Teacher Pay in 12 Latin American Countries:
How does teacher pay compare to other professions, what determines teacher pay, and who are the teachers?

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Executive Summary

Using household survey data from 12 Latin American countries, this paper attempts to answer three research questions: (1) how does teacher's remuneration compare to analogous counterparts in the labor market? (2) What are the factors that determine teacher pay and how does their contribution to teacher pay structure differ from what is found in the non-teaching sector? and (3) if it is true that persons with similar characteristics are paid less when they teach than when they take other jobs, then why do they go into the teaching profession: who are the teachers?

Simple contrasts of annual teacher income with the annual income of comparable counterparts show teachers having lower income. However, teachers are found to work on average significantly less than others. An unweighted average shows teachers in Latin American work only 35 hours per week, compared to almost 50 hours per week for other workers. When the comparison is based on hourly wage (also taking into account the 3-month vacation, the difference disappears in all 12 countries. In 11 out of 12 countries hourly wages for teachers are actually higher than for counterparts in the labor force with similar characteristics.

So while it is true that they are paid less, it is also true that they are well paid for the number of hours they work. This finding may imply that across-the-board salary increase for teachers may not have much impact on recruiting and retaining better teachers. Given that in many Latin American countries, students spend fewer hours in school than other parts of the world, opportunities should be provided for teachers to work longer hours thus to earn more money, such as, after care or summer camps.

The study also finds substantial variation in teachers' pay. However, this variation is much smaller when compared to the pay disparity of other professions. In other words, teachers' salary is much more predictable than in other professions. While education and experience are the principle determinants of teacher pay, interestingly, it is also affected by factors which are not always seen as part of the explanatory equation, including gender, school location, private/public sector, and association with unions. In particular, male teachers are paid more. Also, despite many efforts to provide explicit compensation to teachers who live in remote areas, it is surprising to find that teachers that work in rural or other "difficult" areas are paid 10 to 30 percent less than their urban counterparts.

Most of the officially-published teacher pay scales in LAC have a fairly strict way of calculating teacher pay that leaves little room for discretion. This finding might be explained that male teachers are more likely to take on additional administrative duties which compensate them for additional hours of work. The fact that rural teachers are paid significantly less is also troublesome. Since it is unlikely that the official pay formula will explicitly penalize service in difficult areas, the pay differential may result from a cumulative effect of reduced access to in-service training and fewer opportunities for administrative advancement for rural teachers. Careful studies need to be done to

examine why rural teacher compensation appears to be lower despite hardship compensation measures available in some countries. There are already signs that teachers in rural areas tend to be younger and less experienced than those in urban areas. Rural education could be in a downward spiral if no measures are taken to first attract and then retain good teachers in rural areas.

In Central America, public teachers on average are paid more than private teachers, whereas in South America private teachers are paid more than public ones. And in the two countries where the study was able to observe the relationship between union affiliation and pay, there is a significant premium associated with the affiliation with the union.

Finally, the study finds that two thirds of the teaching labor force are females, compared to less than one third in the non-teaching sector. These women are more likely to be the wife of household and their income typically constitutes a secondary source of income for the household. This finding confirms the earlier hypothesis that teachers may have chosen the profession for its fewer working hours and flexibility in schedule. Teachers in general have a much higher level of education than non-teachers. The differences range from 3 to 7 years. However, teachers' average schooling of 12 years is low when compared to that observed in the US, Japan, and OECD countries (16 years). Teachers tend to have a higher average age than non-teachers, indicating the possibility of more younger teachers dropping out of the system in their early teaching years. Teachers also tend to come from lower socio-economic background and from larger households compared to others, controlling for schooling and other characteristics.

INTRODUCTION

Throughout the Latin America region, teacher pay makes up 90% of national public education budgets, or between two to six percent of the entire Gross Domestic Product. In the quest for educational quality and efficiency, there is little doubt that teachers in Latin America have or will become the centerpiece of the new educational reform. Using household survey data from 12 Latin American countries, this paper will attempt to answer three questions: (1) how does teacher's remuneration compare to their counterparts in the labor market? (2) What are the determinants of teacher pay and how does teacher pay structure compare to that of the private sector? and (3) if it is true that teachers are paid less for similar characteristics, why do people go into the teaching profession, who are the teachers?

STUDY BACKGROUND

Studies have debated heatedly on the over- or under- payment of teachers. For example, Vegas et al. (1999) reported that while in one third of the metropolitan area teachers receive significantly less pay than their counterparts in the labor force, the difference does not exist in the other two-thirds. An earlier study of Psacharopoulos (1987) concluded that primary school teachers in Brazil are not overpaid relative to other professions. Piras and Savedoff (1998) takes into account the number of hours teachers work and concludes that teachers' hourly wages in Bolivia are higher than their counterparts in other professions. Depending on the data, definition of variables, and comparison group, the results could be different even within one country.

It is even more difficult to make general statements about the level of teacher pay across the entire region. ILO (1991) attempted to compare teacher salaries with other professions in seven Latin American countries using official data on pay. Psacharopolous (1996), using 1989 household survey data, contrasted teacher pay with a comparison group in 12 Latin American countries and found that there is great variability from country to country, ranging from an underpayment of teachers in urban Bolivia by 35% relative to the control group, to an overpayment of 65% in Colombia. However, neither of the two studies properly controlled for differences in the characteristics of teachers and other workers. To answer the question of whether teachers are over- or under-paid, the present study modifies Psacharopolous' approach in two ways. First, it will use more up-to-date household survey data of 1995 and 1996. Second, instead of a mean comparison of teachers and non-teachers in a descriptive way, it will fit Mincer's earnings functions for all the 12 countries, with and without controlling for hours worked per week. Thus, the difference we observe in the salary control for observable, pay-relevant characteristics such as schooling, experience, living in rural or urban areas, or even association with the private sector and unions.

Teachers' pay varies. The second research question focuses on how teacher pay is determined. In the U.S. labor market environment, Chambers (1995) found that public school teachers are paid higher salaries than private school teachers and that longevity at

the job and educational qualifications are valued significantly more in public schools than in private ones. Carnoy & Welmond (1996) have attempted to answer the questions in the worldwide context by comparing salary growth to GDP growth. Their study shows that in addition to productivity (measured as the pupil-teacher ratio), teachers' compensation is based largely on the capacity of the government to pay them as measured by the growth in GDP per capita. However, few Latin American studies have examined the determinants of teachers' pay structure, e.g., how much is experience rewarded versus extra schooling, or what is the magnitude of incentive for teachers working in difficult areas, what is the "premium" of working in the private sector or being affiliated with a union? Ultimately, what should be the elements of a "good" teacher pay structure?

Finally, the paper asks who are the teachers. If teachers are "underpaid", why do people still choose to be teachers? Schiefelbein et al. (1994) documented that teachers in six Latin American countries are mostly women, from modest socioeconomic background, and a majority of them have children. The present study will take a step forward by statistically modeling the probability of being a teacher as a function of their personal and demographic characteristics. The hypothesis is that teachers are mainly women who need to take care of their children and are attracted by the profession's flexibility and less stringent working hours. Their pay perhaps is a secondary source of household income.

DATA, SAMPLE, AND METHODS

Data for the study comes from 12 sets of household survey data compiled by *Comision Economica Para America Latina Y El Caribe (CEPAL)*. The Bolivia, Colombia, Honduras, and Paraguay data are for 1996, whereas in all other countries 1995 surveys are used.   The advantage of using CEPAL data is the comparability across the 12 countries in sampling framework and definitions of most of the variables. Only urban areas were surveyed in Ecuador and Uruguay, but the other 10 surveys are nationally representative. Sampling weights are used in the analysis to ensure the generalizability of results. Sub-sample is selected from each of the survey using the following criteria: not currently studying, employed in the formal sector, working more than 20 hours per week, and more than 15 years of age.

With the exception of El Salvador and Venezuela, the definition of teacher refers to all preschool, special education, primary and secondary teachers only. In El Salvador and Venezuela, there may be some university teachers who are also selected since the data does not permit a breakdown of different categories of teachers. In fact, in El Salvador, "teacher" refers to those who engage in "enzenanza" (teaching), and in Venezuela it refers to those who engage in "instruccion publica" (public instruction). The following table presents sample sizes for both teachers and non-teachers in the 12 samples. The results show that teachers constitute a surprisingly significant proportion of the entire former sector full-time labor force, ranging from 2% in Uruguay to 9% in Bolivia and Ecuador. Note that sample sizes for subsequent analysis are the same as reported here in Table 1 and they will not be reported again.

Table 1: Samples sizes by teachers and non-teachers.

Countries	Teachers	Non-teachers	% of teachers
Bolivia	355	3505	0.09
Brazil	485	6642	0.07
Chile	532	11541	0.04
Colombia	1558	24855	0.06
Costa Rica	218	6689	0.03
Ecuador (urban)	456	4402	0.09
El Salvador	291	5988	0.05
Honduras	369	4363	0.08
Panama	382	5896	0.06
Paraguay	93	1798	0.05
Uruguay (urban)	368	15372	0.02
Venezuela	219	7078	0.03

A combination of descriptive, multivariate linear regression, and multivariate logistic regression methods is used to answer the three research questions presented above. First I use multiple regression to determine the magnitude of pay disparity without controlling for hours worked per week. Then I proceed to use the hourly wage as the dependent variable (implicitly taking into account number of hours worked per week) to examine the pay disparity. A sub-sample of teachers only are selected to answer the second question of what determines teacher pay. Again multiple regression is used to examine pay determinants. Finally logistic regressions are used to determine the probability of being a teacher. These analytical methods are complemented by descriptive statistics throughout the analysis.

(1) Are Teachers Underpaid?

There is a widely held perception that teachers are "underpaid". But much of the argument over teacher compensation is a semantic one that really involves what is meant by the term "underpaid". One option is to examine annual salary, another to look at hourly wages, still a third is to adjust hourly wages for the significantly longer school vacation periods. This paper reports on all three definitions of "teacher pay" because the richness and timeliness of the data set makes knowing these statistics inherently interesting. At first glance it may seem desirable to offer some opinion on which of these measures is "best", for the purpose of policy prescription. Yet a bit of reflection suggests that using two of these measures –annual salary and vacation-adjusted hourly wage-- can be of value in comparing the compensation of teachers to employees in other sectors. We can use both measures as long as we understand that they are *not* equivalent. Each tells us something different. The comparison of *annual salary* can tell us about the *standard of living* of teachers: can teachers afford the same material comforts as a suitably chosen control group? A comparison of *vacation-adjusted wages* addresses the question of "fairness" of compensation: are teachers reasonably compensated *for what they do*? The salary comparison addresses the question of whether teachers are paid less, the vacation-

adjusted wage comparison can answer whether they are "under"-paid. Being paid less is not the same as being under-paid.

For the first comparison, Mincer-type regressions of the logarithm of annual income on education, experience and other labor market characteristics were run for 12 Latin American countries. The coefficients reported in Table 2 contrast teachers' *annual* income with that of comparable counterparts. These results show that the widely-held perception that teachers incomes are lower is generally warranted.

Table 2: Premium of Being a Teacher in 12 Samples, without controlling for working hours.

Countries	Not controlling for working hours
Bolivia	-0.38 (0.04)***
Brazil	-0.35 (0.03)***
Chile	-0.19 (0.03)***
Colombia	-0.05 (0.02)***
Costa Rica	NS
Ecuador (urban)	-0.37 (0.03)***
El Salvador	-0.22 (0.03)***
Honduras	NS
Panama	-0.05 (0.03)~
Paraguay	NS
Uruguay	-0.14 (0.03)***
Venezuela	-0.09 (0.04)~

~$p<=0.10$ * $p<=0.05$ ** $p<=0.01$ ***$p<=0.001$ NS Not significant

In 9 out of 12 samples teachers *are* paid significantly less than labor market participants of similar characteristics. The disparity ranges from 5% in Colombia to 37% in Ecuador. In Panama and Venezuela, the 5% and 9% wage differences between teachers and their counterparts are significant only at $p=0.10$ level. However, in Costa Rica, Honduras, and Paraguay, teacher and non-teacher remuneration are actually indistinguishable after controlling for gender, schooling, experience, private sector, whether working in rural or urban areas, and when data permit, association with teachers' union and ethnicity.

These results beg a question: why do people choose to enter a profession that is widely known to offer them a lower annual income? The remainder of this paper pieces together various answers.

It is likely that the impact of the "teacher" dummy variable on predicted income reflects what economists call a "compensating differential". This states that there is something about teaching that people like and are willing to "pay" for with lower annual income. Either the observed difference in earnings reflects different job characteristics or some barrier is keeping teachers from obtaining non-teaching jobs.

The compensating differential argument goes thus. Let us first imagine that people are all basically the same. They differ only in the years of schooling and the amount of work

experience they have attained, and they then choose where to work only on the basis of which job rewards them the most for these acquired skills. Also imagine that there are no barriers to mobility, so that teachers can get non-teaching jobs if they so desire. In this kind of a world there could not be a persistent pay differential between teaching and non-teaching jobs. If teaching salaries were set below what people could earn in other jobs, there simply would be no teachers.

What we observe in the data does not support this outcome. There *are* teachers and there *is* persistently lower pay for teachers. This means one or more of the assumptions in this argument is wrong. Contrary to what was assumed above, either

- There is some barrier that keeps teachers from obtaining higher-paying, non-teaching jobs, or
- Teachers are inherently different, lower-quality workers who would also be paid less in the non-teaching sector or
- Teachers are motivated by job characteristics other than pay

The first condition is unlikely to be operational here. There is no evidence that Latin American teachers are disallowed from seeking employment in other sectors. Available data from Bolivia, Chile, and Uruguay suggest that slightly more than half of the graduates from teacher training institutions take on teaching (Table 3), indicating that the door to other professions for those graduates are still open. Also, even if such a barrier did exist, it could affect the current *stock* of teachers, but not the *flow*. In other words, the barrier could "trap" existing teachers in lower-paying teaching slots, but new graduates would seek other careers. The long run effect would be the same. After some time there would be no teachers.

Table 3: % of teacher training institutions graduates who teach as their principal job

Countries (sample size)	% of TTT graduates who teach
Bolivia (523)	52%
Chile (66)	78%
Uruguay (384)	53%

The second condition is possible. The regressions control for "years of education", but not the *type* of schooling. Teachers usually go to normal schools or special teacher training institutions rather than regular universities. The curriculum in these schools is generally different from what is found in other degree programs and may not be suitable for work in other careers. Furthermore, there is also some evidence mounting that students who choose teaching careers have lower aptitude test scores. For instance in the US, the National Commission on Excellence in Education, in *A Nation at Risk*, found that "not enough of the academically able students are being attracted to teaching". Murnane, Singer, Willett, Kemple, and Olsen (1991) confirmed that college graduates with higher IQ scores are consistently less likely to enter teaching than were lower scoring graduates. This would suggest that causality operate in the opposite direction too. Lower pay

attracts lower qualified personnel. However, the data that are available for this analysis provides no information on innate ability.

The remainder of the paper therefore explores the third condition, namely that pay is not the only characteristic considered by people who choose teaching careers.   What are these characteristics? One humorous aphorism states that the 3 best reasons to become a teacher are June, July and August.   This points to a well-known job characteristic: teachers work few hours per week and have longer summer vacations. We now go on to examine the importance of teaching schedules. If people know about teaching schedules before they choosing a career, this may be one of the reasons they choose to teach, even though they also know that their *yearly* pay will be lower. Teaching schedules roughly conform to school schedules: teachers enjoy longer summer vacations, many more mid-year holidays and shorter workdays than other workers who consider themselves fully employed. This makes teaching attractive for people who also plan to raise a family.

The hypothesis to be tested is that lower teacher pay reflects what economists call a "compensating differential": people who opt for a teaching career are more likely to *want* to work for fewer hours.   This should mean that surveyed teachers report they are fully employed even when they actually work less than 40 hours per week, 50 weeks per year [1]. They may choose to work for less pay *because* they can work fewer hours.

Table 4: Average Hours Worked Per Week, Teachers and Non-teachers

Countries	Teachers (A)	Non-teachers (B)	Difference (A-B)
Bolivia	27.9	50.1	-22.2***
Brazil	28.7	40.9	-12.2***
Chile	39	48.1	-9.1***
Colombia	36.8	50.3	-13.5***
Costa Rica	39.1	49.2	-10.1***
Ecuador (urban)	38.6	47.4	-8.8***
El Salvador	33.6	46.6	-13***
Honduras	36.8	50.7	-13.9***
Panama	36	44.9	-8.9***
Paraguay	35.8	48.0	-12.2***
Uruguay (urban)	31.1	45.1	-14***
Venezuela	37	43.7	-6.7***

~$p<=0.10$ * $p<=0.05$ ** $p<=0.01$ ***$p<=0.001$

Table 4 shows that teachers work significantly fewer hours per week than non-teachers in all 12 countries. On a weekly basis, they average between 6.7 hours (in Venezuela) and 22.2 fewer hours (in Bolivia) per week than non-teachers. In addition, most of teachers have three months' vacation in the summer. Therefore, though teacher annual salaries are lower, they also work much less time each week *and* they get the whole summer off.

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[1] Hours worked is calculated from survey response to the question "how many hours did you work last week in your principal job?" It is likely that some teachers will only report hours they spend in school whereas some may also include hours they spend at home on teaching-related activities, if there is any.

Table 5: Hourly wage premium for being a teacher in 12 samples (not taking into account teachers' three-month vacation).

Countries	Hourly wage "premium" of being a teacher
Bolivia	NS
Brazil	-0.07 (0.03)*
Chile	NS
Colombia	0.20 (0.02)***
Costa Rica	0.15 (0.04)***
Ecuador (urban)	-0.27 (0.04)***
El Salvador	0.09 (0.03)**
Honduras	0.29 (0.04)***
Panama	0.12 (0.03)***
Paraguay	NS
Uruguay (urban)	0.10 (0.03)***
Venezuela	0.08 (0.04)~

~p<=0.10   * p<=0.05   ** p<=0.01   ***p<=0.001

Table 5 shows the teaching premium after accounting for hours worked during the survey month. Table entries are the teacher "dummy variable" coefficients estimated with a regression of hourly wage on the same set of variables reported for Table 3. The "wage" is calculated as the monthly income divided by hours worked per month. Results in Table 5 do *not* take into account the fact that most teachers have at least 3 months off during the summer. Even so, the relative compensation of teachers now looks quite favorable. In ten out of twelve countries teachers earn at least as much as non-teachers and in 7 they actually earn *more*. Only in Brazil and urban Ecuador is it still true that teachers are paid less.

The surveys do not ask how much time people have off in the summer, but it is well known that teachers have much more time off. Vacation time is likely to vary by country and by individual, depending on country institutions and on individual administrative duties. So to illustrate the point, Table 6 shows the impact on teacher premiums of a simulation that assumes that all teachers work only 75% as many days per year as non-teachers. This makes the hourly wage significantly *higher* than the non-teaching private sector in every country but Ecuador, where it merely eliminates the teacher penalty. In most countries teachers would actually earn about 1/3 more than non-teachers with the same labor market characteristics [2].

Table 6: Hourly wage premium for being a teacher in 12 samples (taking into account three-month vacation for teachers)

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[2] There is contention that the teaching hours is not directly comparable to the other types of working hour, as teaching may be a much more complex activity which requires intellectual, physical, social, and emotional engagement. This paper does not get into this issue and it assumes that one hour of teaching is equivalent to one hour of other types of work.

Countries	Hourly wage "premium" for being a teacher
Bolivia	0.37 (0.04)***
Brazil	0.11 (0.03)***
Chile	0.18 (0.03)***
Colombia	0.35 (0.02)***
Costa Rica	0.38 (0.04)***
Ecuador (urban)	NS
El Salvador	0.37 (0.03)***
Honduras	0.44 (0.04)***
Panama	0.33 (0.03)***
Paraguay	0.29 (0.06)
Uruguay (urban)	0.29 (0.03)***
Venezuela	0.37 (0.04)***

~$p<=0.10$ * $p<=0.05$ ** $p<=0.01$ ***$p<=0.001$

(2) Is There Variation in Teachers' Incomes and what are the determinants of this variation?

So far we have treated teachers as if they were a homogeneous group. Yet we know that they are paid differently depending on their qualifications, level of education, or any other characteristics that may be considered important for the country. How much variation is there among teacher incomes across the 12 samples? What is the level of equality in terms of teacher pay? To answer this question, Column 1 of Table 7 reports the coefficient of variation associated with the teacher income in the 12 countries. This measure divides the standard deviation by the mean and thus gets rid of the unit of measure problems inherent in cross country comparisons. Table 7 shows the coefficients of variation ranging from 0.30 in Panama to 0.83 --more than twice as high-- in Brazil. In fact, if we use 0.50 as a cutoff value, we can roughly group the countries into two categories: high teacher pay dispersion countries (Brazil, Bolivia, Colombia, Honduras, Paraguay, Venezuela, Ecuador, and Chile), and low dispersion countries (Panama, Costa Rica, El Salvador, and Uruguay). Note also that South American countries tend to have a larger disparity in teacher pay than Central American countries in the region.

Table 7: Coefficient of Variation of Teacher Income.

Countries	Teachers only	Non-teachers (education between 6 and 16 years)
Bolivia	0.67	1.17
Brazil	0.83	1.35
Chile	0.51	1.14
Colombia	0.67	1.07
Costa Rica	0.37	0.82
Ecuador (urban)	0.52	0.93
El Salvador	0.35	0.75
Honduras	0.56	0.86

Panama	0.30	0.83
Paraguay	0.52	0.83
Uruguay (urban)	0.47	0.95
Venezuela	0.54	0.81

By comparing the coefficient of variation of teacher annual salary with that of the non-teachers, we will get a better sense of the relative dispersion in earnings. Since more than 90% of teachers have at least primary level education, the comparison group is chosen from the non-teacher pool with years of schooling between 6 and 16 years. The second column of Table 7 shows that the coefficient of variation for non-teachers is generally much larger than for teachers.

This points to another characteristic of the teaching profession: teacher earnings distributions are flatter. We also know that teacher layoffs and firings are also rare. This means that people entering teaching careers face much less uncertainty about what their income and job tenure will be than workers in other sectors. There is more security and predictability in lifetime earnings profiles for teachers and this is likely to draw people who find risk distasteful. Low risk may be considered a desirable job characteristic by them. In the non-teaching sector earnings differentials partly reflect differences in individual productivity that are not picked up by surveys but are --over time-- observable and rewarded in the private sector labor market. Therefore flatter earnings distributions may also signal that such individual productivity differences are not well rewarded in the education sector.

How is teachers' pay determined? What are the generalizable characteristics of teachers' pay structures in the 12 Latin American countries? To answer this question, the sub-samples of teachers for each country was used to fit multivariate regressions predicting the logarithm of teacher's annual income, in each of the 12 countries, using the same independent variables as before. The analysis finds that teacher gender, schooling, experience, whether or not working in difficult areas, whether or not in the private sector, and sometimes association with teachers' union all have significant impact on how much they are paid. Parallel analysis was also performed on a sub-samples of non-teachers only. The study finds that the impact on earnings of several of these characteristics is different in the teaching and non-teaching sectors. Results from the multiple regression analysis are presented in Table 8 (for teachers) and Table 9 (for non-teachers).

Table 8: Determinants of Teacher Pay in 12 Latin America Countries

	Being female	Return to schooling	Experience	Experience-squared	Incentive for working in difficult areas	Private sector premium	Weekly hours worked	Affiliation with union	Adjusted R-square
Bolivia	NS	0.05 (0.01)***	0.01 (0.007) ~	NS	NS	0.31 (0.06)***	0.006 (0.002)***	N/A	0.18
Brazil	NS	0.16 (0.01)***	0.02 (0.01)~	NS	-0.26[3] (0.07)***	0.11 (0.06)~	0.02 (0.00)***	0.29 (0.07)***	0.59
Chile	-0.08 (0.04)~	0.04 (0.01)**	0.02 (0.006)**	NS	-0.14 [4] (0.04)**	0.18 (0.04)***	NS	N/A	0.14
Colombia	-0.15 (0.02)***	0.10 (0.004)***	0.03 (0.00)***	-0.0003 (0.00)***	-0.10[5] (0.03)***	N/A	0.005 (0.001)***	N/A	0.41
Costa R.	NS	0.09 (0.02)***	0.03 (0.01)*	NS	NS[6]	NS	0.009 (0.003)**	N/A	0.22
Ecuador	-0.10 (0.04)*	0.04 (0.01) ***	0.017 (0.009)*	NS	-0.19 [7] (0.06)**	NS	0.06 (0.003)~	N/A	0.16
El Salvador	-0.20 (0.04)***	0.06 (0.01)***	0.02 (0.01)***	-0.0003 (0.00)**	-0.16[8] (0.07)*	-0.46 (0.05)***	0.007 (0.002)***	NS	0.46
Honduras	-0.07 (0.04)~	0.11 (0.01)***	0.03 (0.01)***	-0.0003 (0.00)**	NS	-0.20 (0.05)***	NS	N/A	0.56
Panama	-0.08 (0.03)*	0.06 (0.01)***	0.03 (0.01)***	-0.0006 (0.00)***	NS	-0.28 (0.05)***	0.007 (0.002)***	N/A	0.36
Paraguay	-0.25 (0.09)*	0.05 (0.02)*	NS	NS	NS	NS	0.03 (0.004)***	N/A	0.48
Uruguay	NS	0.03 (0.01)**	0.04 (0.01)***	-0.0007 (0.00)***	-0.12 (0.05)**	0.19 (0.06)***	0.01 (0.00)***	N/A	0.28
Venezuela	NS	0.07 (0.02)**	0.09 (0.04) ~	-0.004 (0.002)~	-0.17 (0.08)*	0.18 (0.08)*	NS	0.24 (0.11)*	0.30

Note: ~p<=0.10* p<=0.05 ** p<=0.01   ***p<=0.001

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[3] Non-autonomous municipalities in Brazil

[4] Non-metropolitan urban area in Chile

[5] Atlantic and Pacific coasts of Colombia

[6] Rural area in Colombia. After controlling for rural/urban, Atlantic and Pacific coasts still manifest a wage discrimination of more than 10%.

[7] Rest of urban area versus Quito in Ecuador

[8] Rural area in El Salvador

Table 9: Determinants of Pay in the non-teaching labor market in 12 Samples

	Being female	Return to schooling	Experience	Experience-squared	Incentive for working in difficult areas	Private sector premium	Weekly hours worked	Affiliation with union	Adjusted R-square
Bolivia	-0.34 (0.03)***	0.08 (0.00)***	0.04 (0.003)***	-0.0005 (0.00)***	-0.16 (0.02)***	-0.20 (0.03)***	0.002 (0.00)***	N/A	0.31
Brazil	-0.19 (0.02)***	0.15 (0.00)***	0.07 (0.003)***	-0.0009 (0.00)***	-0.39 (0.02)***	NS	0.015 (0.001)***	0.36 (0.02)***	0.56
Chile	-0.21 (0.01)***	0.12 (0.00)***	0.03 (0.001)***	-0.0003 (0.00)***	-0.30 (0.02)***	-0.07 (0.02)***	0.007 (0.001)***	N/A	0.44
Colombia	-0.24 (0.01)***	0.11 (0.001)***	0.03 (0.001)***	-0.0004 (0.00)***	-0.13 (0.01)***	N/A	0.004 (0.00)***	N/A	0.45
Costa Rica	-0.20 (0.01)***	0.09 (0.002)***	0.03 (0.002)***	-0.0004 (0.00)***	-0.15 (0.01)***	-0.24 (0.02)***	0.01 (0.001)***	N/A	0.44
Ecuador	-0.19 (0.02)***	0.08 (0.00)***	0.03 (0.002)***	-0.0004 (0.00)***	-0.25 (0.08)***	-0.08 (0.02)**	0.004 (0.001)***	N/A	0.33
El Salvador	-0.22 (0.01)***	0.08 (0.002)***	0.03 (0.001)***	-0.0004 (0.00)***	-0.21 (0.01)***	-0.32 (0.02)***	0.006 (0.001)***	0.14 (0.07)~	0.50
Honduras	-0.13 (0.02)***	0.10 (0.002)***	0.03 (0.002)***	-0.0004 (0.00)***	-0.31[9] (0.02)***	NS	0.005 (0.001)***	N/A	0.45
Panama	-0.18 (0.02)***	0.11 (0.002)***	0.04 (0.002)***	-0.0005 (0.00)***	-0.33[10] (0.02)***	-0.19 (0.02)***	0.01 (0.001)***	N/A	0.51
Paraguay	-0.18 (0.03)***	0.09 (0.004)***	0.04 (0.008)***	-0.0006 (0.00)***	-0.07[11] (0.03)~	-0.10 (0.03)**	0.004 (0.001)***	N/A	0.38
Uruguay	-0.41 (0.01)***	0.10 (0.002)***	0.04 (0.001)***	-0.0005 (0.00)***	-0.30[12] (0.01)***	-0.08 (0.01)***	-0.009 (0.00)***	N/A	0.41
Venezuela	-0.21 (0.02)***	0.10 (0.003)***	0.04 (0.01)***	-0.0006 (0.000)*	-0.31[13] (0.04)***	NS	0.009 (0.001)***	0.20 (0.03)***	0.29

Note: ~p<=0.10   * p<=0.05   ** p<=0.01   ***p<=0.001

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[9] Rural area in Honduras

[10] Rural versus urban area in Panama.

[11] Rural versus urban area in Paraguay.

[12] Other areas versus Montevideo in Uruguay.

[13] Rural versus urban area and rest of urban area versus urban area in Venezuela.

Years of Schooling

The most consistent and important predictor of teacher pay is years of schooling. With no exception, schooling is significantly related to teacher pay in all the 12 countries. The magnitude of the return to schooling, among teachers, ranges from 3% in Uruguay to 15% in Brazil. When comparing these rates of return to education with those of rest of the labor market, we find that in the three countries with the highest rates of return to teacher education (Brazil, Colombia, and Honduras) the return to schooling appears to be comparable between teachers and non-teachers. However, for the other countries, the returns to schooling for teachers are much smaller. For example, in Chile, teachers are paid about 4% more for each additional year of schooling, whereas for non-teachers the return is 12%, about 3 times as much as that of the teachers. As mentioned above, it is possible that the type and quality of schooling for teachers may be different than for non-teachers.

Gender

Gender also plays a significant role in determining how much teachers are paid. While in half of the 12 countries there is no obvious role for gender teacher in pay determination, after having controlled for experience, schooling, and other pay-relevant characteristics, in the other half including Chile, Colombia, El Salvador, Honduras, Panama, and Paraguay, female teachers are paid significantly less than their male counterparts. The disparity ranges from 8% in Chile, to 20% in El Salvador and 25% in Paraguay.

Why is there such a gender disparity? Why do male teachers get paid more than women do in half of the countries? Our data don't tell us exactly, but it is unlikely that official pay scales explicitly reward male gender. In fact, many LAC school pay scales are rigidly codified into laws ("ley de escalafón") . These clearly stipulate the arguments of a pay function that rewards 3 things: formal education, job experience (as seniority), and administrative duties. Sometimes the laws also provide extra compensation for teachers in rural areas. Several possibilities arise. First, it is possible that a higher percentage of male teachers get the administrative slots within the education system and they are paid more for that. The gender bias exists on the *hiring* side when determining who gets the administrative slots. Second, women teachers experience may get put on "hold" when they go on maternity leave. Thus, even though they may have begun working as teachers as long ago as males, they may not have received any pay increase for the time when they were at home on maternity or child-rearing leaves. Third, even though pay scales clearly define pay formulae, there may be some room for discretion and that whenever there is such discretion, it may be decided in favor of male teachers.

It seems easy to prove the first argument. Unfortunately the household survey data do not permit a further breakdown of assignments with the teaching profession. A few surveys include detailed occupation codes which distinguish administrator from teachers, however, the sample sizes become too small in those cases. Nevertheless, we can examine indirect evidence, by looking at the difference in working hours between male and female teachers . Table 10 shows that in all 12 countries, male teachers on average

work more hours than female teachers in their principal job which is teaching. In 8 out of 12 countries, this difference is significant. This could be a sign that a higher percentage of male teachers are in administrative posts than females.

Table 10: Difference in working hours between male and female teachers.

Countries	Male Teachers	Female teachers	Difference
Bolivia	31	26	***
Brazil	30.3	28.4	NS
Chile	39.1	38.9	NS
Colombia	39.4	35.4	***
Costa Rica	41.7	38.5	*
Ecuador	39.2	38.2	NS
El Salvador	35.8	32.2	**
Honduras	39.1	35.5	*
Panama	36.7	35.8	NS
Paraguay	37.5	35.6	**
Uruguay	33.9	30.3	***
Venezuela	40.8	35.5	***

Note"   ~$p<=0.10$ * $p<=0.05$ ** $p<=0.01$ ***$p<=0.001$

Interestingly, when looking at the impact of gender on pay in the non-teaching sector, the study finds the "discrimination" against females is much worse there. In the non-teaching sector, female teachers are underpaid compared to their male counterparts in all the 12 countries and the magnitude of the disparity is fairly large ranging from at least 13% in Honduras to as much as 34% in Bolivia.

Experience
We saw earlier that income is much more equally distributed among teachers than among non-teachers with comparable years of education. This lower salary dispersion is equivalent to a lower ex-ante risk. In other words, teachers can make a more accurate prediction of what their salaries will be throughout their lifetimes. One thing that everyone knows for sure is that they will get older.

This interpretation is born out in the relationship between experience and earnings. The teaching profession is known for having a reward system largely based on seniority. This study confirms that reputation. Teacher pay is significantly associated with more years of experience in all of the countries under study. In 5 out of the above 9 countries, the coefficient associated with experienced-squared is negative but significant, meaning that the rate of pay increase diminishes as experience grows. In other words, even though teacher salaries increase with their experience, the *rate* of increase slows down as seniority increases.

Figure 1: Earnings profiles for teachers and non-teachers in Brazil.
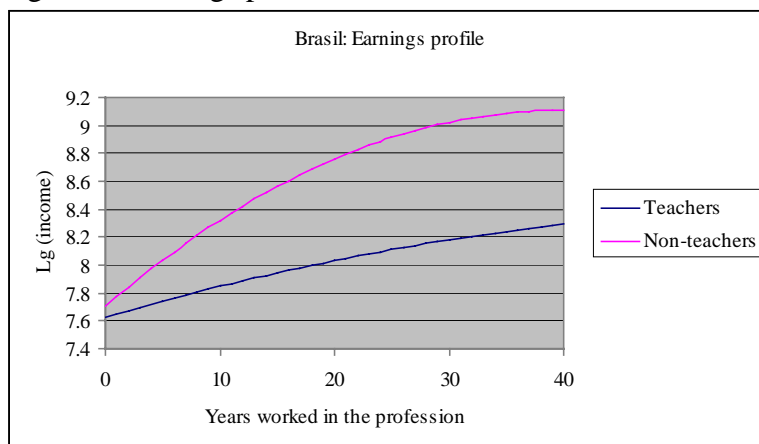
The data show that the relationship between experience and earnings is also non-linear in other sectors of employment. Interestingly though, in more than half of the countries it is also steeper in the non-teaching sector. Figure 1 uses Brazil, the country with the highest degree of inequality in the region, to illustrate what this can mean for the contrast between lifetime earnings profiles of all teachers with their private sector, non-teacher counterparts. The vertical axis measures monthly income, without adjustment for differences in yearly vacation time. As before, the prototype used is a male, with 10 years of schooling, 30 hours of work, white, living in a metropolitan area, and member of a union. Notice that teacher earnings profiles are flatter and everywhere below those of non-teachers. This simulation shows that salaries start out at a comparable level, but that as teachers get older they face a declining standard of living relative to their cohorts working at other jobs.[14]

**Table 11: Ratio of annual salary after 15 years of experience base starting salary
(in local currency units)**

Countries	First year salary	Salary after 15 years of service	Ratio of salary after 15 years over base
Bolivia	4,596	5,313	1.16
Brazil	2,061	2,920	1.42
Chile	1,538,010	1,984,743	1.29
Colombia	1,976,820	2,972,756	1.50
Costa Rica	493,856	698,891	1.42
Ecuador	2,571,500	3,256,782	1.27
El Salvador	19,168	23,121	1.21
Honduras	12,457	17,602	1.41
Panama	3,149	4,131	1.31
Uruguay	16,895	27,480	1.63
Venezuela	214,486	317,887	1.48

To understand how teacher salaries increase over time, Table 11 lists the simulated annual salary of teachers at the beginning of their career (0 years of experience) and after

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[14] When earnings are adjusted for a 75% yearly workload because of longer summer vacations, the teacher earnings profile shows the same rate of increase, but it is shifted upwards. It intersects the non-teacher profile at about 9 years of experience.

15 years of service. The last column of the table lists the ratio of salary after 15 years over the base salary. It shows that after 15 years of teaching in the profession, teachers salaries range from 16 to 63 percent higher. This "return" to experience is comparable to what is reported for the OECD countries. The 1998 OECD Education at a Glance reported that in OECD countries, 15 years of teaching experience equates to between 20 and 80 percent higher salaries (OECD, 1998)

Differentials for working in difficult areas

The intention of this inquiry was to determine whether Latin American teacher pay scales actively encourage teachers to serve in rural or other relatively less developed parts of the country.[15] As mentioned above, the laws or contracts governing teacher compensation ("*ley de escalafón*") usually stipulate a pay function that rewards 3 things: formal education, job experience (as seniority), and administrative duties. Sometimes the laws also explicitly provide extra compensation for teachers in rural areas. This section examines the relation between teacher pay and service in difficult areas within the 12 countries under study.

The findings related to the differentials associated with working in difficult areas are surprising . Contrary to what was expected, it is found that *none* of the 12 countries compensate monthly wage for work in "difficult" areas. In fact, half of the pay structures actually penalize work in such places. This is true in Brazil, Chile, Colombia, Ecuador, El Salvador, and Uruguay. The magnitude of the penalty ranges from a low of 10% in Colombia to as much as 26% in Brazil and Ecuador. This means, for example, that teachers in the metropolitan area of Quito in Ecuador are paid 26% more than their less fortunate counterparts deployed in smaller urban areas. In another half of the countries including Bolivia, Costa Rica, Honduras, Panama, Paraguay, and Venezuela, no significant pay difference was observed between rural and urban teachers. This pattern contrasts sharply with that of the OECD countries where salary adjustments or bonuses are awarded for performance, school location, and additional teaching or administrative duties. OECD reported that these bonuses are substantial ranging from 15 to 20 percent of teachers' salaries (OECD, 1998).

This result was quite unexpected. It is well known that most teachers prefer *not* to work in underprivileged areas and widely believed that some sort of extra compensation is needed to induce them to do so. In fact, the presumption was that compensation schedules would reflect some sort of hardship pay. Yet survey evidence clearly shows

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[15] The definition of "difficult area" is used in a loose manner in this study. Because of the nature of the household survey data in Ecuador and Uruguay where only urban areas are included, the contrast in these two countries is between metropolitan Quito or Montevideo and the rest of urban areas. In Bolivia, the contrast is between the three big metropolitan areas (Santa Cruz, La Paz, and Cochabamba) and the rest of the country. In Brazil, Chile, and Costa Rica, certain areas of the country were identified as being "difficult" based on preliminary data analysis indicating teachers in those areas receive significantly less pay than others. In Brazil, the study contrasts metropolitan areas with autonomous municipalities and non-autonomous municipalities. In Chile, the contrast was between Gran Santiago and the rest of urban areas. And in Costa Rica, the contrast was between "periferia urbana" and "urbana".

that after controlling for years of education, experience and other variables, teachers in rural areas do not fare as well as those in urban and metropolitan areas. At best, rural teachers are *not* being compensated for service in remote areas. At worst, they are being penalized in 6 out of the 12 countries. Some may argue that since the living standards in rural areas are generally lower than those in urban areas, the magnitude of purchasing power disparity may not be as big as the nominal income differences reported here. However, adjustments that would alter nominal income to account for lower *cost* of living should also consider the lower *quality* of life and the reduced range of goods and service options that constrain persons who live in the more remote places. In rural areas the teaching itself also suffers from a lack of basic teaching and learning infrastructure and smaller opportunities for professional advancement (Liang & Rojas, 1999; Schiefelbein et al. 1991). If one imagines a graduate fresh from normal school or college who is making a decision on where to teach, the lack of pecuniary incentives to work in rural areas, coupled with the difficulties of rural teaching and learning, may be sufficient to discourage him or her from teaching there. It is unlikely that the *de jure* pay formulae explicitly penalize service in difficult areas. Rather it is probably the cumulative effect of reduced access to in-service training and fewer opportunities for administrative advancement over time that eventually add up to rural teachers earning less than their urban and more metropolitan counterparts. As in the case of the gender-effect finding, it is most likely that the causes behind this adverse rural-effect finding are hidden.

Beyond the issue of "fairness", this finding raises the concern that such an adverse incentive structure might lead the pool of teachers in rural, "disadvantaged" areas to differ significantly from the urban and more "privileged" set. By simply comparing the means in age and schooling we get a rough sense that teachers working in difficult areas tend to have fewer years of schooling and to be less experienced. The biggest disparity in schooling is found in Brazil where teachers in no-autonomous municipalities have 10.6 years of schooling compared to an average of 12 years in metropolitan area. In Ecuador, teachers in the metropolitan Quito area have an average age of 40 compared to only 30 years of age in the smaller urban areas. This result, though still preliminary, points out that rural education could be in a downward spiral if no measures are taken to first attract and then retain good teachers in rural areas.

Table 12: Characteristics of teachers in urban and other "difficult" areas

Countries	AGE		SCHOOLING	
	Urban	"Difficult" areas	Urban Teachers	"Difficult" areas
Bolivia	38	37	14.3	14.1
Brazil	26.6	26.1	12	10.6
Chile	40.8	41.7	16.2	15.6
Colombia	38.5	36.9	14.3	12.6
Costa Rica	37.5	38.6	14.9	15.1
Ecuador	40	30	15.9	15
El Salvador	38.0	31.9	13.9	12.6
Honduras	38.5	35.7	12.1	11.7

Panama	39.9	38.4	15.6	14.1
Paraguay	34.7	28.7	14.5	14.5
Uruguay	44.1	40.3	13.7	13.2
Venezuela	26.6	26.1	11.9	10.8

However, when comparing the magnitude of the coefficients associated with the rural variables, we find that the "discrimination" against rural areas in general is much worse in the non-teaching sector than in the teaching sector. There, a negative and significant pay differential exists in all countries, ranging from 7% in Paraguay to 31% in Honduras and Venezuela. In other words, the relative position of a rural teacher to an urban one is much better than a rural non-teacher to an urban non-teacher.

Private versus public sector

Table 13: % of teachers in public and private sectors

Countries	# of teachers in the public sector	# of teachers in the private sector	% of teachers in the private sector
Bolivia	307	48	14%
Brazil	333	152	31%
Chile	322	210	39%
Costa Rica	198	20	9%
Ecuador	364	92	20%
El Salvador	229	62	21%
Honduras	307	62	17%
Panama	331	51	13%
Paraguay	74	19	20%
Uruguay	287	81	22%
Venezuela	155	64	29%

Note: Colombia is missing

In the 12 countries observed, there is a significant private education sector even at the primary and secondary level. The private sector constitute between 9% in Costa Rica to 39% in Chile (Table 13). Across the 12 countries, the pay differential between teachers in private and public schools is mixed. Out of 11 countries (Colombia not included since no information is provided in the survey on private/public affiliation), in Bolivia, Brazil, Chile, and Uruguay, teachers of the private sector enjoy a considerably higher salary than those in the public sector. For instance, the Bolivian private teachers earn on average 31% over their counterparts in the public sector. The disparity is the smallest in Brazil where private teachers earn 11% more than their public counterparts. Note that all these countries are in South America.

In three Central American countries including El Salvador, Honduras, and Panama, teachers in the public sector earn considerably more. The disparities in pay are respectively 46% in El Salvador, 20% in Honduras, and 28% in Panama.

These results could indicate two things. First, what is meant by private school may be very different in South American than in Central America. We know that in many Central America countries community schools are classified as private. Community schools such as El Salvador's EDUCO and Panama's PRONADE spring up as a way of catering to rural education needs, an alternative to the traditionally elitist system. Teachers in such community schools are usually recruited through a different contract from regular public schools and they are on a different career track. At the same time, the "real" market-oriented private education sectors in these countries are still immature. However, in South America, the concept of private schools could be more in line with the traditional elite type where teachers are relatively better compensated.

Weekly working hours

When relating wages to teachers' working hours, it is found that hours worked have a positive impact on the teacher wage in 9 out of the 12 cases. Those who work more hours on the weekly basis seem to get higher pay than others do. For every additional hour worked each week, there is an associated pay increase of 0.5% in Colombia to 3% in Paraguay. Since it is rare that teacher pay would fluctuate with hours worked, this association between pay and hours worked could be due to the additional administrative duties some teachers take on, for which teachers are usually compensated with extra earnings.

Affiliation with unions

Data on the affiliation with unions were available only in 2 countries: Brazil and Venezuela. In both cases, membership in a union enhances significantly the possibility of higher pay for teachers. In Brazil, unionized teachers are paid 20% more than their UN-unionized counterparts with the same characteristics in schooling, experience, gender, area, private or public sector, and working hours. In Venezuela, the premium of association with a union is 24% for teachers. The picture is similar in the non-teaching labor market where association with union also signifies higher pay for the members, even though in Brazil the premium is higher for non-teachers (36%) than for teachers (20%).

However, there's a body of literature that discusses the potential problem of selection bias in estimating the union effect on wages. In particular, because people are not randomly assigned to unions, but instead select themselves into these organizations, the estimate of unionization on wages is probably biased. Several authors, including Lung-Fei Lee (1983) and James Heckman (1990), have written methodological papers on how to deal with this problem, suggesting the use of instrumental variables. However, a paper by Baugh and Stone (1981) that estimates the effect of unions on wages using both the regular OLS and a two-stage least squares model instrumenting for unionization finds no significant differences.

(3) Who Are the Teachers?

From the previous sections, we learned that the compensation of teachers can be said to be lower only by ignoring hours worked. There is no doubt that *annual salary* is lower, but teachers' *hourly* wages are comparable, in fact usually higher than what they could receive in the non-teaching sector. So, it appears that the main reason for the perceived "underpayment" is that they work fewer hours.

We must now refine two explanations for lower annual salaries given earlier. We consider whether teachers wish to work longer hours, but have been unable to find more work, or being required to work fewer hours is an attractive job characteristic for which certain people willingly sacrifice some yearly income

The first section reported that Latin American teachers work fewer hours per week compared to other workers. To test the hypothesis that teachers are generally satisfied with their working hours, the proportion of persons who would like to work longer hours is examined. Table 12 shows results for countries with the relevant data. Among persons who are currently working less than 35 hours per week in their principal job, a significantly higher proportion of non-teachers is dissatisfied and would like more work. Thus, not only do teachers work fewer hours, for the most part they appear to be satisfied with this arrangement: they do not wish to work more hours.

There is a minority of teachers that wants more work. Bolivia stands out as the only country where more than 50% of teachers currently working less than 35 hours would like to work for more hours. But recall that Bolivia is also the country where teachers on average work the fewest hours (27.9). A comparison of Table 3 and Table 14 reveals an almost perfect negative rank correlation between mean hours worked by teachers in each country and the proportion of teachers who want to work longer hours.

Table 14: % of people wanting to work more hours, for those who work less than 35 hours in their principal source of employment

Countries	Teachers	Non-teachers	Difference
Bolivia	54%	58%	NS
Chile	8.5%	17%	***
Colombia	15%	36%	***
Costa Rica	20%	46%	***
El Salvador	1.2%	22.4%	***
Honduras	17%	21%	***
Panama	25%	54%	***
Uruguay	21%	32%	***

Note" ~p<=0.10 * p<=0.05 ** p<=0.01 ***p<=0.001

Personal characteristics: gender, age, and education

Table 15 reports the descriptive statistics on teacher's gender, age and schooling as compared to non-teachers. Without any exception, the majority of teachers are females in the 12 Latin American countries. The proportion ranges from 64% in Bolivia to 85% in Paraguay. On average, approximately two-thirds of the teaching force are females. The picture is just the opposite in the non-teacher sector where only about one-third of the labor force is female. Compared to the U.S., this figure is similar. However, it is higher than the majority of OECD countries such as Japan where almost half of the primary teaching force is man (Ministry of Education Japan, 1994). The average years of schooling for teachers range from slightly more than 11 years in Brazil and Venezuela to almost 16 years in Chile.

Most interesting, teachers on average have a much higher level of schooling than non-teachers. In some countries such as El Salvador and Honduras, teachers are more than twice as educated as others. However, when compared to the US and OECD countries where the majority of teachers have at least obtained a Bachelor's degree with a minimum of 16 years of education, this level of schooling for teachers is still low.

Table 15: Average gender, age, and schooling for teachers and non-teachers and non-teachers

Countries	% Female		AGE		SCHOOLING	
	Non-Teachers	Teachers	Non-Teachers	Teachers	Non-Teachers	Teachers
Bolivia	23%	64%	34.7	37.8	8.3	14.2
Brazil	37%	84%	21.8	26.4	8.4	11.4
Chile	27%	71%	35.8	41.3	10.2	15.9
Colombia	30%	66%	33.7	38	7.5	13.7
Costa Rica	25%	80%	33.3	37.7	7.7	14.8
Ecuador	27%	65%	33.6	39.2	10.3	15.2
El Salvador	26%	63%	32.6	37.5	6.3	13.8
Honduras	26%	63%	31.4	37.6	6.1	12
Panama	30%	69%	35.5	39.5	10.0	15.2
Paraguay	25%	85%	32.9	34.4	8.7	14.5
Uruguay	38%	76%	38	41.8	8.7	13.4
Venezuela	27%	72%	23.5	26	8.1	11.5

Teachers also are significantly older than non-teachers. There could be two reasons for this. Either it's because teachers spend more years in school or it's because younger teachers are more likely to leave the teaching profession in their early years of the profession. To test the first hypothesis, a sub-samples of workers more than 20 years old are compared (assuming the majority of the 20 year-olds would have finished school and started working). The teachers are still found to be significantly older in all countries but Paraguay. Even though the household survey data do not directly permit the analysis of teacher turnover, this result is consistent with the presumption that teachers are more likely to leave the profession during the early years of their teaching profession.

When statistically modeling the probability of being a teacher as a function of teachers' personal and family characteristics, the above observations are proved to be true. Female gender, age and years of schooling are all found to be significantly associated with the probability of being a teacher (Table 19). The coefficient associated with gender ranges

from 0.95 in Colombia to 2.15 in Paraguay. In other words, the odds of becoming a teacher for women are between 2.7 times to 9 times more than men. The coefficient associated with age ranges from 0.02 in Brazil to 0.11 in Venezuela, meaning that the odds of becoming a teacher increase by 1.34 times to 1.92 times for every additional year of age. The coefficient associated with schooling varies from 0.29 in Venezuela to 0.65 in Chile. For every additional years of schooling, the odds of being a teacher increases by 1.02 to 1.12 times.

Teachers' Role in the household

What role do teachers play in his or her household? Table 16 lists descriptive statistics on percentage being the head of household, percent of being the wife of the head, and their pay as a percentage of total household income. Overall, teachers are less likely to be the head of the household and much more likely to be the wife of the household head than non-teachers. And in 7 out of 12 countries, their wage constitute less than half of the total household income.

Table 16: Teachers' role in the household

Countries	% Head of Household		% Wife of Head		Pay as % of Total HH Income	
	Non-Teachers	Teachers	Non-Teachers	Teachers	Non-teachers	Teachers
Bolivia	62%	44%	10%	36%	58%	47%
Brazil	13%	13%	4%	27%	31%	30%
Chile	52%	36%	10%	38%	55%	46%
Colombia	47%	38%	11%	30%	57%	53%
Costa Rica	52%	33%	9%	49%	58%	56%
Ecuador	50%	40%	11%	35%	55%	48%
El Salvador	47%	38%	10%	32%	52%	52%
Honduras	44%	40%	8%	38%	54%	54%
Panama	51%	40%	15%	37%	54%	52%
Paraguay	49%	20%	12%	42%	49%	20%
Uruguay	47%	32%	18%	43%	47%	40%
Venezuela	17%	6%	5%	23%	61%	35%

More desegregated comparisons begin to reveal a pattern, to show who it is that finds the teaching profession –with its shortened hours and lower annual pay—an attractive option. As a group, female teachers contribute much less to the household income than male heads of household. On the other hand, it can also be seen that they contribute more than the average wife of a head in the non-teaching sectors (Table 17). The implication is clear. In a majority of cases for this female-dominated profession, teaching provides a secondary source of household income. A good source relative to what might be found in other sectors, but a secondary source nonetheless. This finding is consistent with earlier findings (Randall, 1999).

Table 17: Contribution to household income for teachers, non-teachers, female teachers, and non-teacher wives of the household heads.

Countries	Pay as % of Total HH Income			
	Non-teachers	Teachers	Female teachers	Non-teacher wives
Bolivia	58%	47%	43%	37%
Brazil	31%	30%	29%	36%
Chile	55%	46%	42%	36%
Colombia	57%	53%	49%	41%
Costa Rica	58%	56%	53%	41%
Ecuador	55%	48%	43%	39%
El Salvador	52%	52%	50%	39%
Honduras	54%	54%	52%	42%
Panama	54%	52%	50%	39%
Paraguay	49%	20%	47%	40%
Uruguay	47%	40%	38%	34%
Venezuela	61%	35%	34%	44%

Table 18 shows that teachers on average tend to come from slightly smaller households. The average teacher household has between 4 to 5 people, whereas the average non-teacher household has between 5 to 6 people in there. This is largely because of the inverse relationship between education and family size. However, in the multivariate analysis predicting the probability of being a teacher, those who come from larger households are found to be *more likely* to be teachers than others with similar levels of education (Table 19). For every additional person in the household, the odds of being a teacher increases by between 1.08 to 1.38 times . This finding could be confirming the hypothesis that majority of people who go into the teaching profession are attracted by the flexible schedule which enable them to spend more time at home to care for children. Those who have more children (larger household sizes) tend to be more likely to become teachers.

Teachers also tend to come from households with slightly higher total income than non-teachers as indicated by the last two columns of the descriptive table 18. Again, this does not mean that people from higher socio-economic background are more likely to be teachers. In fact, after controlling for education, gender, and other characteristics, household total income is found to be *negatively* associated with the probability of being a teacher. This indicates that with the same level of education, people from lower social economic class are more likely to be teachers. The teaching profession is generally seen by the poor as a means toward upward mobility, since many teacher training institutions or normal schools offer free education for the teachers-to-be.

Table 18: Household size and household income

Countries	Household Size		Monthly Household Income	
	Non-Teachers	Teachers	Non-Teachers	Teachers
Bolivia	5.0	4.5	1722.9	1806.3

Brazil	5	4.5	1299.5	1341.7
Chile	4.6	3.9	426234	662343
Colombia	4.9	4.6	596718	892611
Costa Rica	4.8	4.4	117292	199304
Ecuador	5.1	4.7	1221564	1244260
El Salvador	5.5	4.7	3271	4117
Honduras	6	5.3	2840	4798
Panama	4.8	4.2	895	1128
Paraguay	5.2	5.0	1877732	2587131
Uruguay	4.1	3.6	8145	10009
Venezuela	6.3	5.5	100208	119549

Table 19: Predicting the probability of being a teacher by personal and family characteristics

	Gender	Age	Years of schooling	Head of household	Wife of head	Married	Household size	Household income
Bolivia	1.32 (0.21)***	0.03 (0.01)***	0.48 (0.03)***	NS	0.74 (0.30)*	NS	NS	-0.0004 (0.00)***
Brazil	1.88 (0.15)***	0.02 (0.01)*	0.32 (0.02)***	NS	NS	0.55 (0.23)*	0.32 (0.02)***	-0.0003 (0.00)***
Chile	1.35 (0.16)***	0.06 (0.01)***	0.65 (0.03)***	-0.53 (0.18)*	0.42 (0.21)*	NS	NS	-9.5E-07 (0.00)***
Colombia	0.95 (0.08)***	0.06 (0.00)***	0.44 (0.01)***	NS	0.43 (0.11)***	NS	0.12 (0.02)***	-7.4E-07 (0.00)***
Costa Rica	1.77 (0.28)***	0.03 (0.01)**	0.57 (0.04)***	NS	1.01 (0.37)**	NS	0.20 (0.05)***	-3E-06 (0.00)***
Ecuador	1.52 (0.16)***	0.05 (0.01)***	0.31 (0.02)***	NS	0.55 (0.16)***	N/A	0.10 (0.03)***	-5E-07 (0.00)***
EL Salvador	1.00 (0.18)***	0.06 (0.01)***	0.35 (0.02)***	NS	NS	0.43 (0.17)*	0.08 (0.04)*	-0.001 (0.00)***
Honduras	1.46 (0.16)***	0.05 (0.01)***	0.22 (0.02)***	NS	NS	0.50 (0.16)***	NS	NS
Panama	1.03 (0.15)***	0.05 (0.01)***	0.36 (0.02)***	NS	0.42 (0.17)*	N/A	NS	-0.0007 (0.00)***
Paraguay	2.15 (0.38)***	NS	0.39 (0.05)***	NS	NS	0.72 (0.34)*	0.15 (0.06)*	-3E-07 (0.00)***
Uruguay	1.30 (0.18)***	0.04 (0.01)***	0.40 (0.02)***	-0.54 (0.19)***	NS	NS	NS	-8E-05 (0.00)***
Venezuela	1.18 (0.17)***	0.09 (0.02)***	0.27 (0.03)***	-0.80 (0.29)**	0.77 (0.22)***	NS	NS	-2E-06 (0.00)~

Note: P<0.10~   P<0.05*   P<0.01**   P<0.001***

Summary of Findings

There is much difficulty in carrying out a study of a complicated issue such as teacher pay at the regional level. The tradeoff between breath and depth is always looming in the background. A number of interesting issues have to be sacrificed for the purpose of generalizability. For example, the situation of indigenous as compared with other teachers or the impact of hiring procedures on pay level. Yet several conclusions can still be drawn from the study. This section briefly summarizes these findings.

First, by simply comparing teachers' annual income with their comparable counterparts, teachers are found to have lower income in the 12 Latin American countries under study. Teachers are paid less. However, teachers are found to work on average significantly less than others. An unweighted average shows teachers in Latin American work only 35 hours per week, compared to almost 50 hours per week for other workers. When hourly wage is used as a dependent variable, much of the difference disappears and in some countries teachers are paid more than their counterparts in the labor force with similar gender, education, public/private sector association, and affiliation with unions. So while it is true that they are paid less, it is also true that they are well paid for the number of hours they work. However, this does not mean that all teachers should therefore work more hours. There is an argument that teaching is intrinsically a different type of work and that it may not be possible for the teachers to work as many hours as others. Yet the possibility of providing options for longer working hours should still be explored.

Second, there is variation in teachers' pay. However, this variation is much smaller when compared to the pay disparity of other professions. In other words, teachers' salary is much more predictable than in other professions. In most countries, teachers are paid according to a uniform scale in which salaries depend mainly on the amount of formal education and the number of years of teaching experience. Latin America is no exception. In the 12 countries the study looked in, education and experience are two main determining factors of teacher pay. Interestingly, teacher pay is also affected by gender, school location, private/public sector, and association with unions, factors which should not be part of the equation. Male teacher are paid more. Teachers working in rural or other "difficult" areas are paid between 10 to 30 percent less than their urban counterparts.

In most of LAC officially-published teacher pay scales usually have a fairly strict way of calculating teacher pay that leaves little room for discretion This finding might be explained that male teachers are more likely to take on additional administrative duties which compensate them for additional hours of work. The fact that rural teachers are paid significantly less is also troublesome. Since it is unlikely the official pay formula will explicitly penalize service in difficult areas, the pay differential may result from a cumulative effect of reduced access to in-service training and fewer opportunities for administrative advancement for rural teachers.

Another explanation of pay disparity across gender and geographical area is suggested by the case of Argentina. In Argentina, teachers are explicitly rewarded for performing specific tasks such as working in a remote or other disadvantaged areas and managerial responsibilities. However, there are so many situations or justifications for which such bonuses can be rewarded that Morduchowicz (1997) argue "the limits are set by the imagination of those responsible for formulating the salary policies" (translation of Vegas et al. (1999)). When there is such a discretion, the over-time accumulative effect may be the lower pay of female teachers and teachers working in remote and more difficult areas.

However, this "discrimination" against female teachers and against teachers in rural areas, when measured by the pay differential, is not as severe as that observed in the non-teaching sector – a "good" piece of a "bad" news.

In Central America, public teachers are paid more than private teachers, whereas in South America private teachers are paid more than public ones. And in the two countries where the study was able to observe the relationship between union affiliation and pay, there is a significant premium associated with the affiliation with the union.

Finally, two thirds of the teaching labor force is found to be females. They are more likely to the wife of the household heads whose income constitute secondary income sources for the household. This finding confirms our earlier hypothesis that teachers may have chosen the profession for its fewer working hours and flexibility in schedule. Teachers in general have a much higher level of education than non-teachers. The differences range from 3 to 7 years. However, teachers' average schooling of 12 years is low when compared to that observed in the US, Japan, and OECD countries (16 years). Teachers tend to have a higher average age than non-teachers, indicating the possibility of more younger teachers dropping out of the system in their early teaching years. Teachers also tend to come from lower socio-economic background and from larger households compared to others, controlling for schooling and other characteristics.

Policy Implications and Directions for Future Research

If it is hard to generalize, it is even harder to attempt to draw policy implications across the whole region. The first lesson from the study, not explicitly stated in the text but has always been there, is that there is variation within the region in the answers to the three questions: are teachers underpaid? What determines teachers' salary? And who are the teachers?. Detailed policy directions should be based on careful sector work on teachers in any particular country.

- The current structure of teacher pay in Latin America is most appealing to a subset of the labor force: female, looking for a secondary source of income, and willing to work fewer hours than average non-teaching sector workers.

- Teachers in the region are not underpaid if we take into account the number of hours they work, even though their annual incomes are less than others. ***Increases in***

hourly pay should not be considered as a policy option: in order to attract persons from the full-time sectors such increases would have to be so large as to compensate them for the lower hours worked.

- Teachers generally work fewer hours than others. However, this finding does not necessarily imply that teachers should increase their weekly working hours. Opportunities for working more hours and higher income should be provided for those who are willing. There are some teachers who would like to work more hours at various stages of their career and to earn more money. Given that in many Latin American countries, students spend fewer hours in school than other parts of the world, *opportunities should be provided for teachers to work longer hours thus to earn more money, such as, after care and summer camps*

- *Measures need to be introduced to help recruit and retain high quality teachers in rural areas. Careful studies need to be done to examine why rural teacher compensation appears to be lower despite hardship compensation measures available in some countries.* What are the hidden causes of such disparity? Is it the lack of access to professional development activities or the lack of opportunity for administrative advancement? If it is the lack of access to professional development activities, how can teacher training programs be designed so that those in remote areas will also be able to benefit? If it is the lack of access to administrative advancement, what policy tools can a government rely on to ensure comparable career ladder for rural teachers?   There are already signs that teachers in rural areas tend to be younger and less experienced than those in urban areas. Rural education could be in a downward spiral if no measures are taken to first attract and then retain good teachers in rural areas.

- The household survey data do not permit an investigation of *the relationship between teacher pay and performance*. We know as a general rule that in most countries there is no such linkage at least at the national level. However, this does not mean that such innovations do not exist. Worldwide, researchers and policy-makers are starting to explore using financial incentives to boost teachers' performance, evidence, though still scattered and not conclusive, has shown some preliminary success with such schemes. For example, recently evaluations on the Dallas school accountability and incentive program (Ladd, 1999) and of the incentive program in Jeruselum (Lavy, 1999) both indicate a positive and significant impact on student performance through the uses of financial incentives for teachers. Such pockets of innovation also exist in Latin America. The following box illustrate the *Carrera Magisterial* program in Mexico. The applicability of such incentives need to be further experimented and evaluated in the region.

Mexico's Carrera Magisterial Program

The CM program is developed by the Mexico Secretaria de Education Publica in conjunction with the teachers' union. The program is designed to create a system of teacher compensation based on professional

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skills, teacher performance, and the constant upgrading of teacher skills. The program is voluntary for all primary and secondary teachers with the following criteria: having a post and a minimum of two years of teaching experience. Participating teachers are subject to an annual global evaluation and their salary increases will be linked to the results of the evaluations. The evaluation is based on: performance (35 points), professional skills (25 points), educational attainment (15 points), completion of accredited courses (15 points), and experience (10 points). Depending on the evaluation results, the level of pay increase varies from 28.5% to as much as 224%. By 1997, 50% of all teachers were participating in the program and 25% of all students had a CM teacher. However, impact on student performance still remains to be assessed.

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