administrators), domestic servants, and workers under the age of 15. Where the data set included a variable to weight observations, calculations were made using weight.

The teacher group does include self-employed--there seems to be little difference between self-employed and employee teachers, probably because the teachers' wages are set in the public sector. Self-employed were included to keep the number of teacher cases as large as possible.

In most cases, schooling was determined by looking at the highest grade completed and at which level of schooling. Schooling was calculated by adding the grades that comprise earlier levels to the highest grade completed at the highest level. In some cases, the questionnaire only recorded if the level was completed or not (Argentina 1989) so schooling had to be estimated in a less accurate manner.

A. Most Recent Surveys

Argentina (1989 Encuesta Permanente de Hogares). The data covers the metropolitan area only. Because the occupational code variable is not detailed enough, the variable RAMA (branch of economic activity) was used. The income variable includes earnings for only the primary occupation, while the hours variable reflects total hours in all jobs. The schooling variable is estimated by looking at the education level variable and a variable which states whether the level was completed. Those who did not complete the level are estimated to have 3.5 years if they did not complete primary, 9.5 if they did not complete secondary, and 14 if they did not complete university. Some teachers and comparators have income greater than 0 but no hours recorded; they are included in calculations of mean income and schooling and excluded from calculations of mean hours.

Teachers Teachers are selected if RAMA is equal to 931 and if primary earnings are greater than 0 (INGPRIEM+INGPRICP). The sample may include some workers who work in schools but are not teachers. The sample equals 326 cases, of which 13 had no hours.

Comparators The RAMA variable is used to exclude domestic servants and agricultural workers. Employees are selected using the CATOCUP variable. One case is excluded because of extremely high income.

Bolivia (1989 Encuesta Integrada de Hogares). The data set covers 17 urban centers with a population of 10,000 or more. The income variable, YPRINCIP, reflects income from the primary occupation only, while PRIMHRS is constructed by multiplying the days worked per week times the hours worked per day. The coding says that days refers explicitly to the primary occupation, while it does not state whether hours refers only to the primary job. Cases are selected in income and hours are greater than 0 for both teachers and the comparator group.

Teachers Teachers are selected using the OCUP variable, using the COTA-70 codes.

Comparators The OCUP variable is used to exclude teachers and agricultural workers, while the CATEG variable is used to exclude domestic servants and to include only employees.

Brazil (1989 Pesquisa Nacional por Amostra de Domicilios). The data set covers the entire country. Observation is included in sample if income from primary job (INGPRIT) is greater than 0. The income variable includes payment-in-kind. The hours variable reflects hours in primary job only. Those with income greater than 0 and no hours were on vacation or ill the previous week. Those with no hours are included in calculations of mean earnings and schooling, but excluded from calculations of mean hours.

Teachers Teachers are selected using the OCUP variable. Coding is unique to Brazil and is the same as 1980 census.

Comparators The OCUP variable is used to exclude domestic servants and agricultural workers. The CATEG variable is used to include only employees and to also exclude agricultural workers. Urban workers are selected using the URBRURAL variable.

Chile (1989 Encuesta Nacional del Empleo). The data covers the entire country. An observation is included in the sample if income (SUELEFF) is greater than 0. The income variable includes income from all employers and excludes payment-in-kind. Several observations with income greater than 0 have no hours because the worker was on vacation or ill the week before. Means of income and schooling include all workers with income greater than 0, while mean hours includes only workers with hours greater than 0. The hours variable reflects hours in the primary job only.

Teachers Teachers are selected using the OCUP variable; codes are given in the variable description book. Many teachers also reported payment-in-kind, but it is not possible to determine if the payment is from the primary job or another job, so payment-in-kind is excluded from the analysis. Many teachers also have a salary in addition to reported self-employed income. About 100 teachers had an income but no hours reported.

Comparators Teachers, agricultural workers, and domestic servants are excluded by using the OCUP variable.

Colombia (1989 Encuesta Nacional de Hogares- Fuerza de Trabajo). The data set covers the cities of Barranquilla, Bogota, Bucaramanga, Cali, Cartagena, Manizales, Medellin, and Pasto. For teachers, self-employed income and employee earnings are combined. Income reflects earnings in the primary occupation, while hours includes weekly hours in all jobs. Income includes payment-in-kind in primary job. Several teachers and comparators have income greater than 0 but no hours due to illness or vacation in the previous week. Mean income and schooling includes all workers, while those with no hours are excluded from calculation of mean hours.

Teachers Teachers are chosen using the OCUP variable, which uses ISCO-1968 occupational codes. OCUP is not detailed. The sample includes 70 self-employed teachers. Teachers have primary income greater than 0 and only those with hours greater than 0 are included in calculation of mean hours.

Comparators The OCUP and CATEG variables are used to exclude domestic servants and the OCUP variable is used to exclude agricultural workers and teachers. About 30 people have income but no hours.

Costa Rica (1989 Encuesta Nacional de Hogares - Empleo y Desempleo). The data set covers the entire country. Workers are included in the sample if income from primary job, hours in primary job are greater than 0, and schooling information is complete. It is not clear if payment-in-kind is included in the income variable--the questionnaire only asks if the worker receives payment-in-kind. The earnings variable used was YPRINCIP. The hours variable used is habitual hours worked per week.

Teachers Teachers are selected using the OCUPACPR variable. The codes are the COTA-70 occupational codes.

Comparators The OCUPACPR variable is used to exclude teachers and agricultural workers (excluding administrators) from the sample while the OCUPACPR and CATEGPR variables are used to exclude domestic servants. Urban workers are chosen using the ZONA variable.

Ecuador (1987 Encuesta Periódica sobre Empleo y Desempleo). The data set covers Quito, Cuenca and Guayaquil. Workers are included in the sample if monthly income (Y) is greater than 0. Y may include income from other jobs. There is only a yes-no question for payment-in-kind; it is not clear if it is included in the earnings variable. The hours variable reflects hours in all jobs. By combining the HLWEEK and HNORMAL variables, it is possible to obtain hours for all workers with income greater than 0.

Teachers Teachers are selected using the OCC variable, which uses the COTA-70 occupational codes. The coding is detailed enough to distinguish among different types of teachers.

Comparators Teachers, agricultural workers and domestic servants are excluded from the sample using the OCC variable. Employees only are included using the OCCAT variable. Four workers had income greater than 0 but no hours. One observation is excluded because respondent said he worked 140 hours per week.

Honduras (1989 Encuesta Permanente de Hogares de Propósitos Múltiples). The data set covers the entire country. The income variable includes the primary job income only. The hours variable used is the hours actually worked the week before in the primary job. Some teachers and comparators have no hours but income greater than 0.

Teachers Teachers are selected using the PRINOCUP variable. The codes used are COTA-70 codes. A teacher is chosen if YPRIN or AVGEARNP is greater than 0.

Comparators Teachers, domestic servants and agricultural workers (except administrators) are excluded from the sample using the OCUPOC variable. Employees are selected using the CATEG variable. Sample includes workers with SUESALP greater than 0. 129 cases have income but no hours, and are excluded from the calculation of mean hours.

Panama (1989 Encuesta de Hogares, Mano de Obra). The data set covers the entire country. Workers are chosen for the sample if income and hours are greater than 0; both variables reflect only the primary job and payment-in-kind is not included. Sample includes only workers aged 15 to 65.

Teachers Teachers are chosen using the OCUPACIO variable.

Comparators Agricultural workers (excluding administrators), domestic servants and teachers are excluded using the OCUPACIO variable. Employees only are included using the CATR variable. Urban workers are selected using the REGION and ESTRATO variables.

Peru (1990 Peru Living Standards Measurement Survey). The data set covers only Lima. An observation is included in the sample if income and hours are both greater than 0. Both income and hours reflect only the primary occupation. The sample is aged 15 to 74.

Teachers Teachers are chosen using the OCCUP variable. The occupational code is given with the variable description. 14 teachers are self-employed.

Comparators Agricultural workers and teachers are excluded from the sample using the OCCUP variable while domestic servants are excluded using the EMPCAT variable.

Uruguay (1989 Encuesta Nacional de Hogares). The sample only covers the urban population and includes only workers aged 15 to 65. The sample consists of workers with primary earnings greater than 0. Earnings include payment-in-kind. The hours variable reflects only primary job hours and includes overtime hours. Many workers have income but no hours because they were on vacation or ill in the previous week; such workers are included when calculating the means of schooling and income, but excluded from the calculation of mean hours.

Teachers Teachers are chosen using the OCUP variable, which uses the COTA-70 occupational codes. About one-fifth of the teachers had no hours worked in the previous week. Fifty-five of the teachers are self-employed and about 25 percent have a second job.

Comparators Agricultural workers (excluding administrators) teachers and domestic servants are excluded using the OCUP variable. Employees are chosen using the CATR variable.

Venezuela (1989 Encuesta de Hogares por Muestra). The data set covers the entire country. The sample consists of workers with monthly income (INGPRIEF) greater than 0 and with complete schooling information. The hours and income variables include other jobs besides the primary one. Normal hours and actual hours worked are in separate variables; by adding them it is possible to have hours recorded for everyone.

Teachers Teachers are chosen using the OCUP variable, which is coded in a way unique to Venezuela.

Comparators Teachers, domestic servants, and agricultural workers (excluding administrators) are selected out using the OCUP variable. Urban workers are selected using the ZONA variable. Employees are selected using the CAT variable.

B. Earlier Surveys

Argentina (1980 Encuesta Permanente de Hogares). Sample is an urban sample. Teachers are selected using RAMAPR variable (the branch of economic activity) because there was no occupational variable. Unlike 1989 data set, schooling information is detailed with the last year of schooling completed at each level. Teachers are selected in sample if YPRINCIP is greater than 0 and schooling information is complete. There were 5 teachers who had income but had no hours reported were sick or on vacation, so they were included in income calculation but not in hours calculation. Earnings are primary occupation earnings and hours are total hours for all occupations.

The comparator group was selected by excluding domestic servants, agricultural workers and teachers using the RAMAPR variable. Employees are chosen using the CATEGPR variable. To calculate mean earnings and hours, workers are included if SUESAL is greater than 0 and if school information is complete. Some workers had no hours--they were on vacation or ill--they were excluded when calculating hours.

Bolivia (1986 Encuesta Permanente de Hogares). The data set covers the cities of La Paz, Cochabamba, Oruro, and Santa Cruz. Teachers are selected using the OCUPACIO variable. The sample includes teachers with income (SYS or GAN) greater than 0 and for whom schooling data is known. Hours are hours in the primary job, income may include income from jobs other than the primary one. All teachers with income greater than 0 also had hours recorded.

The comparator group is selected using the CATOCUP variable to include only employees and to exclude domestic servants. All agricultural workers are excluded using the OCUPACIO variable. Individuals with income (SYS) greater than 0 are included in the sample and all individuals with income had hours greater than 0 also.

Brazil (1979 Pesquisa Nacional por Amostra de Domicilios). The data set covers the entire country. Teachers are selected using the OCUPAC variable. Hours and earnings are for primary jobs only. Earnings include payment-in-kind. Sample consists of teachers with earnings greater than 0 and for whom schooling could be estimated to the level. Only teachers with hours greater than zero were included in the calculation of weekly hours.

The comparator group is selected by excluding domestic servants, teachers, and all agricultural workers. Only urban employees are included in the sample. The Brazil data set is national, so urban employees are selected using the SITUACIO variable. All workers with income greater than 0 (YOCUPRIN) are included in the calculation of earnings; there were 34 workers with income but no hours who are excluded from the hours calculation.

Colombia (1980 Encuesta Continua sobre Fuerza de Trabajo). The data set covers the cities of Barranquilla, Bogota, Bucaramanga, Cali, Manizales, Medellin and Pasto. Teachers are selected using the OCUP variable. There are 16 self-employed teachers included in the sample. The SYS and GAN variables are summed to create Y, which includes payment-in-kind. Income is for all occupations, not just primary occupation. Teachers are selected if y is greater than 0 and schooling information is complete. There are no teachers with income and no hours. Hours are hours from the previous week in all occupations.

The comparator group was selected by excluding teachers, domestic servants and agricultural workers using the OCUP variable. Employees were chosen using the CATEG variable. Workers are included in calculation of mean hours and mean income if SYS is greater than 0 and schooling information is complete.

Honduras (1986 Encuesta Permanente de Hogares de Propositos Multiples). The data set covers 16 principal cities. Teachers are selected using the OCUPOC variable and are included if either SUESALP or GANANP is greater than 0. Hours and income variables include primary occupation only. It is not clear whether payment-in-kind is included in the income variables.

For the comparator group, teachers, agricultural workers, and domestic workers are excluded using the OCUPOC variable. Employees are chosen using the CATEG variable. A worker is included in the sample if SUESALP is greater than 0.

Panama (1979 Encuesta de Hogares, Mano de Obra). The data set covers the entire country. Teachers are chosen using the variable OCUPPR. The coding is different from the codes used in the other data sets. Teachers are selected to calculate the means if SUELDO is greater than 0. SUELDO is salary from primary job and does not include payment-in-kind. All teachers with salary also have hours greater than 0. Hours variable includes hours worked in the previous week in primary job.

For the comparator group, teachers and agricultural workers are excluded using the OCUPPR variable. I could not distinguish between agricultural workers and agricultural

administrators, so all are excluded. Domestic servants are excluded using RAMAPR variable. Workers were chosen if SUELDOME was greater than 0. All workers with income greater than 0 had hours greater than 0. I selected urban workers using the REGION and ESTRATO variables. Two cases are excluded because the workers had very high income.

Uruguay (1981 Encuesta Nacional de Hogares). The data set covers the metropolitan area only. Teachers are chosen using the variable OCUP3DG. Teachers are included in the sample if they have income greater than 0 and if they are not employers. Sample includes self-employed and employees. All teachers are included to calculate income. Both hours and earnings are only for the primary job; hours variable includes overtime in primary job.

For the comparator group, only employees are included. Domestic servants, teachers, and agricultural workers are excluded using the OCUP3DG variable. Those with income above 10 times the standard deviation plus the mean are excluded from the sample (a total of 7 out of 8,698 cases). The income variable is SUESAL. Again, many workers have income but no hours because of vacation or illness. These 400 cases are included to calculate mean income, but excluded from the hours calculation.

Venezuela (1981 Encuesta de Hogares por Muestra). The data set covers the entire country. Teachers are chosen using the OCUP variable. Teachers are included in sample if hours and income are greater than 0. For those who had no hours worked in the previous week, normal hours worked per week was used. There were 56 self employed teachers out of a total of 2,957. The income and hours variables reflect all jobs.

For the comparator group, only employees are included. Teachers and agricultural workers were excluded using the OCUP variable and domestic servants were excluded using the RAMA variable. Urban workers were selected using the ZONA variable Workers were chosen if hours and income were greater than 0.

Table A-1

Mean Earnings of Teachers (T) and Comparator (C) Group, circa 1989

Country	Level	Monthly Earnings (local currency)	Ratio (T/C)	N
Argentina (1989)	All Teachers	5,959	325	
	Comparator	7,958	0.75	3,318
Bolivia (1989)	All Teachers	248	799	
	Comparator	381	0.65	9,775
Brazil (1989)	Primary	540	123	
	Secondary	1,454	351	
	University	3,923	184	
	All Teachers Comparator	903 1,032	4,099 0.8856	439
Colombia (1989)	All Teachers	86,315	1,033	
	Comparator	52,271	1.65	16,494
Costa Rica (1989)	Primary	27,410	151	
	Secondary	30,862	78	
	University	52,578	21	
	All Teachers Comparator	29,263 21,953	317 1.33	2,261
Chile (1989)	Primary	49,462	940	
	Secondary	57,591	294	
	University	116,007	74	
	All Teachers Comparator	60,752 50,273	1,460 1.21	17,092

(continued)

Table A-1 (continued)

Country	Level	Monthly Earnings (local currency)	Ratio (T/C)	N
Ecuador (1987)	Primary	24,997	164	
	Secondary	30,300	170	
	University	54,911	57	
	All Teachers Comparator	31,148 25,208	480 1.24	5,311
Honduras (1989)	Primary	648	281	
	Secondary	933	80	
	University	1,874	29	
	All Teachers Comparator	762 539	425 1.41	4,049
Panama (1989)	Primary	393	279	
	Secondary	497	139	
	University	865	36	
	All Teachers Comparator	471 424	495 1.11	3,253
Peru (1990)	All Teachers	55,540	128	
	Comparator	63,407	0.88	1,407
Uruguay (1989)	Primary	120	238	
	Secondary	128	220	
	University	145	14	
	All Teachers Comparator	122 157	509 0.78	7,626
Venezuela (1989)	All Teachers	7,692	3,247	
	Comparator	6,286	1.2235	725

Table A-2

Years of Schooling and Mean Hours Worked of Teachers and Comparator Group

Country	Level	Years of Schooling	Hours Worked
Argentina (1989)	All Teachers	13.41	28.01
	Comparator	9.32	43.59
Bolivia (1989)	All Teachers	14.35	27.88
	Comparator	8.09	49.67
Brazil (1989)	Primary	11.35	27.42
	Secondary	14.43	32.30
	University	15.27	36.29
	All Teachers	11.88	29.44
	Comparator	7.02	43.03
Colombia (1989)	All Teachers	14.01	38.14
	Comparator	8.93	48.27
Costa Rica (1989)	Primary	14.22	33.05
	Secondary	15.28	34.13
	University	16.12	40.58
	All Teachers	14.61	37.35
	Comparator	9.11	47.22
Chile (1989)	Primary	14.78	33.05
	Secondary	16.78	34.13
	University	17.33	36.27
	All Teachers	15.50	34.38
	Comparator	10.16	48.11
Ecuador (1987)	Primary	14.55	26.99
	Secondary	15.86	29.84
	University	17.56	37.09
	All Teachers	15.32	30.01
	Comparator	10.24	42.83

(continued)

Table A-2 (continued)

Country	Level	Years of Schooling	Hours Worked
Honduras (1989)	Primary	11.93	36.26
	Secondary	14.42	37.99
	University	15.19	41.85
	All Teachers	12.51	36.79
	Comparator	7.87	46.69
Honduras (1991)	Primary	11.83	36.73
	Secondary	13.39	37.58
	University	16.14	33.22
	All Teachers	12.12	36.73
	Comparator	7.74	49.16
Panama (1989)	Primary	13.74	37.64
	Secondary	16.86	37.70
	University	16.99	37.18
	All Teachers	15.08	37.47
	Comparator	11.41	42.66
Peru (1990)	All Teachers	14.99	27.78
	Comparator	10.04	47.83
Uruguay (1989)	Primary	13.45	25.34
	Secondary	15.73	24.16
	University	17.21	31.50
	All Teachers	14.36	25.63
	Comparator	9.01	45.53
Venezuela (1989)	All Teachers	13.04	33.36
	Comparator	8.38	42.80

Table A-3

Mean Earnings of Teachers and Comparator Group, circa 1980

Country	Group	Monthly Earnings (local currency)	Ratio (T/C)	N
Argentina (1980)	All Teachers	1,218	0.93	183
	Comparator	1,303		2,329
Bolivia (1986)	Primary	112,629	0.74	137
	Secondary	124,522		93
	University	362,807		10
	All Teachers	126,798		253
	Comparator	172,441		1,549
Brazil (1979)	Primary	49,230	0.92	3,147
	Secondary	125,840		402
	University	234,060		201
	All Teachers	65,810		4,575
	Comparator	71,490		67,114
Colombia (1980)	All Teachers	11,354	1.37	393
	Comparator	8,268		7,151
Honduras (1986)	All Teachers	697	1.31	578
	Comparator	531		5,916
Panama (1979)	Primary	242	1.10	389
	Secondary	410		208
	University	721		14
	All Teachers	321		639
	Comparator	292		4,429

(continued)

Table A-3 (continued)

Country	Group	Monthly Earnings (local currency)	Ratio (T/C)	N
Uruguay (1981)	Primary	3,644		162
	Secondary	4,355		267
	University	6,374		9
	All Teachers	4,205	1.09	450
	Comparator	3,862		8,698
Venezuela (1981)	All Teachers	3,240	1.35	2,957
	Comparator	2,393		38,537

Notes: Argentina, Colombia and Venezuela hours are total hours worked in all active employment. Bolivia, Brazil, Honduras, Panama and Uruguay hours in primary occupation only. Venezuela income includes income from all jobs.

Table A-4

Mean Years of Schooling and Hours Worked of Teachers and Comparator Group, circa 1980

Country	Group	Years of Schooling	Hours Worked
Argentina (1980)	All Teachers	12.62	29.27
	Comparator	8.73	45.00
Bolivia (1986)	Primary	14.58	25.41
	Secondary	14.43	24.54
	University	15.03	34.50
	All Teachers	14.49	25.47
	Comparator	9.45	44.58
Brazil (1979)	Primary	10.95	27.75
	Secondary	14.83	32.64
	University	15.22	36.81
	All Teachers	11.88	29.44
	Comparator	6.19	46.87
Colombia (1980)	All Teachers	14.17	36.17
	Comparator	8.07	48.20
Honduras (1986)	All Teachers	13.24	34.06
	Comparator	8.08	46.90
Panama (1979)	Primary	12.80	35.98
	Secondary	15.98	36.73
	University	17.90	38.59
	All Teachers	14.13	36.36
	Comparator	9.50	41.98

(continued)

Table A-4 (continued)

Country	Group	Years of Schooling	Hours Worked
Uruguay (1981)	Primary	13.20	24.04
	Secondary	15.48	26.04
	University	17.78	35.89
	All Teachers	14.62	25.91
	Comparator	7.97	45.91
Venezuela (1981)	Teachers	12.06	33.60
	Comparator	7.39	43.17

Table A-5

Primary Teacher Pay Differentials by Urban-Rural Location, 1979

Country	Location	Monthly Earnings	Ratio	N
Brazil (1979)	Urban	5,609	0.38	2,650
	Rural	2,116		497
Panama (1979)	Urban	429	0.76	176
	Rural	324		32

Table A-6

Mean Number of Schooling and Hours Worked for All Teachers
by Urban-Rural Differences

Country	Location	Years of Schooling	Hours Worked
Brazil (1989)	Urban	12.39	29.89
	Rural	8.68	26.79
Costa Rica (1989)	Urban	14.89	37.14
	Rural	14.05	39.27
Honduras (1989)	Urban	13.16	36.11
	Rural	11.82	37.51
Panama (1989)	Urban	15.48	37.33
	Rural	13.75	37.89
Venezuela (1989)	Urban	13.09	33.48
	Rural	11.95	31.15

Table A-7

Primary Teacher Pay Differentials by Urban-Rural Location

Country	Location	Monthly Earnings	Ratio	N
Brazil (1989)	Urban	667	0.34	1,627
	Rural	229		380
Costa Rica (1989)	Urban	26,844	1.05	83
	Rural	28,286		68
Honduras (1989)	Urban	676	0.93	156
	Rural	628		125
Panama (1989)	Urban	403	0.93	167
	Rural	374		126

Table A-8

All Teachers Pay Differentials by Urban-Rural

Country	Location	Monthly Earnings	Ratio	N
Brazil (1979)	Urban	7,317	0.32	4,039
	Rural	2,365		536
Panama (1979)	Urban	342	0.76	493
	Rural	259		146
Venezuela (1981)	Urban	33,042	0.78	2,779
	Rural	25,847		178

Table A-9

All Teachers Pay Differentials by Urban-Rural Location, 1989

Country	Location	Monthly Earnings	Ratio	N
Brazil (1989)	Urban	1,021	0.31	3,613
	Rural	315		497
Costa Rica (1989)	Urban	29,638	0.98	191
	Rural	29,153		109
Honduras (1989)	Urban	835	0.82	272
	Rural	687		153
Panama (1989)	Urban	497	0.78	342
	Rural	386		153
Venezuela (1989)	Urban	776	0.83	3,087
	Rural	643		160

Table A-10

**Mean Years of Schooling and Hours Worked of Primary School Teachers
by Urban-Rural Location, 1979**

Country	Location	Years of Schooling	Hours Worked
Brazil (1979)	Urban	11.85	27.89
	Rural	7.26	27.19
Panama (1979)	Urban	16.35	36.78
	Rural	14.26	36.48

Table A-11

Mean Years of Schooling and Hours Worked of Primary School Teachers
by Urban-Rural Location, 1989

Country	Location	Years of Schooling	Hours Worked
Brazil (1989)	Urban	14.15	37.55
	Rural	12.99	37.97
Costa Rica (1989)	Urban	14.39	36.59
	Rural	13.96	43.16
Honduras (1989)	Urban	12.60	34.89
	Rural	11.45	37.25
Panama (1989)	Urban	14.15	37.55
	Rural	12.99	37.97

Table A-12

Mean Number of Schooling and Hours Worked for All Teachers
by Urban-Rural Differences

Country	Location	Years of Schooling	Hours Worked
Brazil (1979)	Urban	12.01	29.27
	Rural	7.30	27.28
Panama (1979)	Urban	14.56	36.20
	Rural	12.82	36.87
Venezuela (1981)	Urban	13.09	33.48
	Rural	10.68	31.44

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