

Improving Teaching and Learning through Effective Incentives

What Can We Learn from Education
Reforms in Latin America?



THE WORLD BANK

Emiliana Vegas and
Ilana Umansky

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Education is the most important productive asset most people will ever own. Apart from its economic effects, education is intimately linked to sociocultural and political inequalities. More equal education has potentially multiple influences on more equal outcomes and practices.... While there is no specific institutional blueprint for this strategy, successful actions are likely to involve mechanisms to increase the accountability of teachers and schools. These may take the form of incentives for results (as is the case with Chile's school contests and vouchers), special funds to supplement school budgets (as with Brazil's FUNDEF program), or greater participation by local communities (as with El Salvador's EDUCO approach).

—De Ferranti, Perry, Ferreira, and Walton
*Inequality in Latin America:
Breaking with History?*

Introduction

1

While many Latin American countries have succeeded in providing access to basic education for the great majority of children, educational quality in the region remains very low.¹ In an increasingly globalized world where workers' skills and knowledge play an ever-important role, countries with predominantly low-skilled workers are doomed to stay behind, their citizens earning low wages and continuing to miss opportunities to escape poverty and enjoy a better life. From the viewpoint of using scarce resources efficiently, it is troubling that most countries in the region spend much on education, yet the skills that

¹ Students from Latin American countries were among the worst performers in two recent international assessments, the Progress in International Reading and Literacy Study and the Programme for International Student Assessment.

school graduates in Latin America have are not sufficient for them to earn enough for a quality standard of living.

Latin America as a region faces tremendous challenges, particularly those of development, poverty, and inequality. As the quotation above illustrates, education is widely recognized as one of the most—if not the most—critical means of defeating these challenges. Democratizing education, by improving both its coverage and quality, is critical to overcoming the social and economic inequality that plagues Latin America (De Ferranti et al. 2004). Ensuring that all children have the opportunity to learn critical skills at the primary and secondary level is paramount to overcoming skill barriers that perpetuate underdevelopment and poverty (De Ferranti et al. 2003).

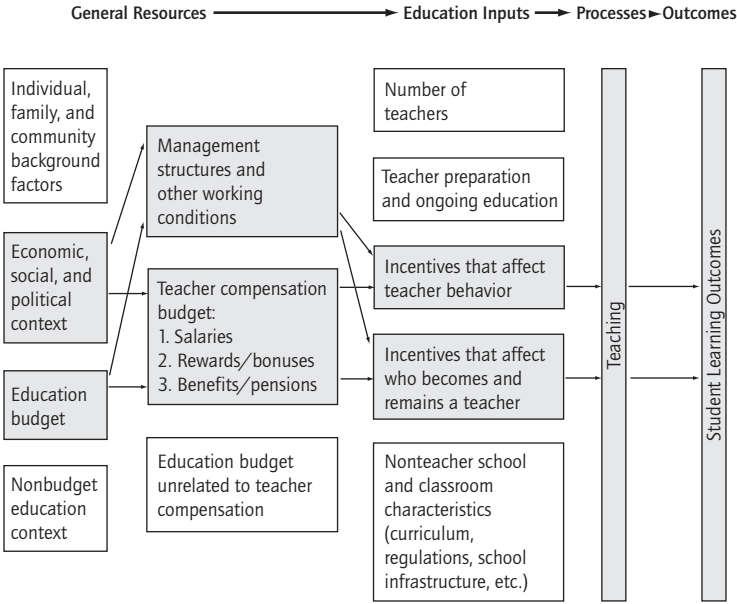
Although most individuals recognize the importance of improving the quality of education systems for reducing poverty and inequality and increasing economic development, how to do so is not clear. A growing body of evidence supports the intuitive notion that teachers play a key role in what, how, and how much students learn.² Attracting qualified individuals into the teaching profession, retaining these qualified teachers, providing them with the necessary skills and knowledge, and motivating them to work hard and do the best job they can is arguably the key education challenge.

Figure 1.1 presents a simplified schema of the factors that influence student learning, including general resources, education inputs, and processes. In the figure, the resources covered by this report are shaded, and their relationships to inputs, processes, and outcomes are indicated by arrows. For ease of exposition, we show only those relationships that are explored in this report.

General resources that have an impact on student learning include background characteristics of individuals; families and communities; the economic, social, and political context surrounding education in general and teachers in particular; the education budget, which represents the financial resources allocated to education; and the nonbudgetary context, such as curriculum, infrastructure, and school regulations. For the purposes of this study, we divide the education budget into two parts: the teacher compensation budget and the part of the education budget that is unrelated to teacher pay, the nonteacher education budget. In most of Latin America, teacher compensation ac-

² See, for example, Rivkin, Hanushek, and Kain (1998) and Rockoff (2004) for evidence that teacher quality has a strong impact on student achievement. More specifically, Ehrenberg and Brewer (1995) and Ferguson and Ladd (1996) provide evidence that teachers' mathematics and language skills are strongly related to student outcomes.

Figure 1.1 Simple Schematic Diagram of Factors Contributing to Student Learning (*Shaded boxes and arrows between boxes represent areas investigated for this report*) *



* We are grateful to Peter Mook for suggesting a schematic diagram of factors contributing to student learning.

counts for the lion’s share of educational expenditures (see Table 1.1). This large share of teacher compensation in total education spending makes the effectiveness of teacher compensation mechanisms all the more important.

The teacher compensation budget can be further divided into salaries, nonsalary monetary compensation schemes in the form of rewards or bonuses (e.g., for working in rural versus urban schools or for improved student performance), and nonsalary benefits such as health insurance, housing benefits, and pensions.³ The teacher compensation budget affects the overall number of teachers, teacher preparation and ongoing education, who becomes and remains a teacher, as well as

³ In Latin American countries, teacher pensions and other benefits often constitute a substantial component of total teacher compensation. A study of the impact of these benefits is beyond the scope of this report.

Table 1.1 Primary and Secondary Expenditures on Teacher Compensation as a Percentage of Total Education Expenditure, by Country and Education Level

Country	Primary (%)	Secondary (%)
Argentina ^a	73	64
Belize ^a	98	75
Bolivia ^c	85	78
Colombia ^a	93	90
French Guiana	88 ^e	90 ^d
Guadeloupe	88 ^e	87 ^d
Guatemala ^b	99	74
Honduras ^b	98	77
Jamaica ^a	96	81
Martinique ^d	n.a.	86
Nicaragua ^e	n.a.	82
Panama ^c	99	96
Peru ^a	79	81
St. Kitts and Nevis ^b	99	80
St. Vincent and the Grenadines ^f	n.a.	88
Suriname ^d	84	66
Trinidad and Tobago ^a	81	n.a.
Uruguay ^b	83	67
Venezuela, R.B. de ^c	80	53

Source: UNESCO Education Indicators, available at <http://www.uis.unesco.org>.

Note: n.a. = not applicable. Data are from most recent year available.

a. 1996.

b. 1995.

c. 1994.

d. 1993.

e. 1992.

f. 1991.

teacher behavior on the job. The part of the education budget that is unrelated to teacher compensation primarily affects the resources available to teachers in their job, such as curriculum, regulations, infrastructure, and teaching materials.

As can be seen in Figure 1.1, education policy makers have three main options for improving teaching quality: (1) teacher training and professional development; (2) teacher incentives that impact who becomes a teacher and how long they remain in the field; and (3) incentives that affect the work teachers do in the classroom. This study focuses entirely on the second and third options. Teacher training and professional development have received attention in the past from educators, policy makers, researchers, and the international donor com-

munity.⁴ In contrast, the literature on teacher incentives in Latin America is not very extensive. Though previous studies have addressed questions related to teacher quality and incentives in Latin America,⁵ ours is the first we are aware of to study the impact of various policy reforms affecting teachers on teacher quality and student achievement in multiple Latin American countries.

Why and how do incentives matter?

A substantial literature on incentives in firms has emphasized that the interests of workers (teachers) and their employers (principals, education authorities, or school boards) are often not aligned. For example, whereas school administrators and education authorities may be interested in attracting more students to their schools, teachers may want to keep some difficult-to-teach students out of their classrooms. Compensation contracts may be designed to include incentives that lead workers (teachers) to operate in the interest of the firms (schools).⁶ In the example above, school administrators could devise incentives (such as extra pay or promotion possibilities) for teachers to keep all students in their classrooms.

Evidence suggests that changes in teacher-incentive structures can affect who chooses to enter and remain in the teaching profession, as well as their daily work in the classroom. For example, in the United States, where there is growing concern about the declining quality of teachers, recent research shows that the increase in labor market opportunities for women led to a decrease in the pool of qualified applicants for teaching positions.⁷ At the same time, research suggests that teacher salary scales in the United States are so compressed that the best teachers are likely to leave the profession for higher-salaried jobs in other occupations.⁸

⁴ For a review of the literature and assessment of current teacher preparation systems in Latin America, see Villegas-Reimers (1998); for a review of recent trends and innovations in teacher preparation programs in the region, see Navarro and Verdisco (2000).

⁵ See, for example, the various case studies in Navarro (2002), which describe various aspects of teacher contracts and characteristics in several Latin American countries.

⁶ For a review of the literature on the provision of incentives, see Prendergast (1999).

⁷ Corcoran, Evans, and Schwab (2004b) and Hoxby and Leigh (2004) present evidence that the quality of teachers in the United States has declined over time as a result of changing labor market opportunities.

⁸ Hoxby and Leigh (2004) present evidence that the decline in teacher quality in the United States is due not only to increased opportunities for women outside of teaching, but also to the highly compressed teaching wage structure.

For example, an evaluation of a randomized teacher-incentives program in Kenya found that teachers increased their effort to raise student test scores by offering more test-preparation sessions (Glewwe, Ilias, and Kremer 2003). Similarly, a recent evaluation of a performance-based pay bonus for teachers in Israel concluded that the incentive led to increases in student achievement, primarily through changes in teaching methods, after-school teaching, and teachers' increased responsiveness to students' needs (Lavy 2004).

Because teachers respond to incentives, education policy makers can improve the quality of teaching and learning by designing effective incentives to attract, retain, and motivate highly qualified teachers. But how teacher incentives are designed and implemented also matters. In various cases, teachers have been found to respond adversely to incentives by, for example, not collaborating as much with other teachers, excluding low-performing students from exams or classes, providing students with the answers to the tests, or even ensuring that students increase their caloric intake on the day of the test.⁹

Incentives as a broad and complex concept¹⁰

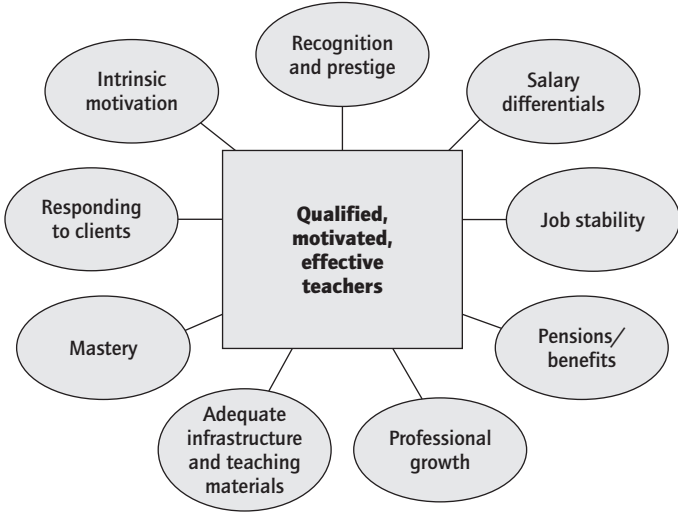
The *Oxford English Dictionary* defines an incentive as “something that arouses feeling, or incites to action; an exciting cause or motive; an incitement, provocation, ‘spur’.” As is clear in this definition, the term *incentives* can encompass many ways of getting people to take action. It is in this broad sense that we use the term *incentives* in this report.

Many people think of teacher incentives exclusively as salary differentials and other monetary benefits. Indeed, differences in pay can act as an incentive to attract and retain qualified teachers or, conversely, discourage qualified applicants and talented practitioners already in the profession. But there are many other kinds of incentives, many of which are nonmonetary. Figure 1.2 graphically displays many types of incentives for attracting highly qualified teachers and motivating them to be effective in their jobs.

⁹ See Murnane and Cohen (1986), Cullen and Reback (2002), Figlio and Getzler (2002), Figlio and Winicki (2002), and Jacob and Levitt (2003).

¹⁰ We are grateful to Jeff Puryear, whose comments at the “Learning to Teach in the Knowledge Society” conference held in Seville, Spain, in June 2004 greatly informed this section.

Figure 1.2 Many Types of Teacher Incentives Exist



One type of incentive for attracting individuals into teaching is intrinsic motivation: the opportunity to educate children, and thereby improve their well-being, can serve as a powerful incentive to attract individuals into the teaching profession. Though its presence is important to many teachers, most people would agree that intrinsic motivation alone is not sufficient to produce adequate performance.

A second kind of teacher incentive is social prestige and recognition, which can incite people to become teachers. In the early and mid-twentieth century, Latin American teachers enjoyed great social prestige and recognition. Unfortunately, teacher recognition throughout the region has declined substantially in recent decades.

A third kind of incentive, and perhaps the most common, is salary differentials and other monetary benefits. Differences in salary and overall compensation exist between teachers and nonteachers, and among teachers themselves. Changes in the salary differential between teachers and nonteachers can make teaching a more attractive profession to highly qualified individuals. Among teachers, salary differentials may be based on seniority, training, characteristics of the school or its

students, performance, or other variables. In most Latin American countries, teacher salary differentials are based almost exclusively on training and years of service; they are rarely based on performance.

A fourth kind of incentive relates to job stability. The threat of losing one's job can act as a powerful incentive, though it is virtually absent from the teaching profession in the region. Because of the prevalence of union contracts that strongly protect teachers' jobs, rarely does a teacher get fired in Latin America. On the flip side, job stability may attract potential teachers to the profession.

Pensions and other nonsalary benefits, such as health insurance, constitute a fifth type of incentive. Reliable government pensions that provide for a decent living after a teacher retires can attract people to the career as well as create an incentive for teachers to remain in their jobs. Teachers' pensions in Latin America tend to be relatively high, predictable, and available at a relatively early age. Although not sufficiently researched, pensions may be one of the more influential incentives encouraging people to work as teachers.

Professional growth is a sixth type of incentive. The presence of opportunities for advancement throughout a career can serve to motivate teachers to excel in their work. Unfortunately, this type of teacher advancement ladder is also largely absent in the teaching profession in the region.

A seventh type of incentive involves nonsalary job characteristics, such as the availability of adequate facilities and materials with which to teach. In many countries, the lack of such basic infrastructure makes teaching a difficult, often unattractive profession to qualified professionals.

An eighth type of incentive involves a sense of mastery in one's job. People who feel that they can be capable and effective as teachers are more likely to choose to become teachers.

Finally, the need to satisfy clients and respond to supervisors can be a strong incentive that can affect performance on the job. Although in the private education sector this incentive is usually present, it is less formalized in the teaching profession in public education in Latin America.

Because there are many types of incentives, attracting and retaining qualified individuals into teaching and motivating them to do the best work they can in their jobs can, therefore, involve many different types of policies. Unfortunately, as will be discussed below, policy makers generally focus on only a few types of incentives for teachers.

Teacher effectiveness and student performance

Who is a good teacher? What makes a good teacher? Nearly everyone who has been through school can remember a great teacher. People usually provide a variety of reasons for what makes their teacher a great one, from being “loving and caring,” “knowledgeable,” or a “good communicator” to being “tough” and “pushing one to work hard and expand one’s horizons.” These are complex behaviors that are not easily measured. In fact, measuring the factors that effective teachers have, and ineffective teachers do not, has proved technically difficult and expensive. The problems in accurately measuring the factors that affect teacher effectiveness constitute one of the main challenges for designing teacher incentives.

Ultimately, what society should care about is whether teachers are generating learning in their students. In other words, while showing affection and commanding the subject matter may be qualities that are likely to stimulate students to learn, not all teachers who are affectionate or knowledgeable in their subject matter are also effective teachers.

In this report, we use a specific definition of teacher effectiveness. We consider a teacher effective when there is evidence that his or her students have acquired adequate knowledge and skills. To measure teacher effectiveness, we rely primarily on available indicators of student learning from national assessments of subject-matter (usually language and mathematics) knowledge. Because student learning takes multiple forms and is difficult to measure and because tests are an imperfect measure of learning, we recognize that test scores are an incomplete and imperfect proxy for teacher quality.¹¹ However, given the absence of a better understanding of what factors make a good teacher and given the paucity of systematic and comparable data on student learning, national assessments are our best option for shedding light on the quality of teaching and learning.

The challenge of reforming teacher incentives

The majority of Latin American teachers are not accountable for what they do in the classroom or, more important, for their own students’

¹¹ Kane and Staiger (2001) and Koretz (2002) provide evidence of the multiple problems in student assessments of knowledge.

learning progress. In most countries in the region, teachers can earn higher salaries only by staying in the profession or by getting additional education degrees, as salary scales are linked primarily to education and years of service and not to any measure of performance. With few exceptions, teachers in the region cannot be dismissed for performance reasons. Similarly, teachers are rarely acknowledged or rewarded for excellence.

It is difficult to design, get political approval for, and—what is often underestimated—implement reforms targeted at changing teacher incentives. As a result, few Latin American countries have been able to do so, and countries that have introduced teacher-incentive reforms have used various channels.

Some countries, such as Bolivia, Chile, and Mexico, have tried to improve teacher quality by establishing salary differentials, granting bonuses for teachers working in rural areas, or rewarding teachers with exemplary student performance. Brazil has attempted to raise teacher quality by changing the resources available and the mechanisms by which they are made available to municipality and state-level education systems. El Salvador, Guatemala, Honduras, and Nicaragua have devolved authority to communities, granting professional autonomy to schools and teachers in the belief that the increased accountability will lead to higher teacher quality and student outcomes. More recently, Chile is also attempting to eliminate job stability for poor-performing teachers.¹²

How governments choose to reform teacher incentives is, of course, related to the historical and political economy context of each nation. For instance, Brazil historically has been one of the most decentralized countries in the region, with state and municipal governments managing education systems of their own for many decades. This high degree of decentralization resulted in enormous inequality in the resources available for education systems in states and municipalities across the country. A federally mandated education finance equalization reform was, therefore, one way of addressing inequality in spending levels per student across states and municipalities. Requiring 60 percent of the reform's resources to be allocated to teacher salaries ensured that the additional resources would affect current and potential teachers.

¹² In August 2004, the Chilean Congress passed a teacher evaluation law whereby if a teacher's performance is rated unsatisfactory for three consecutive years, he or she is required to resign to the teacher unions and withdraw from the profession. However, the reform has not yet been implemented.

In contrast, the excessive centralization of education systems in Central America had resulted in poor access and quality of schools in many areas. In response, governments empowered communities to manage schools, including the authority to hire teachers locally, hoping that this tighter relationship between clients and education service providers would improve school access and quality.

A wide system affecting teaching and learning¹³

While teacher-incentive reforms are a promising option to improve teacher quality and student learning, they do not operate alone but instead are part of a broader system that affects teaching and learning. As a result, reforms to teacher incentives may be more effective in raising student learning when other parts of the broader system affecting teaching and learning are in place. For example, tying salary increases to teacher performance may be effective in raising student achievement only when teachers have clarity about the knowledge and pedagogical skills needed to improve student learning. Similarly, the benefits of increased teacher accountability reforms are possible only when teachers know to whom they are accountable and those individuals, in turn, have authority to reward and sanction teachers on the basis of their performance. In short, effective incentives are a necessary, but not sufficient, condition for ensuring teacher quality and student achievement.

What would be the components of an education system geared toward attracting and retaining qualified teachers and motivating them to perform to the best of their capacity in schools? At least seven components can influence teaching quality, and incentives are one of these components. First, teachers must have access to adequate teaching materials and basic infrastructure conditions. Although the need for basic infrastructure and teaching materials seems obvious, many Latin American teachers continue to work in inadequately resourced schools.

Second, teachers must know what is expected of them. Although in many settings education standards are a sensitive issue, all education systems have established standards for their public school teachers. For example, most systems expect teachers to have completed a minimum

¹³ We are grateful to Jeff Puryear, whose comments at the “Learning to Teach in the Knowledge Society” conference held in Seville, Spain, in June 2004 greatly informed this section.

number of years of education; many systems expect teachers to have completed particular teacher training programs or established teacher certification programs; most systems expect teachers to work a number of days or hours per week and year. A system that is able to recruit and retain highly qualified teachers is one that provides clear expectations for teachers in terms of the subject knowledge and pedagogical skills that teachers need; provides specific guidelines regarding how teachers should behave and what they should do; and makes explicit the specific competencies and learning achievement goals that teachers are expected to occasion in their students. Without clarity in what is expected from teachers, it will be very hard to establish incentives for teachers to meet expectations.

Third, how teachers are selected and assigned to schools affects the quality of teaching and student learning. In many Latin American systems, these rules are not clear or transparent, which leaves the process open to political influence. When clear rules exist, they are often detached from policies that attempt to target resources to areas of highest need. For instance, instead of assigning the best-performing teachers to the schools serving students who are in most need, countries often give priority of choice in school assignment to teachers based on years of experience, typically resulting in schools serving more disadvantaged populations having less-experienced teachers. A purposeful mechanism of teacher assignment may involve devolving authority to school principals or administrators, enabling them to choose the teachers with the best qualifications and characteristics to serve the students in their schools. Rules for selection and criteria for assignment should be clear, transparent, and rational. Without such logically directed and easily understandable rules and criteria, the system is left open to political influence and the least effective teachers often end up teaching the most vulnerable children.

Fourth, on a regular basis, education systems need information about teaching and learning and measures of progress against the expectations that have been set forth. This information needs to be used not only for accountability purposes but also as a tool to improve teaching practice. Monitoring and evaluation systems need to address at least three questions: (1) Do existing teachers possess the expected knowledge and skills?; (2) Is teacher performance currently meeting the expectations that have been agreed upon?; and (3) Are students learning the expected skills and making progress in acquiring these skills at the expected rate? Without evaluating teachers' knowledge and skills, teacher behavior and performance, and student learning results,

neither policy makers nor teachers themselves can know to what extent teachers are meeting expectations.

Fifth, an effective system for attracting and retaining good teachers is one with clear expectations of the skills teachers should have, the behaviors they should exhibit, and where these are monitored and evaluated on a continuous basis. However, it is just as essential to use this information to provide teachers with the technical and managerial support needed as well as the professional development opportunities necessary for them to succeed in the task of engendering student learning. This support implies having school administrators who are also instructional leaders, working closely with teachers in using the evaluation information to help teachers improve their subject knowledge and pedagogical skills in targeted areas. Also, it implies that school instructional leaders encourage and support teachers in working with each other to produce better results for all students in the school. Finally, it requires that school administrators build in time for professional development and teacher collaboration within the school day and year. If teachers are not provided with instructional leadership and professional development opportunities, they cannot be expected to acquire new skills, improve their teaching, or build the teacher professional communities needed to produce high levels of student learning.

Sixth, effective teachers have authority to use their best professional judgment in determining what is needed to obtain results against the agreed-upon standards. Without authority, for example, to choose among different teaching methods, teachers cannot be held responsible for failing to accomplish the student learning goals. Similarly, school leaders and school management teams need to have the professional autonomy to provide teachers with the material and technical resources necessary to support teachers in meeting the agreed-upon expectations. Furthermore, school leaders and school management teams need to have the authority and resources to reward high-performing teachers and to penalize low-performing teachers. Without professional autonomy and authority, teachers, as the educational actors with the greatest knowledge and understanding of their students' needs, are unlikely to be able to promote student learning to the best of their ability.

Finally, because individuals respond to a variety of incentives, multiple incentive policies should likely exist to attract and retain highly qualified individuals into teaching and to get teachers to work hard to raise student learning. These incentives may include adequate relative salaries (i.e., salaries that are at least as high as those available to individuals with similar characteristics in other professions); higher salaries

for better-performing teachers; higher salaries for teachers working in more difficult conditions (e.g., remote areas, disadvantaged populations); a well-defined teacher career with advancement opportunities; public recognition and prestige for excellent teachers; a real threat of losing one's job as a result of inadequate performance; and a relatively tight client relationship, where teachers have to regularly convince someone (principals, parents, or communities) that they are performing adequately.

In what follows, we discuss evidence from government reforms of various teacher incentives in Latin America, focusing on their impact on teaching quality and student outcomes. In these discussions, we ask the reader to keep in mind that incentives are only one component of a well-designed system to promote teaching and learning. As a result, the extent to which teacher-incentive reforms have an impact on teacher quality and student learning will depend on the extent to which other components of the broad system affecting teachers are also developed.

Education reforms as teacher-incentive reforms: Case studies included in this report

Just as there are many types of teacher incentives, education reforms may affect teachers even if not originally planned as teacher-incentive reforms. Policy changes in the level or structure of compensation, as well as changes in teachers' professional autonomy, can significantly affect the teaching profession. The studies prepared as background papers for this report approach the question of the effect of teacher-incentive reforms on teaching quality and student learning from various different angles. Each background paper explores one or several aspects of a teacher-incentive reform in Latin America and attempts to identify its impact on teaching quality and student learning.

Country case studies for this report were chosen where education reforms were implemented that had likely effects on teachers. As explained above, because teacher-incentive reforms are politically challenging and difficult to implement, many countries have shied away from changing the prevailing structure of teacher incentives. Our methodological approach entails using existing data and econometric techniques to shed light on the impact of the reforms on teacher quality and incentives. Our analyses are limited by the quality of the data available, and we use alternative econometric and statistical tech-

Box 1.1 Components of an Effective System for Attracting, Retaining, and Motivating Highly Qualified Teachers

- 1. Adequate infrastructure and teaching materials; basic resources**
- 2. Clarity in what is expected from teachers**
 - what knowledge and skills teachers need to have
 - what behavior and performance teachers should exhibit
 - what results, in terms of student learning, teachers are expected to accomplish
- 3. Clear, transparent rules for teacher selection and purposeful assignment to schools**
 - how teacher selection and assignment affects teaching and learning
- 4. Monitoring and evaluating teaching and learning**
 - what knowledge and skills teachers have
 - what behavior and performance teachers exhibit
 - what students are learning and at what rate they are making progress
- 5. Instructional leadership and professional development for supporting teacher professional communities**
 - school administrators as instructional leaders
 - using information from teacher evaluation to develop professional development opportunities tailored for each teacher and teams of teachers
 - built-in time for teacher professional development and teacher collaboration
- 6. Professional autonomy and authority**
 - teachers can use their best professional judgment in the classroom
 - school administrators have professional autonomy to provide teachers with support, in both material and technical resources
 - school administrators have authority to reward high-performing teachers and penalize low-performing teachers
- 7. Effective teacher incentives**
 - adequate relative salaries
 - higher salaries for better-performing teachers
 - higher salaries for teachers working in disadvantaged areas
 - advancement opportunities throughout the teacher's career
 - recognition for excellent teachers
 - real threat of losing one's job for poor-performing teachers

niques in an attempt to overcome some of the shortcomings of the existing data.

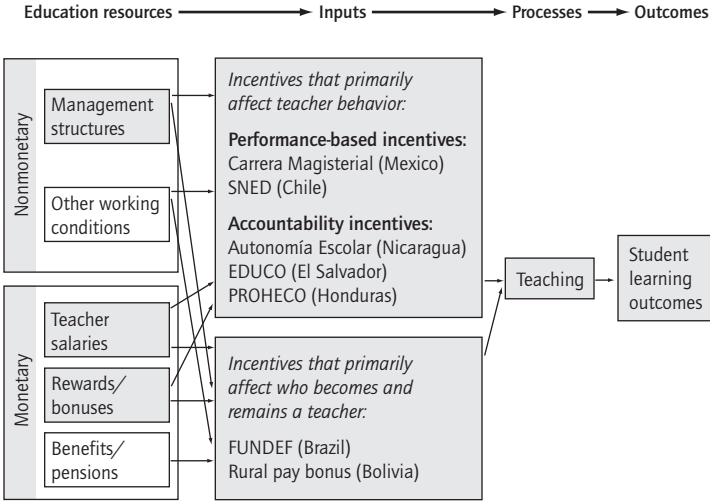
Conducting impact evaluations of education programs is challenging given the impossibility of knowing what would have happened to those affected by the program in the program's absence. For example, to understand the impact of school attendance on labor market outcomes, we would need to compare two identical individuals at the same time in the same place, one who attended school and the other one who did not. As this is impossible in practice, a challenge for the impact evaluation is to construct groups of individuals who can be convincingly compared. In this sense, for evaluation purposes, all participants of education programs should ideally be selected in a randomized fashion. Although in many cases randomized assignment to participation in education programs is not possible, creative ways of analyzing good data on education programs can yield results that are equal in quality to those from randomized trials. This approach is taken in the background papers for this report.

As differences in salary between teachers and nonteachers can have a great impact on who chooses to enter the teaching profession, we first discuss how well teachers are paid relative to comparable workers in other occupations. One component of our study involves analyzing how well teachers fare in terms of salaries when compared with other workers in 17 Latin American countries. Then, we explore the impact of seven teacher-incentive reforms in countries throughout the region. Figure 1.3 graphically displays the reforms addressed in this report and situates them within the framework presented in Figure 1.1. These reforms include changes to education finance systems, reforms to teacher compensation, and the introduction of school-based management.

In 1998, Brazil instituted *Fundo de Manutenção e Desenvolvimento do Ensino Fundamental e de Valorização do Magistério* (Fund for the Maintenance and Development of Basic Education and Teacher Appreciation, or FUNDEF), an education finance equalization law designed to reduce spending inequality and, at the same time, guarantee a minimum level of spending per student in primary schools. Importantly, the reform mandated that 60 percent of the revenues generated by FUNDEF be used for teacher salaries. The resulting changes in teacher salary level thus altered the incentives to teachers.

In Bolivia, demographic changes have resulted in a natural experiment, in which schools in urban areas are sometimes labeled as rural schools and thus teachers receive a financial incentive—a bonus for teaching in rural areas. This situation, in which schools in close prox-

Figure 1.3 Teacher-Incentive Reforms Analyzed in this Report Categorized by Main Area of Influence



imity have teachers who are paid differentially, allows us to evaluate whether the higher salaries for teachers who otherwise have identical working conditions result in more motivated teachers and thus increased student learning.

Other reforms are specifically designed to generate incentives to improve teacher performance. Chile and Mexico have both instituted performance-based incentives for teachers. In Chile, top-performing schools within predetermined groups earn a financial bonus that is distributed among the teachers in the winning schools. In Mexico, teachers can enroll in Carrera Magisterial, a teacher career scheme in which individual teacher salary increases are tied to student performance as well as other measures of teacher quality. As is frequently the case, these incentives can generate impact in multiple ways. They are designed to reward teacher performance in the classroom, but they can also impact teacher recruitment and retention by increasing teachers' promotion and earnings potential.

In several Central American countries, governments have instituted school-based management reforms that give local communities greater authority over schools in the hopes of increasing teacher accountability and, as a result, student achievement. These reforms can affect the

incentives faced by teachers by increasing the direct connection between schools (the service providers) and parents, communities, and students (the clients). For example, in many of these reforms, schools can select the teachers they hire and are free to dismiss them for poor performance. By increasing accountability between teachers and communities, school-based management reforms are designed to induce teachers to work better (e.g., attend regularly, show up on time, change teaching practices) and, thus, help students learn more.¹⁴

While understanding which reforms have a greater impact on achievement is the primary goal of this study, we also devote some effort to getting a better understanding of the political economy of education reforms and, in particular, the role of teachers' unions. As argued above, the political context has a large influence on the design and implementation of education reforms and, ultimately, on teacher quality and student learning.

Important components of a system for attracting and retaining good teachers are beyond the scope of this report. Examples of these include the issue of pensions, which in the majority of countries represents a substantial portion of teacher expenditures; teacher working conditions; and other benefits associated with the teaching profession, such as job stability and insurance. We leave these for future research. The rest of the report is organized as follows. In the next chapter, we summarize the main characteristics and findings from our research. This chapter is divided into sections on teacher compensation, performance-based pay, school autonomy, and the political economy context. A concluding chapter presents policy lessons and options deriving from this research.

¹⁴ The World Bank's *World Development Report 2004* introduced the concepts of short and long routes to accountability. In the former, clients and providers are connected directly, whereas in the long route, clients must use voice and voting as citizens to hold politicians accountable. In this framework, the Central American cases discussed in this report can be seen as examples of strengthening the short route to accountability.

Teaching, in particular, is one of the occupations which are widely believed to emphasize a strong sense of vocation: many practicing teachers say they are in the profession for reasons other than money, mainly having to do with their intrinsic desire to teach. However,... both prospective and practicing teachers are influenced by salary levels.

—Han and Rossmiller (2004, p. 83)

Education Reforms Affecting Teacher Incentives in Latin America: Summary of Findings

2

As detailed in the introduction, the incentives teachers face can impact teacher recruitment, retention, and day-to-day choices in the classroom. In this chapter, we present the main lessons and findings from the diverse studies conducted for this project. In the introduction, we argued that teacher incentives take multiple forms and may affect teachers in multiple ways. From the inspiration to help children in need to develop into caring and capable citizens, to opportunities for career and salary advancement based on student performance on standardized exams, teacher incentives range from personal internal motivations to highly structured and planned incentive reforms. Incentives

Box 2.1 The Background for This Report

This chapter summarizes the findings of nine analytical papers produced for a regional study on Teacher Quality and Incentives in Latin America, financed by The World Bank. Rather than synthesize or cite findings from previous work, here we focus on presenting new contributions and lessons resulting from this regional study. This report offers a comprehensive bibliography on the teacher incentive scholarship for those interested in learning more about the field beyond the work conducted for this study.

The analytical papers, plus a review of the literature on teacher incentives in the region and around the world, will be published in an edited volume entitled *Incentives to Improve Teaching: Lessons from Latin America* (Vegas, ed., World Bank, forthcoming). The following is a list of the papers conducted for this study and contained in the edited volume. Readers interested in the details concerning the methods, data, or precise findings of specific case studies presented here should turn to the relevant paper. This chapter summarizes papers 2 through 10. They are also listed in the bibliography.

1. "A Literature Review of Teacher Quality and Incentives: Theory and Evidence," by Ilana Umansky
2. "Are Teachers Well Paid in Latin America and the Caribbean? Relative Wage and Structure of Returns of Teachers," by Werner Hernani-Limarino
3. "Teachers' Salary Structure and Incentives in Chile," by Alejandra Mizala and Pilar Romaguera
4. "Teacher and Principal Incentives in Mexico," by Patrick McEwan and Lucrecia Santibáñez
5. "Arbitrary Variation in Teacher Salaries: An Analysis of Teacher Pay in Bolivia," by Miguel Urquiola and Emiliana Vegas
6. "Education Finance Equalization, Spending, Teacher Quality and Student Outcomes: The Case of Brazil's FUNDEF," by Nora Gordon and Emiliana Vegas
7. "Decentralization of Education, Teacher Behavior and Outcomes: The Case of El Salvador's EDUCO Program," by Yasuyuki Sawada and Andrew Ballard Ragatz
8. "Teacher Effort and Schooling Outcomes in Rural Honduras," by Emanuela Di Gropello and Jeffery H. Marshall
9. "Teacher Incentives and Student Achievement in Nicaraguan Autonomous Schools," by Caroline E. Parker
10. "Political Economy, Incentives, and Teachers' Unions: Case Studies in Chile and Perú," by Luis Crouch

can also affect teaching in different ways. Some incentives focus on attracting more talented candidates to the profession of teaching. Others address teachers' effort and behavior by, for example, encouraging them to work in rural areas or to improve their students' reading and math skills. Yet other incentives are designed to promote greater teacher retention, such as by increasing salaries as teachers gain more experience on the job.

The papers that inform this report cover a range of education reforms: those designed specifically as teacher reforms and those that, by their very nature, affect the incentives teachers face almost accidentally. The goals of this chapter are, first, to broaden and deepen an understanding of how education reforms affect teachers in Latin America, and, second, to shed light on how reforms can be designed and implemented to maximize their beneficial effects on teaching and learning. Aspects of many of the reforms detailed in this report are the subject of previous research. While this research informed the background studies prepared for this report, we do not attempt to report it here because of space constraints.¹⁵ We do, however, provide a comprehensive bibliography.

The structure of the chapter is as follows. The first section examines the incentives embedded in the fundamental characteristics of teacher compensation systems, including their salary level, in both absolute terms and as compared with other workers, and the structure of salary advancement and salary differentials. The second section focuses on what are typically thought of as teacher incentives, namely performance-based pay schemes. The third section investigates the incentives created by a nonmonetary teacher incentive: school-based management reforms. The final section looks not at a particular type of education reform but rather at how the general political economy of a country can affect the design and implementation of teacher-incentive reforms. In particular, this section examines the role of teachers' unions in establishing effective teacher incentives.

¹⁵ In addition, a number of governments have attempted to introduce reforms to teacher incentives, but have not succeeded in their implementation. An analysis of failed efforts to reform the incentives faced by teachers in Latin America is left for future research.

Teacher compensation affects teaching and learning

The introduction presented a series of factors that influence who becomes a teacher, whether they remain in the profession, and the work that they do in the classroom. These range from having the necessary skills and materials to knowing what is expected of them and how they will be evaluated. Key among these factors is the pay associated with being a teacher and how active and prospective teachers feel about their prospects for advancement. Salary level and structure are all the more important in Latin America, where there are few other remuneration mechanisms, frequently contributing only modestly to the wage level. This section discusses how salary levels—both relative and absolute—as well as salary structure affect teaching quality in Latin America.

How teachers are paid, both in absolute levels and relative to comparable workers, matters

As in other parts of the world, in Latin America there is a widely held belief that teachers are not well paid and that, in general, they earn less than they would in other professions. In the past decade, however, teacher salaries have risen considerably in much of the region. Recent empirical research has found that the extent to which a teacher may be well or poorly paid depends much on his or her own demographic and labor market characteristics as well as on those to whom he or she is compared.

How well (or poorly) paid teachers are depends on with whom they are being compared. A study of teacher salaries in 17 Latin American countries reveals that relative teacher salaries differ considerably depending on with whom teachers are compared and the methods used to make the comparison.¹⁶ Wages are a function of two components: the productive endowments of a worker and the price or value assigned to those endowments in a particular job. Determining whether teachers are well paid requires isolating the price effect and asking whether an individual with a certain skill and experience set

¹⁶ In this analysis by Hernani-Limarino (forthcoming), hourly wages of teachers and nonteachers were compared. The advantage of using hourly wages, rather than monthly or annual salaries, is that they take into account differences in the number of hours worked. This is particularly important when analyzing relative teacher salaries, as teachers often work fewer hours per week than do comparable workers in other occupations.

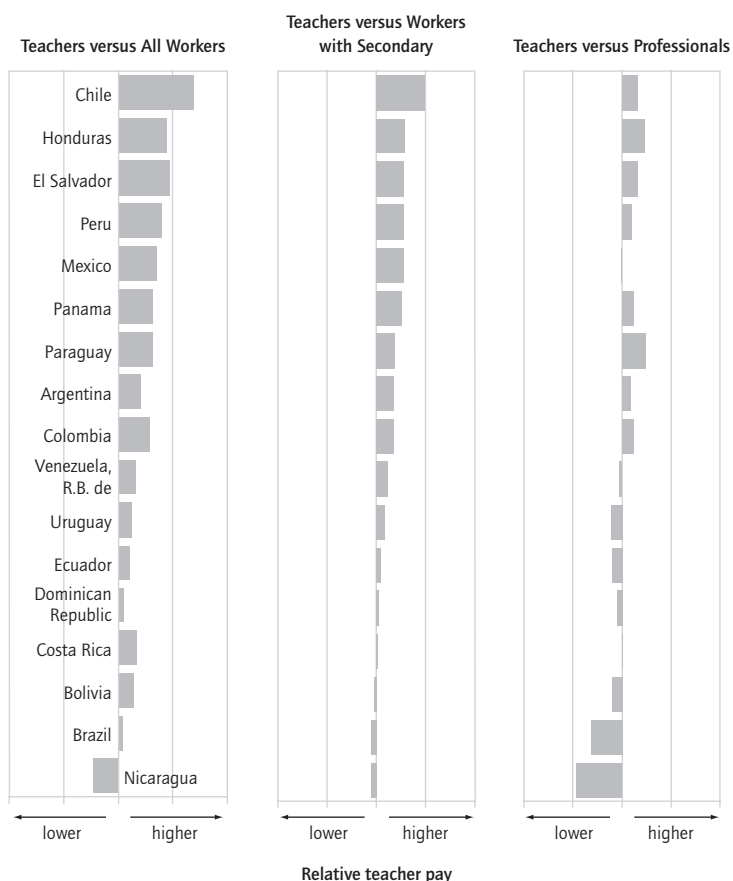
who works as a teacher will be paid more (or less) than an individual with an equivalent skill and experience set who works in a different occupation.

On the basis of this type of analysis, teachers in Argentina, Chile, Colombia, El Salvador, Honduras, Panama, Paraguay, and Peru are found to be, on average, paid more than comparable workers in other occupations. Teachers in Nicaragua earn lower average wages than do workers in other fields. But in Bolivia, Brazil, Costa Rica, Dominican Republic, Ecuador, Mexico, Uruguay, and Venezuela, whether teachers are well paid varies depending on the comparison group employed in the analysis. When teachers are compared with all other workers in their country, only teachers in Nicaragua fare poorly in terms of relative wages. However, when teachers are compared with all workers who have, at a minimum, completed secondary school, nonteachers in Nicaragua, Brazil, and Bolivia are, on average, better paid than teachers. If teachers are compared with workers in office, technical, and professional occupations, then nonteachers are better or equivalently paid in Costa Rica, Dominican Republic, Ecuador, Uruguay, Venezuela, and Mexico as well (see Figure 2.1).

This last comparison group—other workers in office, technical, and professional occupations—is probably the most appropriate comparison group because in most Latin American countries teachers are officially required to have postsecondary degrees either at special teacher training institutions or at universities. This third comparison group similarly is comprised of individuals who are likely to have attended postsecondary education institutions. Individuals in the previous two comparison groups presented in Figure 2.1 are likely to have significantly less education, on average, than teachers have. Compared with this third comparison group, teachers' hourly wages are higher in only approximately half of the 17 countries. Furthermore, as is evident in Figure 2.1, in those cases where teachers' hourly wages remain higher, they are comparatively less high than when either of the other two comparison groups are considered. That said, Figure 2.1 also shows that in most of those countries where teachers are paid less than comparable nonteachers, the pay differential is not great.

While an individual's decision to become a teacher and remain in the profession will depend on his or her perception of relative teacher salaries rather than on research findings, the empirical evidence indicates that teachers are generally not severely underpaid (with a few exceptions) and that their salary should not create any major disincentive for people to enter the profession. Importantly, the analysis conducted

Figure 2.1 How Well Teachers Are Paid Depends on to Whom They Are Compared (Conditional log wage differential between teachers and different samples of nonteachers)

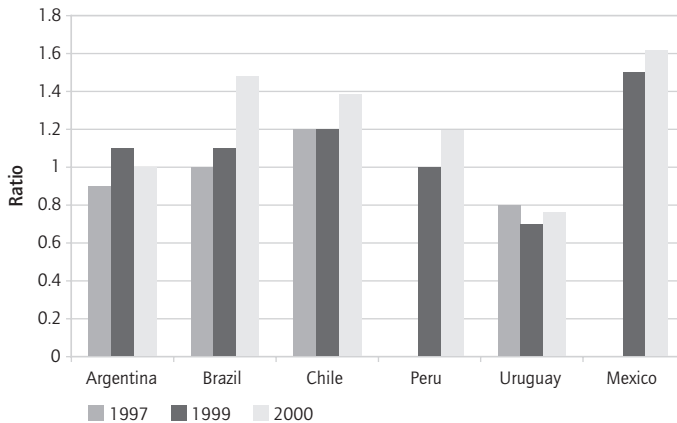


Source: Hernani Limarino (forthcoming)

for this report looked at hourly rather than annual salaries. Because teachers typically work fewer hours than do individuals in other professions (teachers generally have shorter work days and longer vacations), their monthly salaries may be lower, which may thus discourage some from entering or remaining in the field.

Nonetheless, in spite of substantial increases in enrollment in primary and secondary education in many Latin American countries, none of the countries in the region have experienced severe teacher shortages in recent years, which suggests that teacher salaries are not so

Figure 2.2 Ratio of Real Primary School Teacher Salaries (with 15 Years of Experience) to GDP per Capita (1997–2000)



Source: UNESCO Institute for Statistics (UIS)

low as to discourage individuals from choosing to become teachers.¹⁷ In part, this absence of teacher shortages may be due to recent increases in average teachers' salaries in several countries of the region (see Figure 2.2). As will be discussed later in the report, however, there is some concern regarding the qualifications of individuals who choose to become teachers. In those instances when teachers earn substantially lower relative salaries than do comparable workers in other occupations, this may lead qualified individuals to choose professions other than teaching.

*Changes in absolute teacher salary levels can also affect who chooses to enter teaching and how long they remain in the profession.*¹⁸ Although experts may disagree regarding the importance of the absolute level of teacher salaries in attracting and retaining qualified individuals to the profession, there is broad consensus that teacher salary level influences

¹⁷ Latin America now faces the daunting task of massively expanding secondary education, which, in 2000, had a net enrollment rate of 64 percent (World Bank, 2003b). At the same time secondary school teachers require more specialized and advanced subject-specific knowledge. While no acute teacher shortages have developed to date in Latin America, the challenges faced in recruiting and retaining sufficient numbers of qualified and talented secondary school teachers may require higher salaries.

¹⁸ By absolute salary level we refer to the actual sum a teacher receives, rather than his or her pay relative to other workers.

who enters the field and how long they remain in teaching. At the same time, research indicates that other working conditions and regulations can counteract or amplify the influence of wages on teachers.¹⁹

The case studies of Chile and Brazil conducted for this report offer some insight into this subject. In Chile, changes in wage levels were accompanied by changes in the overall number as well as the quality of applicants to the teaching profession. Teachers experienced a 32 percent decline in real salaries in the 1980s as a result of government budget reductions. Over this same period the number of students entering education programs dropped 43 percent.

In the 1990s both trends reversed. Between 1990 and 2002 real teachers' salaries increased 156 percent. During this period, the government launched a publicity campaign to encourage students to become teachers and created a scholarship program for outstanding students to study pedagogy. Simultaneously, the government allocated substantial additional resources to schools, thus improving overall working conditions for teachers. While how each of these efforts separately affected incoming education students remains unclear, during the same period, there was a 39 percent increase in the number of education students and the average score for applicants to education programs increased 16 percent. This improvement in applicant quality did not take place across all degree programs, such as engineering, where the average entrance exam score remained more or less constant. These patterns suggest that changes in salary level can impact an individual's choice to become a teacher.

There is also limited evidence that salary level can have a beneficial impact on student outcomes. In Brazil, a finance equalization reform that targeted redistributed funds to teachers resulted in smaller class sizes, fewer over-aged children in primary and secondary schools, and a diminishing gap between high- and low-performing students.

Brazil is a vast country characterized by large inequalities in educational spending and educational outcomes. These inequalities exist between states and also between the different municipalities within each state. The FUNDEF reform, implemented in 1998, is a national finance equalization reform for primary education in which each state

¹⁹ Loeb and Page (2000), Kingdon and Teal (2002), and Murnane and others (1991) suggest that salary levels are critical to teacher recruitment, retention, and quality. Others, such as Bennel (2004), Hanushek, Kain, and Rivkin (2001), Hoxby (1996), and Ballou and Podgursky (1997), counter that other working conditions and considerations may be more important than salary level.

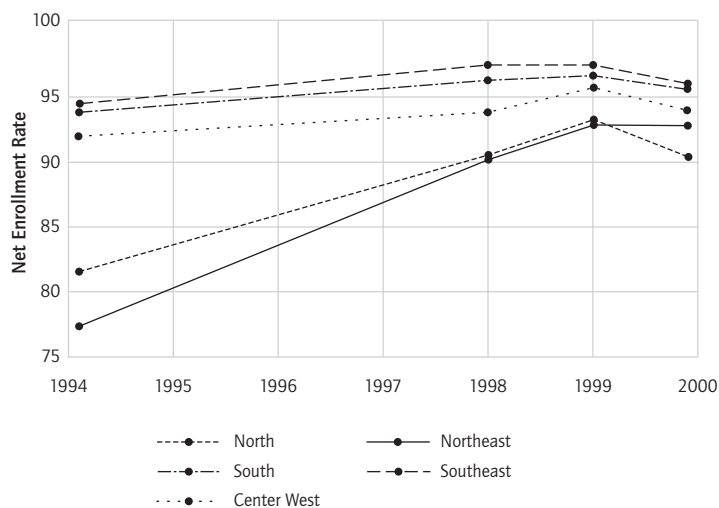
and municipal government in Brazil pools funds at the state level that are then redistributed equally, on a per-student basis, to each governmental education authority (state and municipal). While the FUNDEF accounts do not pool all educational funding, they do ensure that primary education spending is somewhat more equitable between state and municipal governments. Addressing a long-standing inequality in education finance, this reform tends to increase per-pupil education funding in municipality-run schools and decrease per-pupil education funding in state-run schools, particularly in the poor northern and northeastern regions of Brazil.

Furthermore, the federal government agrees to provide additional funds for any pooled account in which per-student funds fall below set spending floors. This additional mechanism is a first step toward addressing interstate inequalities in educational spending. These “top-ups” have benefited the poorer states of Brazil, primarily located in the Northeast.

Sixty percent of FUNDEF funds are earmarked specifically for teachers. These funds are used to hire new teachers, train underqualified teachers, and increase teachers’ salaries. There is evidence that the subnational governments that experienced increases in mandated per-pupil spending decreased average teacher-pupil ratios, which indicates that they hired new teachers (as there was no corresponding decrease in enrollment). A survey carried out by the Brazilian Ministry of Education shows that salaries increased 13 percent in the first year of FUNDEF alone. Salaries increased most significantly in municipality-run schools (18.4 percent) and in the poor northeastern states of Brazil (49.6 percent), the two main constituencies that benefited financially from the reform.²⁰ There was also a dramatic decrease in the percentage of teachers who completed only primary education. This improvement was most noticeable in the poorer regions of Brazil and in the earlier primary school grades where higher proportions of teachers had been underqualified prior to the reform. The reform, however, was introduced at approximately the same time as new legislation that required teachers to have at least a secondary education degree, and our research shows that the funds received from FUNDEF were not significantly associated with the steep decline in underqualified teachers. Nonetheless, some of the FUNDEF revenue was used to train and educate teachers.

²⁰ UNESCO 2000.

Figure 2.3 Inter-Regional Inequalities in Primary Net Enrollment Rates Continued Closing in Brazil with FUNDEF



Source: INEP (*Instituto Nacional de Estudos e Pesquisas Educacionais*) 1994–2000.

The FUNDEF reform and the changes it created in educational inputs have, in turn, generated changes in outcomes. More students are now attending school in the poorer states of Brazil as a result of the reform, specifically in the higher grades of basic education (see Figure 2.3). Higher school enrollment is very positive because it means that children from poor areas are completing more years of schooling. In addition, having teachers with higher education levels themselves is related to lower levels of over-aged students in the classroom. This inverse relationship between teacher education and over-age enrollment suggests that having qualified teachers helps students stay on track in school, repeat less, drop out and reenter less, and perhaps also enter first grade on time. Furthermore, analysis shows that low-performing students suffer most from inequalities in per-pupil spending. This finding may indicate that finance equalization reforms that decrease these spending inequalities may also decrease the performance gap between high-performing and low-performing students and between white and nonwhite students. The exact mechanism by which this is the case is not clear but it seems probable that giving teachers more competitive salaries, hiring more teachers, and ensuring that teachers have adequate education levels would particularly benefit low-performing and disadvantaged students.

Salary structure also affects teachers and the work they do

While teachers in Latin America are not always poorly paid when compared with other workers, often the degree to which a teacher is relatively well (or poorly) paid will vary based on certain characteristics of that individual. Indeed, public school teachers' salary structures are generally quite different from the salary structures of workers in other occupations.

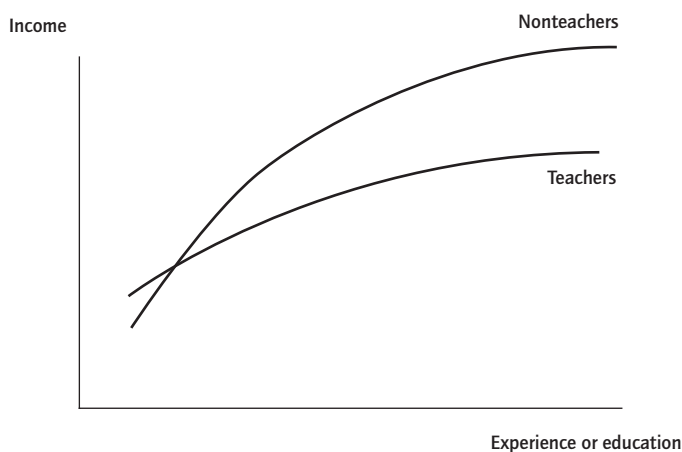
Public teacher wage scales are relatively flat and favor individuals with less education and job experience. The wage structures of public school teachers in most Latin American countries are set and implemented nationally (Brazil and Argentina being important exceptions).²¹ In most countries, teacher wage scales are different at the preprimary, primary, and secondary levels although they are rarely, if ever, different for teachers of different subject matters. In 17 Latin American countries examined for this report, the teacher wage structure is flatter and begins at a higher level than does the salary structure of nonteachers (see Figure 2.4). While throughout the region teachers receive higher base salaries (the part of their salary that is unrelated to any characteristic) than do comparable workers in other occupations, teachers receive lower returns than do nonteachers on improved characteristics, such as higher education or training and additional years of experience. This is true despite the fact that these two factors offer higher returns than any other factors in the teacher wage scale. Practically, then, teachers earn comparatively higher salaries than they would outside of teaching when they are at the lower end of the wage distribution—that is, have less education and experience—while teachers with more education and experience earn the same or less than they would in other professions.²²

The incentives created by such a teacher wage structure can be detrimental to the goal of attracting and retaining highly qualified individuals in the teaching profession. Indeed, previous research has found that individuals who choose to become teachers often were not strong students, are not interested in teaching as a career, do not have

²¹ In this section, we mostly refer to public school teachers' wage structures.

²² Note that teachers' pensions and other nonsalary benefits are not dealt with in this discussion. Pensions are, however, widely believed to be quite high compared with those of nonteachers, earned at an earlier age, and fiscally secure. High, early, and secure pensions may be a strong incentive for teachers to enter and remain in the field. This is not captured in Figure 2.3 and requires more research.

Figure 2.4 The Teacher Wage Structure Begins Higher But is Flatter Than That of Nonteachers
(Hypothetical diagram)



the appropriate characteristics to succeed as teachers, and, generally, are not qualified for the job.²³

In Chile, for example, the teachers' earnings profile begins at a higher level than that of nonteachers (average teacher salaries have more than doubled in the past decade).²⁴ However, the structure of teacher salaries has significantly less variation and is flatter than that of nonteachers. Teachers with more experience and education earn higher salaries, but the returns on these two characteristics are lower for teachers than for nonteachers. Importantly, while teachers' salaries are pegged almost exclusively to seniority and education, nonteachers' salaries tend to vary more based on evaluations of actual on-the-job performance.

Public sector teacher salaries also tend to be determined by fairly rigid scales based on very few factors. As mentioned above, in Latin America, the most common factors that determine progression along the salary scale are teacher education or training level and years of experience. In Bolivia, for example, teacher experience and education,

²³ See Villegas-Reimers (1998).

²⁴ Nonteachers in this case include all nonagricultural workers 15 years or older.

along with one other trait (the location of the school in which a teacher works), explain 90 percent of the variation in teachers' salaries.

This structure creates incentives for teachers to focus their efforts on increasing their seniority and their education or training level. There is evidence that these are, to a certain extent, appropriate incentives. Two of the most commonly found observable factors related to student educational achievement in Latin American and in studies of the determinants of student achievement in other developing countries are teacher education and training and teacher experience. In contrast, most of the literature on factors affecting student achievement in developed countries has found that teachers have an important impact on student learning, but not because of their measurable attributes—such as education and experience—but instead because of differences in their skills or teaching practices, variables that are very difficult to observe and quantify by researchers.²⁵

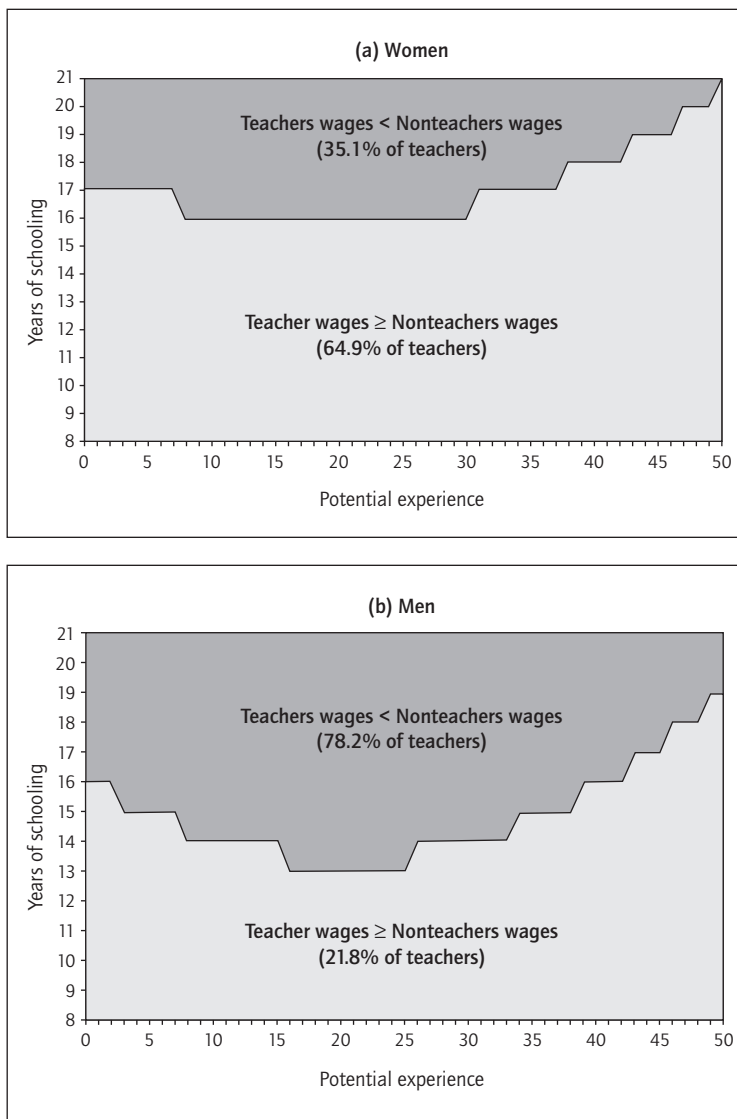
Rigid pay scales based on few teacher characteristics allow for little, if any, pay differentiation based on teachers' activities or effectiveness in the classroom and school. In Bolivia, for example, the Ministry of Education pays roughly half of all teacher remuneration toward lump sum payments that are not based on any teacher characteristic, let alone tied to teacher effort or effectiveness.

Wage gaps for women and rural workers are smaller for teachers. Another important feature of the teacher wage structure is that female teachers and teachers living in rural areas in Latin America do not face the same wage discrimination they would in other professions. Other factors being constant, women who are not teachers earn lower salaries than do men in all countries. The same is true for workers in rural areas: there is a wage premium for being in urban areas in all 17 countries examined for nonteachers. In contrast, the gap in wages between male and female teachers, as well as urban and rural teachers, is smaller than for workers in other occupations.

This unique feature of the teacher salary structure in Latin America is likely to create incentives for women and those working in rural locations to work as teachers. The high proportion of female teachers (for example, 70 percent of teachers in Chile) lends some credence to this hypothesis.

²⁵ See, for example, Hanushek (1986), Hanushek (1995), Rice (2003), and Velez, Schiefelbein, and Valenzuela (1993).

Figure 2.5 Although Female and Male Teachers Have a Relatively Small Gap in Compensation, Women in Chile Face Greater Incentives to Become Teachers Based on Relative Compensation (1998 figures).



Source: Mizala and Romaguera (forthcoming)

Women may be inclined to become teachers because they face less wage discrimination and because historically teaching was one of the few jobs available to women. But men may tend to avoid teaching because they can earn more as nonteachers. Evidence from Chile reveals that given the same educational background and years of experience, men earn less as teachers, particularly those with high levels of education. Women with up to 16 years of education (a college degree) earn more as teachers than as nonteachers throughout their career. Men, on the other hand, earn more as teachers only if they have 13 or fewer years of schooling (incomplete college). Figure 2.5 shows that in Chile, 65 percent of female teachers earn more as teachers than they would in another profession. The opposite is true for men: 78 percent of male teachers would earn more were they to work in another field.

Rural pay bonuses and other salary differentials. As discussed above, most of the variation in teachers' salaries in Latin America is derived from differences in education/training level and seniority. While in most countries seniority and education/training level determine the lion's share of salaries, there are also several countries where salary differentials are offered based on countless other factors. In Peru, for example, a typical teacher receives compensation for about 15 different "behaviors," and base salary accounts for only 5 percent of total salary.

In Bolivia, teachers receive extra pay for teaching near national borders, teaching bilingual students, receiving in-service professional development, performing administrative duties, and working in rural areas (see Table 2.1). Four distinct incentives are offered to teachers based on the location of their work alone. The rural teacher premium (captured in Table 2.1 as "Rewards to geography implicit in the Escalafón") offers an interesting view into some of the potential strengths and weaknesses of salary differentials.

As in many other countries, the rural teacher pay differential in Bolivia is intended to compensate teachers for the perceived hardship of living and working in a rural area. Rural and urban teachers in Bolivia, until recently, were educated in different teacher training (or normal) schools. As a result, prospective teachers had to choose, even prior to studying education, whether to become an urban or a rural teacher. For multiple reasons, most teachers prefer to work in urban areas. Without a salary differential, one would expect more teachers to apply to become urban teachers, which would result in stiffer competition in these schools and ultimately in more qualified teachers in urban schools.

Table 2.1 A Decomposition of the Teacher Wage Bill in Bolivia

Percentage		Category
47.0		Base payments
	40.0	Payments to an urban interim teacher without category
	4.3	<i>Economic</i> bonus
	2.5	<i>Pro book</i> bonus
12.5		Location of work
	7.7	Rewards to geography implicit in the Escalafón
	1.7	<i>Zone</i> bonus
	2.0	<i>Frontier</i> bonus
	1.1	<i>IPR</i> (bonus for rural area work)
15.2		Training (preservice)
21.9		Seniority (experience component of the Escalafón)
3.4		Other behaviors
	1.0	<i>Administrative</i> bonus
	0.3	<i>IMB</i> —Bonus for bilingual education
	2.0	<i>IAD</i> —Bonus for in-service training
100.0	100.0	Total

Source: Urquiola and Vegas (forthcoming).

Because rural and urban schools serve very different populations and operate in very different contexts, it is difficult to compare the quality of these two groups of teachers or ascertain the effectiveness of the rural pay differential. But because of recent urbanization and demographic growth within cities, some designated rural schools have been incorporated into urban areas. In these cases, urban and rural teachers work in neighboring schools, sometimes even the same school, with indistinguishable groups of students. This chance occurrence creates a situation in which teacher quality can be compared between teachers who are classified as rural (and thus earn higher wages) and those classified as urban.

Researchers found no meaningful differences between the test scores and other educational outcomes of students of urban-classified and rural-classified teachers with the same background characteristics. This finding suggests that the rural pay differential is not successful at attracting and retaining teachers that are more effective than average urban teachers. Further supporting this finding, rural teachers nationally are twice as likely as urban teachers to lack full teacher preparation and they are also more likely to abandon the profession.

Figure 2.6 A Peruvian Teacher's Pay Stub Includes 15 Forms of Extra Pay

MINISTERIO DE EDUCACION			
*OE USE			
FEBRERO – 2004 ACT/NOMB/TIT			
Apellidos	:		
Nombres	:		
Fecha de Nacimiento	:		
Documento de Identidad	:		
Establecimiento	:		
Cargo	:	PROF. POR HORA	
Tipo de Servidor	:	DOCENTE NOMBRADO	
Niv. Mag./Grupo Ocup./Horas	:	5/0-0/24	
Tiempo de Servicio (AA-MM-OO)	:		
Fecha de Registro	:		
Cuenta de TeleAhorro	:		
Leyenda Permanente	:		
Leyenda Mensual	:		
Régimen Pensionario	:	Ley 20530	

+basica	50.00	+d0073	92.67
+personal	0.04	+d0011	107.50
+ael25671	60.00	+ds065	100.00
+aeds081	70.00	-d120530	102.69
+tph	37.40	-derrmag	16.00
+du080	133.00	-sindicato	10.00
+refmov	5.00		
+du90	79.89		
+ds19	110.00		
+ds21	14.46		
+prepclas	23.85		
+reunifica	28.24		
+igv	17.25		

T-REMUN	929.30	T-DSCTO	129.69
MImponible	797.59	T-LIQUI	799.61
Mensajes :			
Revise el numero de su DNI, apellidos, nombres, y fecha de nacimiento, estos deben concordar con su DNI. Las correcciones comunicarl as de inmediato a su USE respectiva, de no hacerlo acarrear a problemas con su pago. Se están correctos obv ie este mensaje.			

Source: Peruvian Ministry of Education (Crouch, forthcoming).

In sum, both teacher wage levels and structure generate various incentives and disincentives. Higher absolute wages and competitive relative wages appear to attract more and better-qualified candidates to the teaching profession and may also result in less teacher turnover. Finally, the salary structure can be designed to reward or encourage specific choices, such as teaching in specific areas or staying in the profession. The effectiveness of specific salary differentials is still unclear, and in the case of Bolivia, appears questionable. The next section looks specifically at salary differentials or incentive reforms that attempt to reward teachers based on their performance in the classroom.

Characteristics and effectiveness of performance-based teacher incentives

This section focuses on two teacher-incentive reforms that link teacher compensation to student performance, implemented in Mexico and Chile in the 1990s. The Mexican program is an individual performance-based pay program that awards permanent promotions (and higher compensation) to teachers based on their rank on a number of factors. The Chilean program is a school-level performance-based pay program that awards a bonus to teachers in schools that outperform schools serving similar populations on a national student exam.

Both incentive mechanisms attempt to improve teaching and learning by evaluating teachers and schools based on their students' performance on standardized exams. But the reforms have several important differences: (1) the Mexican reform involves rewarding individuals whereas the Chilean reform involves rewards to all the teachers in a given school;²⁶ (2) the Mexican reform offers permanent salary increases while the Chilean reform offers only a temporary bonus; (3) the Chilean reform groups schools (and, thus, teachers) based on the types of student population they serve, while the Mexican reform does not distinguish among teachers serving students from different backgrounds; and (4) the size of the incentive is much larger in the case of Mexico where teachers can receive up to quadruple the base

²⁶ There has been substantial debate over the relative strengths and weaknesses of individual versus school-based merit pay incentives. Murnane and Cohen (1986) wrote an influential paper on this subject.

salary, whereas in Chile the incentive offers between 5 and 7 percent of annual average salaries.

Have incentive reforms improved teaching and learning?

Mexico's Carrera Magisterial Program, which began in 1993, created a means by which teachers can move up consecutive levels of higher pay based on year-long assessments of a series of factors, including their professional development and education, years of experience, a peer review, and, importantly, their students' performance. The purpose of the reform was to establish incentives for teachers to improve their qualifications and effectiveness in the classroom, and to create a means by which teachers could receive promotions without being promoted out of the classroom and into administrative positions. Nearly all eligible teachers in Mexico have participated in the program.

In the Carrera Magisterial Program, each factor is evaluated using a point system. The total number of possible points is 100, and the student performance component—measured by standardized test scores—gives a total of 20 possible points. Teachers' scores are sent to state education offices, and teachers are awarded promotions at the state level based on a state-established cut-off point each year. Since the 1999–2000 school year, there has been a national minimum cut-off point of 70 points.

The size of the bonuses offered by Carrera Magisterial are quite substantial, amounting to between 24.5 percent of teachers' base wage for the first promotion, up to 197 percent of base wage for the highest (fifth) promotion. If effective, Carrera Magisterial could motivate teachers to increase their effort and effectiveness in the classroom and encourage more promising and capable individuals to enter and remain in the teaching profession.

While it is a voluntary, nationwide program, two qualities of the program design allow for investigation into the programs' effectiveness at improving student performance. First, because of the 70-point cut-off level, teachers with different background characteristics face very different levels of incentives to improve their students' performance. Many teachers, whose education levels are low or who have few years of experience, could not reach the cut-off point even if they were awarded all 20 of the possible points for student performance. Teachers who are relatively close to the 70-point cut-off level, on the other hand, face considerably higher incentives than any other group of teachers. Second, because cut-off points are ultimately decided by

states and their levels therefore may vary, teachers in certain states face much larger incentives than their colleagues in other states. These two design mechanisms were exploited to study the impact of the reform on student performance.

Despite its promise, there is no apparent effect of the Carrera Magisterial Program on improving student performance as measured by a standardized exam. Teachers who face greater incentives either because they are in states with lower cut-off levels or they themselves are close to the 70-point cut-off level do not tend to have students with higher achievement. While test scores do not capture the spectrum of ways in which teaching and learning can improve, the fact that Carrera Magisterial measures test scores specifically—thereby creating a strong incentive for teachers to focus on their improvement—and that, nonetheless, test scores have not gone up under the reform suggests that it is unlikely that any major unmeasured improvements in Mexico's classrooms have resulted from the reform.

In Chile, results of a teacher-incentive reform are slightly more hopeful. The Sistema Nacional de Evaluación de Desempeño de los Establecimientos Educacionales (National System of School Performance Assessment or SNED) was implemented in 1996 and offers monetary bonuses to schools that show excellent performance in terms of student achievement. Schools are divided into homogenous groups so that schools are in competition only with other schools serving similar groups of students in similar settings. The bonus is awarded to the top-performing schools serving 25 percent of total enrollment in each of the nation's regions. It is offered once every two years, and has now been offered five times. Ninety percent of the bonus awarded to the school is divided among each winning school's teachers. Each teacher, in turn, receives what has typically amounted to one-half of one month's salary, or between 5 and 7 percent of a teacher's annual salary. The school director determines the use of the remaining 10 percent of the bonus.²⁷

Among schools with relatively fair chances of receiving SNED, only in the most recent available application of SNED did these schools have better student performance than prior to SNED.²⁸ Nonetheless, when

²⁷ School directors report that they commonly distribute the remaining 10 percent among the teaching staff.

²⁸ While there have been five applications of SNED thus far, Mizala and Romaguera (forthcoming) analyzed only three applications in their background paper for this report. They exclude the first application of SNED because the methodology used to reward schools was different in the first application. They also exclude the most recent SNED application because results had not been released at the time of writing.

the data from the three available and comparable SNED applications are compiled, there is an improvement in student performance in this same group of schools. Although impact evaluations of SNED are difficult and rare, this provides some preliminary evidence that the incentive has had a cumulative positive impact on student performance for those schools with relatively good chances of winning the award.

Previous literature on the impact of teacher-incentive reforms specifically, and on incentives in general, has documented various adverse or unintended consequences of such reforms. These include increased cheating, encouraging (or forcing) low-performing students to drop out, “teaching to the test” to the detriment of other subjects and skills, providing out-of-school paid test tutorials, and even increasing students’ caloric intake on the day of exams.²⁹ Neither the study of Carrera Magisterial nor that of SNED examined the precise behavioral responses on the part of teachers or students that explain any changes in student performance. In the case of Carrera Magisterial there were no significant differences, making the issue irrelevant. But in the case of Chile, though there is evidence of improved student performance, particularly in the fourth round of the award, there is no information about the mechanisms whereby student performance increased.

What explains the lack of evidence of impact of the Carrera Magisterial Program and the limited evidence of impact (in only one of three rounds) of SNED? To at least some extent, the limited impact seems to come from flaws in incentive design. Both SNED and Carrera Magisterial involved carefully designed incentives. By highlighting the flaws in their designs, we underscore the difficulty in designing effective reforms.

Incentive design and implementation are key to effective impact

The three most significant design flaws revealed in the Mexican and Chilean cases, as well as in the Bolivia rural pay bonus discussed earlier, are that (1) only a small proportion of teachers may face greater incentives to improve learning in their classrooms (most teachers either receive the award automatically or have virtually no chance of receiving it); (2) the size of the award may be so small that teachers feel it is not worth their while to try to improve student performance and may

²⁹ See, for example Glewwe, Ilias, and Kremer (2003), Clotfelter and others (2004), Koretz (2002), and Jacob and Levitt (2003) for more evidence of the negative behavioral reactions to and manipulations of teacher-incentive mechanisms.

instead focus on easier or more lucrative ways of increasing their salary; and (3) the award may not be sufficiently linked to actual teacher performance.

Too few teachers have any real chance of receiving the reward. Both the Mexican and the Chilean programs were designed to reward effective teachers whose students perform well either absolutely (in the Mexican case) or relatively (in the Chilean case) on standardized exams. Yet in both cases it turns out that most teachers could probably not receive the award even if their students were exceptionally successful on the exam. Reward incentives work only to the extent that people feel motivated by the belief that with effort they can win the reward. In Mexico and Chile, large proportions of teachers probably understand that because of their background characteristics (Mexico) or the school they work in (Chile) they face little or no chance of receiving the reward even if they work extremely hard.

In the case of Carrera Magisterial, only 15 percent of teachers have the background characteristics such that improving student performance could allow them to receive the promotion. Eighty of the 100 total points come from teachers' education, experience level, professional development courses taken, their own performance on an exam, and a peer review. While most of these factors are associated with higher student performance, rewarding them is not a direct incentive for teachers to improve their teaching. In addition, we have already seen that several of these factors are already heavily emphasized in salary scales. Teachers are well aware of the point system and can relatively easily estimate their points. If teachers cannot accumulate at least 50 points from these factors, then they cannot receive the reward even if they receive the full 20 points for student performance.

A related problem in the Mexican reform is that absolute test scores are used rather than comparative group test scores. It is surely much harder for students from poor families, illiterate families, or families with little education to perform well on national exams. Non-native Spanish-speaking students also face a greater challenge. Teachers of these groups of students may face lower incentives to improve their teaching as they may decide that the effort needed to try to compete with teachers from more affluent schools is not worth the potential reward.

Not only do most teachers face little or no incentive to improve their teaching because of the Carrera Magisterial Program, but the

point system, as it is currently designed, places a heavy bureaucratic burden on the national and state education offices. Almost all eligible teachers sign up for the program, as it requires little effort on their part. As a result, the government ends up having to collect a substantial amount of data for huge numbers of teachers who have little chance of receiving the promotions.

In addition, some teachers under Carrera Magisterial receive the promotion with little or no effort. For the first year or two of the program, nearly all participating teachers were awarded the first-level promotion simply to spread enthusiasm for and participation in the reform. While this objective may have been accomplished, it may not have been a cost-effective means of spreading awareness of a reform whose primary goal is to improve teaching and learning. In addition, there are some teachers whose education level and experience is so advanced that they exceed the cut-off point without needing to improve their teaching at all.

The Chilean SNED program has similar weaknesses. Fifty-one percent of schools in Chile have always ranked poorly among their homogenous group and have never been rewarded by the SNED Program. It is likely that most of these schools are well behind the more effective schools in their homogenous group and face very little probability of receiving the reward in the future. Teachers at these schools most likely do not feel motivated to improve their performance; some may even feel discouraged by their position and the program may have a negative impact on their performance. At the other end of the spectrum, about 2 percent of schools won the SNED award in all three rounds and are such excellent schools that teachers probably do not feel any need to improve their performance in order to win the award.

With only 15 percent of teachers in Mexico and less than 50 percent of schools in Chile facing increased incentives to improve their teaching despite the presence of national incentive programs designed to improve teacher performance, there is a clear problem in the reach of the incentive, especially with respect to teachers in poor-performing schools in Chile and teachers with little education and experience in Mexico. Sadly, it is these very groups of teachers who tend to be least effective and are most in need of incentives.

Reward size may not be large enough to stimulate improved teacher effort and performance. In both Chile and Bolivia, teacher incentives

amount to very little of teachers' total remuneration. Teachers in both countries may perceive that the added effort or hardship required to receive the bonus is not worth the potential reward. As mentioned earlier, in Chile, SNED amounts to only between 5 and 7 percent of a teacher's annual salary. Meanwhile, seniority amounts to close to 30 percent of a teacher's salary once he or she has worked for 20 years. Seniority is the surest way of earning more money as a teacher.

Similarly, in Bolivia the incentives that reward teachers for choosing to teach in rural areas, work with bilingual students, or enroll in in-service professional development amount to very little of teachers' total pay. The bilingual education bonus is, on average, only 0.3 percent of a teacher's annual salary and the bonus for rural work is only 1.1 percent of annual pay (this bonus is different from the salary differentials based on geographic labeling of schools discussed above). It is unlikely that these bonuses are sufficient compensation for the hardships and additional effort that they entail. As in Chile—and most if not all other Latin American countries—the highest monetary returns are for seniority and education level.

Incentives may not reward actual or sustained improvements in teaching and learning. The incentives discussed in Mexico and Bolivia promote the behavioral changes they target only to a limited extent. In Bolivia, as was mentioned above, higher pay is offered to teachers who work in rural locations. But many teachers who receive this higher pay no longer work in rural schools. Some work in formerly rural schools now located in growing towns and cities, while others have switched to urban-designated schools but continue to receive their higher salaries. While it is not clear from the study what percentage of rural-trained teachers are in this situation, this does highlight a troubling loophole in which teachers are being rewarded for a behavior they are not exhibiting.

In Mexico, the problem is equally troubling. Teachers undergo an evaluation for one year and, if rewarded, receive substantially higher pay for the rest of their career. This means that teachers may have little motivation to improve their teaching once they have received their promotion. Furthermore, they may wait to test their students until they have a particularly bright or motivated class of students. This may mean that they do not face incentives to teach well when they have students with a lot of learning needs and difficulties. Again, the students with the most need may suffer the most under this system.

The impact of school-based management on the incentives teachers face

In several countries, governments have been decentralizing school management to local communities. These reforms have wide-ranging goals derived from the idea that schools will meet the needs of students and communities better if they respond and are accountable directly to those stakeholders. These education goals frequently include improved education quality, greater relevance, expanded access, and increased efficiency. School-based management has proven promising in many of these areas. Yet the policy has also at times been problematic. Research indicates that school-based management policies can increase educational inequality between communities of differing income levels and management capacities.³⁰

With school-based management reforms only a decade or less old in most countries, policy makers, educators, and researchers are still trying to understand how and under what circumstances school-based management is an effective policy to improve education. Some research has been conducted on decision-making power in decentralized systems. But one critical component of how school-based management can improve education that has hardly been addressed is how it affects teachers and the work that they do.

Many hypothesize that school-based management generates several incentives and conditions that can improve teacher quality and teaching. These include greater accountability to local stakeholders, direct communication between communities and schools concerning their needs and interests, and more flexible and meritocratic pay and advancement structures associated with closer-to-the-source evaluation and weaker teachers' unions.

School-based management can make teachers more accountable to the needs and interests of the families of their students, particularly when local school boards or parent associations have the authority to hire and fire teachers or set teachers' wages. This very direct control over teachers' work generates strong incentives for teachers to satisfy community interests and could improve teachers' work and expand student learning.

³⁰ Arnove (1994), Gunnarson and others (2004), and McGinn and Welsh (1999) discuss some of the possible negative implications of school-based management on educational equity.

In addition, having local school boards consisting of parents, community members, and students can improve the lines of communication between teachers, school managers, and administrators and the communities they serve. In centralized education systems communication is indirect, often filtering imperfectly from communities to education ministries and then back to principals and teachers. The direct and localized communication in locally managed schools could also result in improved teaching and learning, particularly if the alternative, centralized system is inefficient and ineffective.³¹

School-based management is also generally associated with weaker teachers' unions as often teachers in these schools are subject to local decisions rather than national guidelines established through collective bargaining. Some research has indicated that weaker teachers' unions may also improve teacher quality and teaching because countries with strong teachers' unions typically determine teachers' positions according to rigid pay and advancement structures such as seniority and education level rather than on the quality of the work each teacher exhibits.

The possible incentives generated through school-based management reforms could act as "sticks" or as "carrots" to teachers. If teachers perceive local management as disempowering and increasing their vulnerability to local stakeholders, then school-based management could act as a "stick" incentive. If, however, the decentralization of authority successfully gives teachers more autonomy and ownership in their schools, school-based management could create "carrot" incentives.

An alternate hypothesis would be that school-based management does not, in most instances, improve teachers and their work. Arguments include that weakened teachers' unions and centralized guidelines destabilize teachers' work and make them increasingly disempowered and dissatisfied. Also, locally managed schools in communities that lack experience and ability to manage their school are vulnerable to increased mismanagement and corruption. These schools may not receive the support that they need from centralized authorities.

In the end, as we saw with performance-based teacher compensation schemes, the extent to which school-based decentralization improves teaching depends largely on the details of the decentralization

³¹ Just as decentralization can create incentives to improve teaching and learning, so too strong monitoring and supervision from a centralized authority can motivate teachers to perform better.

reform and the national and local contexts in which the reform is played out. This is evident in three different school-based management reforms in Central America.

Three cases of school-based management reforms in Central America

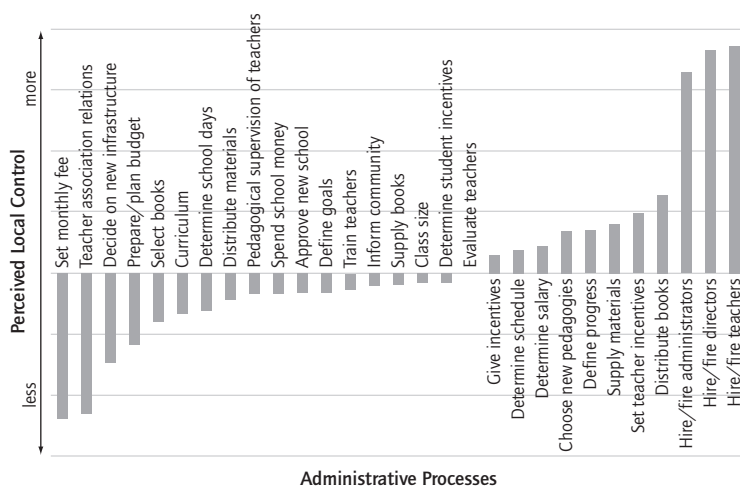
Honduras, Nicaragua, and El Salvador face many common challenges. All are small, poor countries with large rural populations and highly unequal divisions of wealth. Nicaragua and El Salvador both suffered devastating wars in the 1970s and 1980s. Because of poverty, weak governments, and civil strife, all three countries face severe access and quality limitations in their education systems, especially for poor and rural communities.

In response to these urgent educational needs the three Central American nations implemented school-based management reforms. The first country to experiment with this type of decentralization reform was El Salvador. In the 1980s many poor rural communities were entirely cut off from central services because of the civil war. Lacking functioning schools, communities decided to create and run their own local schools. After the war ended the central government acknowledged the success of these schools in cost-effectively providing education in remote areas and decided to expand the program. Schools in the Programa de Educación con Participación de la Comunidad (Education with Community Participation Program, or EDUCO Program) are managed by community associations with block grants provided by the central government.

Honduras implemented a similar reform, Proyecto Hondureño de Educación Comunitaria (Honduran Community Education Project, or PROHECO), also aimed at expanding and improving cost-effective, community-run primary and preprimary schools in rural isolated areas of the country.

The reform in Nicaragua was different from those in El Salvador and Honduras. Nicaragua's *Autonomía Escolar* (School Autonomy) was aimed initially at urban secondary schools and in particular at schools with higher-than-average resources. Unlike in Honduras and El Salvador, where PROHECO and EDUCO schools are built in communities that previously did not have schools, autonomous schools are preexisting schools that simply switch status. By 2002, 63 percent of Nicaraguan students and 37 percent of primary and secondary schools were autonomous.

Figure 2.7 EDUCO Stakeholders Report Less School Control over Administrative Processes Than Their Traditional School Counterparts in Many Instances



Source: Authors' graphical representation of EDUCO data, as presented in Sawada and Ragatz (forthcoming).

Decentralization reforms do not always result in community control or meaningful decision-making authority

To determine whether locally managed schools increase incentives for teachers to perform well by increasing their accountability to local communities, it is first important to ascertain the extent to which meaningful authority is decentralized to the school level. Results on this question are mixed.

Schools that participate in school-management reforms do not always have more autonomy than traditional schools. In El Salvador, local stakeholders in EDUCO schools were more likely than those in traditional schools to report that regional and national authorities had the greatest influence over administrative processes in 17 of 29 decision areas (see Figure 2.7). While these responses are subjective, they do suggest that autonomous schools do not have significant control over many areas of educational decision making.

Nonetheless, in El Salvador local stakeholders were far more likely to report that hiring and firing decisions are determined at the school level. Given the important role that direct teacher hiring and firing by school administrators and communities plays in generating incentives for improved teacher performance, the authority to hire and dismiss

Table 2.2 Teachers in Locally Managed Schools Are Different Than Their Traditional School Counterparts, but the Differences Are Not Consistent across Countries

	Honduras	Nicaragua	El Salvador
Educational attainment	Less	No difference	More
Years of experience	Less	No difference	Less
Work hours	More	—	More
Absences/school closings	Less	—	Less
Uses alternative pedagogy	Less	—	—
Salary	Less	—	Less
Receives Incentives	—	More	—

teachers could potentially have a strong impact on the quality of teaching.

Decentralization reforms appear also to alter the distribution of authority between local stakeholders. In El Salvador, teachers and especially parent associations report high levels of influence relative to traditionally managed schools. In contrast, school directors in that country report significantly less influence than do directors in traditional schools. The same is true for Honduras. In the EDUCO and PROHECO reforms, local authority appears to have shifted from school directors toward parents and, to a lesser extent, teachers.

In contrast, in the Nicaraguan reform, much of the decentralized authority was of an administrative or financial nature rather than being curricular or pedagogical. Furthermore, studies indicate that rather than empowering school boards, much of the localized power has gone directly to the school principal. Parent associations and teachers report little decision-making power in autonomous schools.

These particularities of what power is decentralized and how it is then distributed at the local level are bound to have implications on the ability of communities to communicate their interests, create incentives for teachers, and evaluate teachers' work.

School-based management affects teachers and classrooms

In all three countries locally managed schools have important differences compared with traditional schools. But these differences are not consistent across schools or across countries (see Table 2.2). Indeed, in decentralizing authority to the local level, there will almost necessarily be greater variation between schools as local school associations

or principals make decisions and manage their schools. Nonetheless, the rules that govern decentralization have implications that may reach across schools and countries.

For instance, in both Honduras and El Salvador, decentralized schools are closed less frequently than are traditional schools. Evidence from El Salvador suggests that this is due in large part to fewer union-organized work stoppages. Teachers in El Salvador are also less frequently absent in decentralized schools. There is some evidence that teachers in Honduras may also be less frequently absent because of union participation although they are more likely to be absent because of teacher professional development. Because more class time is consistently found to improve student learning, it is probable that these characteristics are an improvement over traditional schools. These changes in teacher behavior are likely to be, in part, the result of more localized management, discussed above.

At the same time, union-instigated stoppages are usually due to important concerns among teachers regarding their pay and working conditions. Indeed, PROHECO teachers in Honduras are more likely to report being unsatisfied with their salary level and are, in general, paid less than teachers at traditional schools. These differences may have a negative impact on teacher quality and teacher behavior.

It is possible that the lower wages and more difficult working conditions of teachers in EDUCO and PROHECO schools discourage talented teachers from choosing to work in these schools.³² In Honduras and El Salvador, teachers in community-managed schools have fewer years of experience than those in traditional schools and receive inferior salaries. In Honduras, PROHECO teachers additionally have fewer years of schooling and report facing significantly more problems in receiving their salary on time. In Nicaragua, by contrast, where autonomous schools were preexisting and are mostly urban, teachers have roughly the same education and experience level.

There are also differences between locally managed and traditional schools in teacher reports of how many hours they work at the school. In El Salvador, teachers in EDUCO schools report working more hours than their colleagues in traditional schools. The additional hours worked by EDUCO teachers may be due, in part, to greater time spent meeting with parents. In Honduras, there is also limited evidence that

³² El Salvador's Ministry of Education has made an effort in the past few years to increase EDUCO teacher salaries to comparable levels with conventional school teachers (World Bank 2005).

PROHECO teachers may spend fewer hours on administrative tasks and more hours teaching. In Honduras, PROHECO teachers also assign more homework and have smaller classes than in similar non-PROHECO schools, two factors that are often correlated with higher achievement. These examples lend credence to the idea of greater efficiency and teacher effort in decentralized schools.

In Nicaragua, it is difficult to isolate the characteristics of autonomous schools that are effects of the reform from those that existed prior to the reform. Some characteristics of autonomous schools—that they serve children from more advantaged families, have better infrastructure, and have more materials—are likely to have been true prior to the reform. But autonomous schools also provide more teacher incentives and their principals offer more technical assistance to teachers. These could be results of the reform.

What is just as important as how school-based management affects teachers and classrooms is how school-based management does not affect teachers and classrooms. In Honduras, school-based management has not had much impact on some important areas where it was expected it would. Namely, no evidence was found that teachers in community-managed schools are more motivated than are teachers in traditional schools. Researchers looked at classroom processes, teacher attitudes and planning, and school environment and found very few differences between teachers in PROHECO and traditional schools. In fact, teachers in PROHECO schools are more likely to use traditional or frontal teaching methods, such as, for example, using dictation more, giving fewer examples, and being less likely to relate classroom lessons to everyday life. Research in Nicaragua also indicates that after a decade of reform there are very few differences between autonomous and nonautonomous schools that were not present in these same schools prior to the reform. Student background continues to be one of the most important factors explaining differences in student achievement in Nicaragua.

School-based management can improve student learning

Perhaps the most important question concerning school-based management is whether it generally improves student outcomes such as test scores, attendance, and completion rates. Related to this, it is important to know *why* there may be a program effect. It is particularly critical to understand how changes in the characteristics and practices of teachers generated by the reform affect student learning. Here,

again, although it is clear that school-based management has the potential to improve student outcomes, the evidence is mixed.

In Honduras, PROHECO students score higher on math, science, and Spanish exams than do students in other similar but non-PROHECO schools. The benefits of PROHECO are, in part, explained by the qualities and characteristics found to be different in PROHECO schools compared with poor rural non-PROHECO schools. Specifically, the more hours per week a teacher works, the higher the student achievement in all three subjects. The frequency of homework, also higher in PROHECO schools, is associated with higher achievement in Spanish and math. Finally, smaller classes and fewer school closings—as in PROHECO schools—are related to higher student achievement in science.

In El Salvador, EDUCO students also perform better in Spanish than do traditional school students, background factors being constant. Again, the benefit of EDUCO appears to come, in part, from the observed differences between teachers in EDUCO and traditional schools. Specifically, the amount of time teachers spend meeting with parents, a characteristic that is higher in EDUCO schools, partially explains why EDUCO students outperform their counterparts. There is some evidence that EDUCO students may also outperform traditional school students in math and they may be less likely to be absent. But these results are much more tentative.

In Nicaragua, the school autonomy reform appears not to have led to increased student learning. Although third-grade students in autonomous schools have higher average test scores in mathematics and Spanish than do students in traditional schools, only the mathematics results are robust once background factors, such as the socioeconomic status of students, are taken into account. In the sixth grade, autonomous school students score lower than do students in traditional schools in both Spanish and mathematics tests once background characteristics are taken into account. Furthermore, in Nicaragua, there is very little evidence that the observed differences between autonomous and traditional schools are responsible for the differences in test scores, with one exception: technical assistance by principals for teachers appears to help improve third-grade students in Spanish.³³

³³ Our analysis is limited by the availability of educational outcome indicators. While we depend on test scores to evaluate these Central American programs, the relatively small class sizes in the rural PROHECO and EDUCO classrooms of Honduras and El Salvador make test scores problematic as the sole indicator of reform success. The noise associated with test scores is higher in smaller classes (Kane and Staiger, 2002b).

School-based management as a teacher incentive

The three school-based management reforms discussed in this section have been successful at improving student learning to varying degrees. The PROHECO reform in Honduras seems to have had the most success at improving students' test scores in multiple subject areas through keeping schools open, giving more homework, having smaller classes, and having teachers work more hours per week. Students in Nicaragua's autonomous schools, in contrast, are performing worse than those in traditional schools by the sixth grade, even though these are wealthier schools with more resources, more teacher incentives, and better infrastructure. What explains these differences, and what lessons can we take from school-based management reforms in Central America?

First, it cannot be taken for granted that school-based management will result in well-run schools and empowered communities. If school-based management reforms are offered as a solution to pressing educational problems, then school councils must be capable of making meaningful improvements in schools. Clearly, the effectiveness of school-based management will depend, to a large extent, on the capacity of local stakeholders to manage schools. The ability of communities and parents to identify, hire, and retain good teachers and promote good teaching practices can vary widely and is not necessarily any more effective—perhaps significantly less so—than competent centralized management mechanisms. For example, month-long delays in teacher payments in Honduras suggest that the dreaded bureaucracy and inefficiencies of some centralized education systems may be replaced by general mismanagement of resources in decentralized systems.

To avoid these pitfalls, those designing school-based management reforms may want to limit placing large amounts of power in the hands of any one stakeholder. The abundance of power given to principals in Nicaragua, for example, may be problematic. It is also critical for effectiveness and equity concerns that all councils be ready and able to perform their duties and functions. This requires training and materials, especially in poorer communities and communities with less management experience and capacity.

Second, teachers do appear to be changing certain behaviors in response to the new incentives created in locally managed schools. There is evidence that teachers are working more hours, assigning more homework, and developing closer relationships to parents. These are very promising changes, many of which appear to contribute to in-

creased student learning. In contexts of low teaching quality, these changes are a critical step in a positive direction.

Third, however, school-based management appears not to be improving teaching methods or teacher professionalization. The reforms have clearly created new incentives for teachers, but most of these changes are capacity-utilization changes—smaller classes, more hours, fewer closings—and not changes in the teaching that is actually happening inside classrooms. As of yet there is little evidence that classroom practices are improving in decentralized schools and teachers in Honduras and Nicaragua report having less authority than do traditional schoolteachers. Complementary reforms or modifications of school-based management reforms that result in improvements in teacher empowerment, teacher skill development, and teaching methods are needed.

Fourth, there may also be creeping incentives from community-managed schools that could have negative implications for teachers. Lower salaries coupled with less secure jobs and rural settings may discourage talented teachers from working in autonomous schools. Lower education levels and years of experience in two of the three countries indicate that this is a risk. Small class sizes in Honduras and principal technical assistance in Nicaragua may be, in part, compensating for teacher weaknesses.

Finally, the context surrounding the reform is bound to affect reform success. In Nicaragua, the school autonomy reform was coupled with the implementation of monthly student fees for basic and secondary education. These changes were perceived by portions of the general public as an effort to privatize basic education in the post-Sandinista era. While this belief may not have been accurate, it does seem to have limited public acceptance of the reform and may also have limited its impact. As mentioned earlier, teachers' unions in Latin America have tended to resist teacher-incentive reforms including decentralization reforms as they are seen as a threat to union power and teachers' job stability. The negative publicity and resistance from these unions may also limit reform effectiveness.

The role of teachers' unions in designing and implementing teacher-incentive reforms

Teachers' unions have a large impact on incentive effectiveness but are generally avoided in most research on teacher incentives. Teachers'

unions are critical stakeholders in the education sector in Latin America. Many countries in the region have very large and powerful teachers' unions that represent most of the countries' teachers. Teachers' unions are also typically opposed to teacher-incentive mechanisms, particularly those that generate competition among teachers and those that link pay to testing outcomes or other proxies for student learning or teaching quality. When powerful teachers' unions oppose teacher-incentive mechanisms, they can thwart effective reform implementation. Yet in several cases, including Chile's SNED and Mexico's Carrera Magisterial, discussed above, powerful unions not only have consented to teacher-incentive programs but have collaborated in the design of the programs. Improving teaching and learning through effective incentives will require this type of collaboration.

Teachers' unions often have compelling reasons to resist reforms that affect teacher incentives. It is important to recognize that there are logical and legitimate reasons why teachers' unions are often against the use of certain teacher incentives. Teacher incentive mechanisms that reward individual or small-group (school) performance undermine collective teacher identity and affiliation that allow unions to mobilize teachers for collective actions and campaigns. If teacher salary levels become largely determined at local or regional levels, unions may effectively lose their power of collective bargaining. Individualism among teachers may also weaken teachers' interest in becoming union members or in following unions' instructions for collective action. Demand-side reforms that affect the incentives teachers face, such as community-managed schools or vouchers, can also limit unions' hold on teachers by making them more accountable to local stakeholders.

In addition, unions are frequently keenly aware of some of the dangers of performance-based group and individual teacher incentives, such as difficulty in being able to correctly attribute students' performance or even performance gains to the work of one individual or school, and the negative impact that incentives can have on teacher morale and cooperation. In order to design and implement effective teacher incentives it is critical that policy makers recognize and address the concerns that unions have about incentive mechanisms.

Capable and professional teachers' unions are more likely to support teacher incentives. The existence of capable institutions with good leadership appears to be important for having a collaborative relation-

ship between teachers' unions and education authorities. Although not easy to achieve, when both teachers' unions and education authorities are focused on improving education and under the leadership of qualified and capable people, they are better able to work together. Unions that model themselves as professional organizations concerned with the professional practice of their members and the study and improvement of the field of education are more likely to support and contribute to effective teacher-incentive reforms. In contrast, teachers' unions that model themselves after industrial unions, concerned primarily with wages and working conditions, tend to be more concerned with membership and teachers' collective identification than with teaching and learning quality. There is certainly a balance to be made between these two models. While teachers' unions are increasingly moving toward the professional model in Latin America, in many countries the industrial model is still strong. It is in these countries, such as in Peru, that unions tend to block the creation or effective implementation of teacher-incentive reforms.

Public accountability can build pressure for unions to support teacher-incentive reforms. We discussed above the benefits of local and public accountability mechanisms in terms of creating incentives for teachers to increase their effort and improve their performance. Accountability to the public or to local communities may also generate pressure on teachers' unions to concern themselves with education quality and teaching quality. In Chile, public accountability through broad publication and access to information regarding Chile's participation in international assessments of educational quality, as well as results from the national assessments and teacher support for the reform, has likely meant that the teachers' union would have had a difficult time ignoring problems of low-quality teacher or teaching quality. In order to justify its role as a professional organization representing teachers, it could not ignore low or inequitable education in the country. Unfortunately, many other Latin American countries do not participate in international studies or have national testing (this includes most of the less-developed Latin American countries) and, therefore, lack the pressure that communities and the public in general can put on teachers' unions.

Incorporating teachers' unions into the design process can improve the likelihood of implementation success. Incorporating unions in the process of designing teacher-incentive reforms early on builds owner-

ship and acceptance of the reform and is likely to decrease the chance of unions' blocking the creation or proper implementation of the reform. Incorporating teachers' unions in the design process is also beneficial; the design can benefit greatly from the extensive and practical knowledge teachers have about their work. On the flip side, there is the chance that incorporating teachers' unions into the reform process may result in less effective design, if the unions' special interests influence the design of the reform in a negative way.

A context of reasonable salaries and working conditions can increase the likelihood that teachers' unions will support the creation of incentive mechanisms. In Chile, negotiations between the Ministry of Education and the teachers' union regarding the creation of SNED took place in a context of across-the-board salary increases. These universal salary increases meant that the union did not have to be concerned about the SNED being seriously divisive and thereby threatening teachers' collective identity or the union's ability to mobilize teachers for strikes or other collective actions. In very practical terms it also meant that the union did not need to be concerned, as it had been in previous years and as are unions in many other Latin American countries, that some teachers would enjoy salary increases while others continued to receive substandard wages. It is quite possible that teachers' unions will be more receptive to performance-based teacher incentives if they can be assured that the overall salary level and working conditions of all teachers are adequate.

...firms now design contracts not only to induce effort but also to affect the type of workers that they hire.

—Prendergast (1999, p. 14)

Lessons and Policy Implications from Teacher-Incentive Reforms in Latin America

3

In the previous two chapters, we provided a framework for understanding the important role of teacher incentives in improving educational quality as well as evidence from Latin America's experience with reforms affecting teacher incentives. While teacher incentives have the potential to impact who chooses to enter teaching, how long they remain in the profession, and the work they do in classrooms, there is more to improving teaching quality than incentives alone. Adequate resources, clear expectations of teachers, explicit and rational rules for teacher selection and assignment to schools, continuous monitoring and evaluation of teaching and learning, instructional leadership and

professional development for supporting teacher professional communities, and professional autonomy and authority are all important to attract and retain qualified individuals into teaching, develop their skills, and motivate them at work.

The focus of this report is on teacher-incentive reforms in Latin America, as it is one area where there have been innovations in several countries and where our knowledge is still limited. To fill this gap, we used econometric methods to assess the impact of teacher-incentive reforms on teaching quality and student outcomes.

In the introduction, we showed that the term “teacher incentives” encompasses many different aspects related to attracting, retaining, motivating, and developing teachers. Similarly, reforms of teacher incentives can take various forms. In Chapter 2, we grouped teacher reforms in Latin America into three broad categories: reforms related to teacher salary level and structure, reforms related to merit pay, and school-based management reforms. We then highlighted the promise, successes, and failures of teacher-incentive reforms in improving teacher effectiveness. We also explored the role of teachers’ unions in designing and implementing effective teacher-incentive reforms.

In this chapter, we summarize the main lessons from the Latin American experiences with teacher-incentive reforms. Our objective is to draw policy implications that are useful to education policy makers in designing and implementing education reforms to increase teacher effectiveness.

Many types of education reforms affect teaching quality and student learning

When we think about the structure of teacher incentives, we often think of the level and structure of teacher compensation. Our findings support the intuitive notion that teacher quality is sensitive to the level and structure of compensation. For example, Chile’s more-than-doubling of average teacher salaries in the past decade is associated with an increase in the quality of entering students to teacher education programs. Similarly, the increased and more equitable distribution of resources resulting from FUNDEF in Brazil led to improvements in student outcomes. While the Chilean school-based teacher bonus for student performance did not initially have a great impact on student performance, in its most recent available application it is associated

with better student performance. Moreover, average student achievement is increasing in schools that have had a chance of winning the SNED bonus in each of the three applications, which suggests that the program is having some of the expected results.

But changes in other aspects of teacher contracts can also have a great impact on teacher quality and student learning. Education reforms, even those not specifically designed to affect teachers, can influence—and sometimes have even greater effects than changes in compensation on—the characteristics of those who choose to enter and remain in teaching and, importantly, their work in classrooms. For example, EDUCO and PROHECO, two school-based management reforms that devolved decision-making authority to the school, were found to have had an important impact on teacher performance and student learning. In particular, the authority by EDUCO school councils to hire and fire teachers was found to be an important factor in EDUCO students' better outcomes as compared with traditional schools serving similar populations in El Salvador.

Teachers do not always respond to incentives in predictable ways

Although teachers generally respond to incentives, they do not always do so in ways we would expect or hope. As mentioned in Chapter 2, prior research has documented the various ways in which teachers can adversely respond to incentives, from excluding low-performing students from taking the tests, to teaching to the test, to outright cheating (e.g., giving children the questions and answers that will be included in the test prior to the day of the test), to offering fee-based test tutorials for those children that can afford them, to providing children with more or better food so as to improve their chances of performing well on examinations.

Sometimes, programs that are specifically designed to reward teachers who adopt specific behaviors or achieve higher results fail to generate a behavioral response from teachers. Bolivia's bonus for teaching in rural areas is not resulting in higher-quality rural teachers. Carrera Magisterial, Mexico's innovative teacher career system specifically designed to reward teachers who have better performance, was found not to result in changes in teacher performance, and thus has not led to improved student outcomes. These cases highlight the importance of design and implementation of teacher-incentive reforms.

In Chapter 2, we highlighted three common design flaws in teacher-incentive reforms: (1) only a small proportion of teachers face greater incentives to improve learning in their classrooms (i.e., most teachers would either receive the award regardless of performance or have no chance at all of receiving it); (2) the size of the award may be so small that teachers feel it is not worth the extra effort; and (3) the award may not be sufficiently linked to teacher performance. Other factors, such as the problems in attributing student learning to teacher performance, the difficulties in devising accurate measures of teacher performance, the political economy environment and, in particular, teachers' unions, affect the design, implementation, impact, and sustainability of teacher-incentive reforms. We now turn to each of these issues.

Teacher incentives for only a few?

Even though Mexico's Carrera Magisterial and Chile's SNED are both nationwide programs involving most of the country's teachers, the detailed analyses conducted for this report showed that, in each program application, a minority of teachers face any real likelihood of receiving a promotion in the case of Carrera Magisterial, or a bonus in the case of SNED. In other words, for the majority of teachers in a given application, there are no real incentives to improve performance.

Given that only a few teachers are faced with increased incentives to improve performance, it is not too surprising that Carrera Magisterial is found to have negligible effects on student outcomes and that only one application of SNED is found to have positive effects on student performance.

These findings point to the importance of crafting teacher incentives that affect a majority of, if not all, teachers. Only when the majority of teachers are eligible to receive the benefits of hard work and improved outcomes will the resources invested in both designing and implementing the reform as well as in the incentive mechanism itself have the potential to result in improved outcomes in a majority of students.³⁴ This is not to say that all, or the majority, of teachers should receive the incentive reward. Indeed, if teachers have a high likelihood of receiving the reward without any behavioral change, the objective of

³⁴ This argument, of course, rests on the assumption that the reform to teacher incentives does not present any of the other problems discussed in this report.

the incentive—to improve teaching and learning—is obviated. Instead, as many teachers as possible should feel that they have a chance of receiving the reward if they put in the effort to bring about the desired changes in student learning.

Incentive programs should be sure to generate incentives for the highest proportion of teachers possible, and particularly for teachers whose performance is typically lower than average. In the case of Mexico, this could mean awarding more possible points to components that teachers can directly influence such as their students' performance and their own performance on exams. It could also mean setting up homogenous groups, such as is done in Chile, so that teachers compete only with teachers who work with similar populations. In the case of Chile, this could mean reconfiguring the homogenous groups or supporting low-performing schools in each or select groups to increase their possibility of obtaining the award. This combination of support to improve performance along with incentives to motivate performance may be a promising combination. A different option that Chile is currently pursuing is to reward a larger proportion of schools. In the next round of SNED, Chile is planning on rewarding schools serving 35 rather than 25 percent of national enrollment, which will surely motivate a larger number of teachers. Without a reconfiguration of homogenous groups, however, SNED will still fail to create incentives for teachers in the bottom-performing schools.

How (and how strongly) incentives and the desired outcome are linked matters

We just said that all teachers should be *eligible* to receive recognition for hard work and good results. However, for an incentive scheme to work effectively, it must recognize only the share of teachers who truly exhibit the desired performance and results. Weak links between desired performance and, for example, extra pay, tend to result in misallocation of rewards. In the first years of Carrera Magisterial, promotions were given to nearly all teachers who participated in evaluations.

In other cases, not all teachers who deserve acknowledgement for their work are rewarded or little linkage exists between those teachers who receive the reward and those who improve their teaching or are successful with their students. In these cases, few teachers will be induced to adopt the desired behaviors, or be “incentivized,” by the

reform. This is exemplified by the Bolivian rural bonus pay, where many teachers who receive the bonus no longer work in rural schools. In this case, the incentive pay and the desired outcome (having qualified teachers in rural areas) are weakly linked. Needless to say, this is costly and inefficient.

In Mexico's Carrera Magisterial, improved teacher performance and student outcomes do not always result in a promotion because teacher education and experience level greatly affect a teacher's chances of receiving a promotion, *regardless* of her (and her students') performance. Young or poorly educated teachers may be unable to receive the promotion even if they are exceptionally successful in the classroom while teachers with many years of experience and high levels of education frequently receive promotions even if their students are learning little. In addition, permanent salary increases fail to reward teachers for good performance in more than just one year. Longer, multiyear evaluations or required promotion renewals could motivate teachers to be effective with their students for more than just one year.

In short, to induce teachers to perform well and achieve high levels of student learning, teacher-incentive schemes should reward teachers who accomplish these challenges.

Too small to merit the extra effort

Often, a teacher's base salary accounts for a large share of his or her total compensation, and incentives for specific behaviors (e.g., working in rural schools, serving children with special needs) account for only a small proportion of total pay. In these cases, the compensation may be strongly linked to the desired outcome or behavior, but the reward size may be too small for teachers to be induced to adopt the desired behavior.

In Chile, for example, the SNED bonus amounts to between 5 and 7 percent of a teacher's total compensation. This small pay increase may not be enough to motivate teachers to improve their teaching practice and ensure that their students learn more and perform better on the national exam. Chile does, in fact, have plans to address this weakness, as the next round of SNED will offer rewards that are twice as large as in previous rounds.

Faced with pressures from teacher's unions to increase salaries for all teachers and countervailing pressures to improve the efficiency of

education spending and improve incentives for teacher performance, education policy makers run the risk of doling out numerous bonuses for different behaviors and characteristics (e.g., working in rural areas, attendance, or time for preparing classes). A typical Peruvian teacher, for example, receives compensation for about 15 different “behaviors,” though these are not monitored and awarded to all teachers. In Peru, as in many other countries, each bonus is small in size and accrues to most or all teachers, and thus together they amount to increases in pay without any strong association with teacher performance or clear messages to teachers regarding specific behaviors.

In sum, not only is it important to design incentives that effectively compensate teachers for desired behaviors, but the reward size should be large enough to merit the additional effort or hardship that the incentive hopes to promote. In addition, incentives may be more effective if they are limited in number, clearly communicated to teachers, and carefully monitored.

Increased accountability as a powerful, but limited, tool for improving teaching quality

School-based management reforms strengthen the accountability relationship between teachers (and schools) and communities. The Central American experiences show that these reforms can result in, among others, less teacher absenteeism, more teacher work hours, more homework assigned, and closer parent-teacher relationships. These are promising changes, especially in contexts of low educational quality where teacher absenteeism is high and schools are often not functioning at all.

However, improving teacher attendance rates and extending teachers’ hours of work are only necessary first steps to achieving school quality for all. Teachers also need to be knowledgeable in the subject they are teaching as well as able to use effective teaching methodologies in the classroom. The impact of school-based management reforms in these areas appears to be more limited. To raise education quality, teacher-incentive reforms that encourage teachers to stay up-to-date in their skills, improve teaching practices, and, ultimately, reward effective teachers as measured by their students’ learning are also needed.

Attributability, measurement issues, and other factors affecting the effectiveness of teacher incentives

Other factors are also important in designing and implementing effective teacher incentives but were not systematically examined in the background papers for this report. First among these is the need for rewards to be linked to outcomes that can be accurately attributed to the reward recipients. Early reforms to introduce individual teacher merit pay plans in the United States were problematic because of the difficulties in attributing improvements in student outcomes to the efforts of particular teachers.³⁵ When attributability is questionable or difficult to measure, group awards, such as school-based incentives, may be more effective.

Second, it is critical that the desired outcomes be accurately measurable or approximated. Teaching and learning are complex processes and good teaching may be more of an art than a science. Rewards that are offered for specific things usually generate incentives in those very specific areas. Policy makers, therefore, need to be very sure that what they reward is what they actually want to encourage. Test scores, for example, do measure learning, but they have often been shown to be a noisy measure.³⁶ Furthermore, often what is reflected in test scores is knowledge of how to take a test and knowledge of the very specific material covered on a test rather than the generalizable knowledge or analytical skills that education systems typically aim to engender. Devising multiple tests and linking teacher incentives to student performance in multiple tests over time may reduce some of the problems in measuring student learning.

Finally, as mentioned earlier, recent studies have shown that it is very important to avoid potential negative behavioral responses to teacher-incentive mechanisms. These adverse responses can harm teaching and learning by, for example, fostering cheating, disfavoring weaker or at-risk students, or limiting curriculum to material covered in the tests.

³⁵ Murnane and Cohen (1986) present a thoughtful analysis of early teacher merit pay plans in the United States.

³⁶ Kane and Staiger (2001) and Chay, McEwan, and Urquiola (2003) present evidence that differences in test scores among schools are often due to sampling variation and other nonpersistent sources.

The political context and especially teachers' unions play important roles in reform design and implementation

Education reforms are not only affected but also shaped by the role of teachers' unions. In Latin America, teachers' unions are usually large and powerful education stakeholders, representing most—if not all—teachers in a country. Often, they oppose the introduction of teacher-incentive mechanisms (other than across-the-board increases in pay), especially when rewards are linked to teacher performance and student outcomes. Although teachers' unions' opposition to teacher-incentive reforms have thwarted attempts by governments to differentiate teacher pay based on performance, in at least two cases, Chile and Mexico, the teachers' unions collaborated in the design of the incentive reform programs. These cases highlight the fact that improving teaching and learning through effective teacher incentives will necessarily require collaboration between unions and education policy makers.

As emphasized in Chapter 2, it is important to recognize that there are often compelling reasons for teacher's unions' opposition to incentive reforms. Teacher-incentive schemes that reward individual or small-group performance, as well as reforms that devolve authority to schools, can undermine collective teacher identity and affiliation, thus weakening the power of the management of teachers' unions. Furthermore, union leadership is often resistant to performance-based compensation because of the inherent problems discussed above, such as accurately measuring student learning and attributing such learning to specific teachers.

Nevertheless, capable and professional teachers' unions are more likely to support teacher-incentive reforms. Unions that model themselves as professional organizations concerned with teaching practice and the study and improvement of education tend to support and contribute to teacher-incentive reform design and implementation. Besides teachers' union capacity, several factors can also affect the role that teachers' unions play in teacher-incentive reforms, including accountability, union involvement in reform design, and the general context of teacher salaries and working conditions.

Accountability to the public and to local communities may also generate pressure on teachers' unions to support teacher-incentive reforms to improve educational quality. In Chile, for example, the poor performance in international assessments of educational quality and the lack of improvement in student performance in the national assessments has made it very difficult for the teachers' union to ignore

the need to implement reforms to improve teaching quality. The more that countries engage in assessments of educational quality—both national and international—the more likely that pressure will be put on teachers' unions to support substantial education reforms.

Involving teachers' unions early in the process of designing education reforms builds ownership and acceptance of the reform, which will help decrease the chances of unions' blocking the introduction or implementation of the reform. It can also greatly benefit the design of the reform, as teachers have extensive and practical knowledge about their work. Of course, there are also risks to union participation in the design of teacher-incentive reforms, including the potential for “boiling down” the real incentives embedded in the reform.

Finally, a context of adequate salaries and working conditions will facilitate union support for the introduction of teacher-incentive reforms. In Chile, for example, negotiations between the teachers' union and Ministry of Education officials regarding the introduction of performance-based teacher incentives occurred after substantial across-the-board teacher salary increases had taken place.

Conclusions and agenda for further research on teacher incentives

In this report, we summarized evidence from recent evaluations of the impact of teacher-incentive reforms on teaching quality and student achievement. We discussed key lessons and policy implications, in terms of both reform design and implementation. Although we have shed light on the important question of how to design effective teacher-incentive reforms to improve teaching and learning, there are still many areas in need of further investigation.

First, few countries have experimented with performance-based schemes for teachers in the region, and thus we could learn from only the (very different) Chilean and Mexican experiences in this area. As more countries feel the pressure to improve educational quality under fiscal constraints, linking teacher incentives to student performance is likely to become more popular. More and more varied performance-based teacher-incentive reforms will offer opportunities to better understand their impact on teaching quality and student outcomes.

Second, although education reforms are common in the region, it is rare to find cases where findings from sound evaluations inform reform design. Our hope is that this report will help fill this void.

Third, important issues affecting who enters and remains in teaching, such as nonsalary benefits including pensions and insurance, were not addressed in this report. These nonsalary teacher expenditures are substantial in the majority of Latin American countries, and their impact on teaching quality is likely to be nontrivial. Future research should address their role in attracting, developing, and retaining effective teachers.

Finally, we hope that education policy makers incorporate plans to conduct impact evaluations in the process of reform design, so that it becomes common practice to learn from one's (and others') experiences. As mentioned in the introduction, conducting impact evaluations of education programs is challenging given the impossibility of knowing what would have happened to those affected by the program in its absence. This evaluation problem plagues all social programs, and is particularly problematic when assignment of the program to participants is based on factors that could also affect the outcome of the program. Separating the effects on outcomes of variables that impact who (or what school) participates in a specific program from the program itself is known as the selection problem in the impact evaluation literature. For example, the team conducting the evaluation of Mexico's Carrera Magisterial Program had to address the issue that program participation by teachers is voluntary, and thus teachers who choose to participate in Carrera Magisterial may be different from teachers who choose not to participate in ways that also affect their students' learning. These issues need to be taken into consideration when designing teacher-incentive reforms and their impact evaluations.

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Latin America faces tremendous challenges, particularly those of development, poverty, and inequality. Education is widely recognized as one of the most critical means of defeating these challenges. Democratizing education, by improving both its coverage and quality, is critical to overcoming the social and economic inequality that plagues Latin America. Ensuring that all children have the opportunity to learn critical skills at both primary and secondary levels is paramount to overcoming skill barriers that perpetuate underdevelopment and poverty.

A growing body of evidence supports the intuitive notion that teachers play a key role in what, how, and how much students learn. Attracting qualified individuals into the teaching profession, retaining these qualified teachers, providing them with the necessary skills and knowledge, and motivating them to work hard and do the best job they can is arguably the key education challenge.

Improving Teaching and Learning through Effective Incentives focuses on the impact of education reforms on teaching quality and student learning. The reforms explored in this volume represent efforts by several countries in the region to increase teacher accountability and introduce incentives to motivate teachers to raise student learning.

Readers interested in a deeper understanding of this critically important issue can find more detail and a broader discussion in *Incentives to Improve Teaching: Lessons from Latin America*. This book, part of the World Bank's Directions in Development series, contains 10 papers that explore the effects of various teacher incentive reforms implemented in Latin American countries.

