## Contents

	acexiii nowledgmentsxv
z.	wicagnesis
1	Improving Teaching and Learning through Effective Incentives
	Lessons from Education Reforms in Latin America
	Emiliana Vegas and Ilana Umansky
	Introduction
	Why and How Do Incentives Matter? 3
	Incentives as a Broad and Complex Concept4
	Teacher Effectiveness and Student Performance4
	A Wide System Affecting Teaching and Learning6
	Education Reforms, Teaching Quality, and Student Learning 6
	Review of Chapters
	Improving Teaching Quality and Student Learning
	through Incentives
	An Agenda for Further Research on Teacher Incentives
2	A Literature Review of Teacher Quality and Incentives21 Theory and Evidence
	Ilana Umansky
	Introduction
	Principal-Agent Theory: Description and Critiques
	Teacher Quality and Its Determinants
	Current Educational Investment and Policies and
	Their Embedded Incentives
	Merit Pay35
	School Organization
	Political Economy of Reform
	Summary and Conclusions

Are Teachers Well Paid in Latin America and the Caribbean?		Data       189         Teacher Pay in Bolivia       189
Relative Wage and Structure of Returns of Teachers		What Does the Pay Scale Reward?
Werner Hernani-Limarino		The Flow of Teachers through the Salary Structure
1		Arbitrary Variation in Teacher Salaries
		Conclusions
	7	Teacher and Principal Incentives in Mexico
Conclusions96		Patrick J. McEwan and Lucrecia Santibáñez
Teachers' Salary Structure and Incentives in Chile		Introduction
Alejandra Mizala and Pilar Romaguera		The Carrera Magisterial Program
,		Data
Introduction		Allocation of Promotions
Who Are Chile's Teachers?		Empirical Strategy
How Teachers' Salaries Are Determined		Results for Teachers235
Changes in Teachers' Salaries		Results for Principals245
Effect of Salary Trends on Individuals Applying to Study		Conclusions
Education		
Analysis of Relative Teacher Pay115	8	Decentralization of Education, Teacher Behavior,
Incentives Embedded within Teachers' Salary Structure 127		and Outcomes
Effect of the SNED on Schools' Academic Achievement:		The Case of El Salvador's EDUCO Program
A Preliminary Evaluation		Yasuyuki Sawada and Andrew B. Ragatz
Evaluating Performance and Incentives: Teachers' and		iasuyuki Sawaaa ana Anarew B. Nagai2
Principals' Perceptions141		Introduction
Conclusions		The Case of El Salvador's EDUCO Program
		Empirical Analysis of the EDUCO Program
Educational Finance Equalization, Spending,		Conclusions
Teacher Quality, and Student Outcomes		
The Case of Brazil's FUNDEF	9	Teacher Effort and Schooling Outcomes in Rural
Nora Cordon and Emiliana Vegas	-	Honduras307
Introduction		Emanuela di Gropello and Jeffery H. Marshall
		Introduction
		Analytical Framework
		Results314
		Conclusions
		Conclusion
., 1	10	Teacher Incentives and Student Achievement in
Arbitrary Variation in Teacher Salaries	10	Nicaraguan Autonomous Schools
		-
•		Caroline E. Parker
wiguei arquioia ana emitiana vegas		Introduction
Introduction		Nicaraguan Context
	Relative Wage and Structure of Returns of Teachers  Werner Hernani-Limarino  Introduction 63 How Can We Determine If Teachers Are Well Paid? 65 Are Teachers Well Paid? 74 Conclusions 96  Teachers' Salary Structure and Incentives in Chile 103 Alejandra Mizala and Pilar Romaguera  Introduction 103 Who Are Chile's Teachers? 104 How Teachers' Salaries Are Determined 105 Changes in Teachers' Salaries 107 Effect of Salary Trends on Individuals Applying to Study Education 110 Analysis of Relative Teacher Pay 115 Incentives Embedded within Teachers' Salary Structure 127 Effect of the SNED on Schools' Academic Achievement: A Preliminary Evaluation 131 Evaluating Performance and Incentives: Teachers' and Principals' Perceptions 141 Conclusions 144  Educational Finance Equalization, Spending, Teacher Quality, and Student Outcomes 151 The Case of Brazil's FUNDEF Nora Gordon and Emiliana Vegas Introduction 151 Background on Brazil's Education System and FUNDEF 154 Data 158 Empirical Strategy 168 Findings 173 Conclusions and Policy Implications 182 Arbitrary Variation in Teacher Salaries 187 An Analysis of Teacher Pay in Bolivia Miguel Urquiola and Emiliana Vegas	Caribbean   Relative Wage and Structure of Returns of Teachers

	Nicaraguan Autonomy360Methods367Results378Conclusions383
11	Political Economy, Incentives, and Teachers' Unions 389 Case Studies in Chile and Peru
	Luis Crouch
	Background
	Unimplemented
	Progress in Latin America
Figur	res
1.1	Many Types of Teacher Incentives Exist5
3.1	Unconditional Log Hourly Wage and Monthly Earnings Differential
3.2	Hours Worked Per Week
3.3	Unconditional Log Wage Differential between Teachers and Different Samples of Nonteachers
3.4	Conditional Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Coefficient for the Teachers' Dummy
3.5	Productivity Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Endowment Effect from the Oaxaca Decomposition
3.6	Conditional Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Price Effect from the Oaxaca Decomposition
3.7	Contribution of the Difference in the Return to Schooling to the Conditional Log Wage Differential
3.8	Contribution of the Difference in the Returns to Potential Experience to the Conditional Log Wage Differential89
3.9	Contribution of the Difference in Women's Wage Premiums to the Conditional Log Wage Differential
3.10	Contribution of the Difference in Rural Residence Wage Premium to the Conditional Log Wage Differential
3.11	Contribution of the Difference in Initial Wage to the Conditional Log Wage Differential

3.12	Conditional Log Wage Differential between Teachers and
	Nonteachers by Quantile of the Conditional Wage
	Distribution
4.1a	Hourly Income Distribution of Teachers and All
	Nonteachers, 1998118
4.1b	Hourly Income Distribution of Teachers and Nonteachers
	with 13 or More Years of Schooling, 1998
4.1c	Hourly Income Distribution of Teachers and Nonteachers
21-4	with 17 or More Years of Schooling, 1998
4.2a	Hourly Income Distribution of Teachers and All
	Nonteachers, 2000
4.2b	Hourly Income Distribution of Teachers and Nonteachers
	with 13 or More Years of Schooling, 2000
4.2c	Hourly Income Distribution of Teachers and Nonteachers
	with 17 or More Years of Schooling, 2000
4.3a	Salary Differentials between Female Teachers and
	Nonteachers, 1998
4.3b	Salary Differentials between Male Teachers and
	Nonteachers, 1998128
4.4	Allowances and Monetary Incentives for Teachers,
	2002/03130
4.5	Responses of Principals: "I Agree or Strongly Agree
	with MINEDUC Regularly Evaluating Schools
	Receiving State Subsidies"
4.6	Responses of Principals: "I Agree or Strongly Agree That
	MINEDUC Should Provide Resources for Regularly
	Rewarding the Best Performing Schools"143
4.7	Responses of Principals: "It Is 'Very Useful,' 'Somewhat
	Useful, 'Useful' to Principal's Work That There Is a
	Monetary Award to Teachers, Associated with School
	Performance, Financed and Designed to MINEDUC
	Standards"
5.1	Evolution of Enrollment in Basic Education, by Level
	and Region, 1996–2002: EF1
5.2	Evolution of Enrollment in Basic Education, by Level
	and Region, 1996–2002; EF2
5.3	Gross Primary Enrollment Rates by Region, 1994–2000 160
5.4	Net Primary Enrollment Rates by Region, 1994–2000 161
5.5	Percentage of Qualified Teachers by Region, 1996–2002 162
6.1	Salary Progression for Urban Teachers of All Training Levels 194
6.2	Distributions of Salaries for Urban and Rural Teachers 203
6.3	GIS Data for Santa Cruz Schools
7.1	Fitted Values of Promotion on Final Points, by Year,
	for Teachers

7.2	Fitted Values of Promotion on Final Points, by Year,	•
	for Principals	1
7.3	Stylized Portrayal of Empirical Strategy	·
7.4	Fitted Values of Classroom Test Scores on Initial Points,	•
	by Bandwidth for Teachers	T
7.5	Kernel Densities of Test Score for Teachers	,
7.6	Fitted Values of Classroom Test Scores on Initial Points,	·
	by Bandwidth and State, for Teachers	1
7.7	Test Scores and Pupil-Teacher Ratios in Year 10 for Teachers 245	•
7.8	Fitted Values of Classroom Test Scores on Initial Points,	ì
	by Bandwidth for Principals	
7.9	Fitted Values of Classroom Test Scores on Initial Points,	1
	by Bandwidth and State248	+
8.1	Comparison of EDUCO and Traditional Governance	
	Structures	
8.2	OLS Estimated Coefficients on the EDUCO Variable for	1
	Major Influence Level of Key Administrative Processes 274	ř
8.3	Estimated Coefficients for EDUCO Perceived Amount of	•
	Influence Compared with Traditional Schools275	
9.1	Model of Effective Community School, With (Some)	1
	Testable Hypotheses	4
Table		1
Table		1
3.1	Household Surveys	,
3.1 3.2	Household Surveys	,
3.1 3.2 3.3	Household Surveys	,
3.1 3.2 3.3 3.4	Household Surveys	1
3.1 3.2 3.3	Household Surveys	1
3.1 3.2 3.3 3.4 3.5.	Household Surveys	1
3.1 3.2 3.3 3.4	Household Surveys	1
3.1 3.2 3.3 3.4 3.5.	Household Surveys	1
3.1 3.2 3.3 3.4 3.5.	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6	Household Surveys	
3.1 3.2 3.3 3.4 3.5.	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6	Occupational Codes Included in the Definition of Teachers. 75 Size of Teachers' Sample. 77 Alternative Definitions of Nonteachers 77 Unconditional Log Wage Differential between Teachers and Different Samples of Nonteachers: ln(GTN + 1) 79 Conditional Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Price Effect from the Oaxaca Decomposition:  E[ln(wT)\X] - E[ln(wN)\X] 81 Conditional Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Price Effect from the Oaxaca Decomposition: ln(DTN + 1) 84 Productivity Log Wage Differential between Teachers and Different Samples of Nonteachers: Estimated Endowment Effect from the Oaxaca Decomposition: ln(QTN + 1) 86	
3.1 3.2 3.3 3.4 3.5. 3.6	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6 3.7 3.8	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6 3.7 3.8 3.9 4.1	Household Surveys	
3.1 3.2 3.3 3.4 3.5. 3.6 3.7 3.8	Household Surveys	

4.3	Comparison of Teachers' Starting Salary with the
	National Minimum Wage
4.4	International Comparisons of Teachers' Salaries, 2001
4.5	Total Expenditures of the Ministry of Education, 1990–2001 113
4.6	Average Score for Admission to Teaching Programs
4.7	Means and Standard Deviations of Selected Variables
	in a Comparison of Teachers and Nonteachers, 1998
	and 2000
4.8	Determinants of Labor Income, Teachers Compared
	with Nonteachers, 1998
4.9	Factors Determining Labor Income, Teachers Compared
	with Nonteachers, 2000
4.10	Breakdown of the Wage of an Average Municipal Sector
	Teacher, 2003
4.11	SNED: Beneficiaries and Resources
4.12	Trends in SNED Award Amounts
4.13	SNED's Effect on Effectiveness
4.14	SNED Relationship to Effectiveness
5.1	Mean Per Pupil Spending and Enrollment Rates by Region 155
5.2	Share of Teachers in Grades 1-4 with Credentials Higher
	Than Primary Education, 1996
5.3	Sources and Distribution Mechanisms of FUNDEF Funds,
	by Government Level
5.4	Number of Teachers by Level, Region, and Year
5.5	Mean Pupil-to-Teacher Ratio by Level, Region, and Year 162
5.6	Age-by-Grade Distortion by Region, Level, and Year
5.7	Annual FUNDEF Per Pupil Allocations by Region, State,
	and Year
5.8	Mean Per Pupil Spending, by Region and Year
5.9	Mean Net FUNDEF Per Pupil Allocation and Mean Per
E 40	Pupil Expenditures, 1998–2002
5.10	Means, Standard Deviations, and Gini Coefficients for
P 44	SAEB Language Scores in 1995, 2001
5.11	Means, Standard Deviations, and Gini Coefficients for SAEB Mathematics Scores in 1995, 2001
F 40	SAEB Mathematics Scores in 1999, 2001
5.12	Stage 1: Effect of Mandated Educational Spending on
E 10	Actual Educational Spending
5.13	Actual Per Pupil Educational Spending, by Geographic
	Actual Per Pupil Educational Spending, by Geographic
E 14	Region
5.14	
5.15 5.16	
5.10	by Level
	UV 1.CVCI

5.17	Effects of Educational Spending Per Pupil on Share of	1
	Teachers with Credentials Higher Than Primary	
	Education, by Level	·
5.18	Effects of Educational Spending Per Pupil on Age-by-Grade	1
	Distortion, by Level	
5.19	Effects of Education Inputs on Age-by-Grade Distortion,	
	by Level	•
5.20	Estimated Effect of Changes in State-Level Mean Per	
	Pupil Spending on Mathematics Student Achievement	,
	by Percentile181	
5.21	Estimated Effect of Changes in State-Level Inequality in Per	I
	Pupil Spending on Mathematics Student Achievement	
	by Percentile	
6.1	Base Salaries by Geographic Region and Training Status 190	
6.2	Seniority-Based Pay Increases: Escalafón	,
6.3	Salary Structure	
6.4	A Hypothetical Decomposition of the Teacher Wage Bill 195	
6.5	A Decomposition of the Teacher Wage Bill	•
6.6	Distribution of Teachers by Geographic Region	1
	and Training Status	,
6.7	Distribution of Teachers by Training and Experience 199	
6.8	Types of Schools in the Three Largest Cities	
6.9	Descriptive Statistics on Teachers	1
6.10	Hours Worked and the Probability of Holding a Second	
	Teaching Job	
6.11	Student Characteristics in Urban and Rural Schools 206	
6.12	Hours Worked by Teachers and Probability of Holding a	•
	Second Job	
7.1	Evaluation Scheme for Carrera Magisterial217	,
7.2	Teacher Promotions in Carrera Magisterial	1
7.3	Principal Promotions in Carrera Magisterial	
7.4	Descriptive Statistics for Teachers	'
7.5	Descriptive Statistics for Principals222	1
7.6	Determinants of Teacher Promotion, by State226	1
7.7	Determinants of Principal Promotion, by State	
7.8	Teachers' Initial Points and Classroom Test Scores	,
7.9	Teachers' Initial Points and Classroom Test Scores,	1
	within Narrow Bands	ı
7.10	Teachers' Initial Scores and Classroom Test Scores:	
	Difference-in-Differences	1
7.11	Principals' Initial Points and School Performance Scores 247	1
7.12	Principals' Initial Scores and Classroom Test Scores:	,
0.4	Difference-in-Differences	
8.1	Means and Standard Deviations of Municipality-Level	ı
	Socioeconomic Variables 261	

X

8.2	Means and Standard Deviations of Child and Household
	Variables, by School Type
8.3	Means and Standard Deviations of School, Teacher,
	Classroom, and Community Variables, by School Type 263
8.4	The Format of Questions on the Administrative Process 265
8.5	Means and Standard Deviations of Decentralization and
	Perceived Influence Variables
8.6	Means and Standard Deviations for Control Variables
	Used in Administrative Process Regressions
<b>8.7</b>	Level of Decentralization: Comparison of OLS Results
	to Propensity Score and Treatment Effects Results
8.8	Influence Level by Group: Comparison of OLS Results
	to Propensity Score and Treatment Effects Results279
8.9	Means and Standard Deviations of Control Variables Used
	in Teacher Behavior Regressions
8.10	Means and Standard Deviations of Control Variables Used
	in Teacher Behavior Regressions
8.11	Comparison of OLS Results to Treatment Effects and
	Propensity Score Matching Results
8.12	Means and Standard Deviations of Student Achievement
	Test Scores
8.13	Estimated EDUCO Effects on Mathematics Scores
8.14	Estimated EDUCO Effects on Spanish Scores
8.15	Estimated Effects on Days of Absence
9.1	Sample Overview: Number of Students and Schools
	(in Parentheses), by Department
9.2	Comparisons of Student and Family Characteristics among
	PROHECO and Control Samples
9.3	Comparisons of School Characteristics between PROHECO
	and Control Samples
9.4	Comparisons of Teachers' Characteristics
9.5	Comparisons of Teacher Work Hours and Absences
9.6	Comparisons of Teacher Salaries and Payment "Issues" 322
9.7	Teacher Earnings Equations
9.8	Comparisons of Teacher Planning Strategies, Part 1
9.9	Comparisons of Teaching Strategies, Part 2
9.10	Comparisons of Teacher Attitudes, Part 1
9.11 9.12	Comparisons of Teacher Attitudes, Part 2
9.12	
9.13	Students
014	
9.14	
9.15	School Effort on Various Groupings of Variables
0.17	
9.16	Summary of lest ocores

XII CONTENTS

9.17	OLS Estimates of Determinants of Spanish Achievement,
	2002 and 2003337
9.18	OLS Estimates of Determinants of Mathematics
	Achievement, 2002 and 2003339
9.19	OLS Estimates of Determinants of Science Achievement,
	2002 and 2003341
9.20	Breakdown of PROHECO and Control School
	Achievement Differences, 2003
9.21	First-Stage Equations: Binary Probit Estimates of
	PROHECO Participation, 2002 and 2003
9.22	Comparison of PROHECO Achievement Effect Using
	Predicted and Actual Measure of PROHECO
	Participation, 2002 and 2003
9.23	Ordered Probit Estimates of Student-Reported Absences,
	2002 and 2003
9.24	OLS Estimates of Determinants of School Average Repetition
404	and Dropout Rates, 2002 and 2003
10.1	Control Variables: Third-Grade Mean Values, by School Type 371
10.2	Years of School Autonomy, Third Grade
10.3	Third-Grade Descriptive Statistics for Incentive Variables 372
10.4	Third-Grade Descriptive Statistics for Infrastructure and
40 F	Material Resources, by School Type
10.5	Third-Grade Descriptive Statistics for Professional
10.	Development, by School Type
10.6	Third-Grade Achievement Scores, by School Type
10.7	Third-Grade Spanish and Math Scores, by Years of Autonomy 374
10.8 10.9	Control Variables: Sixth-Grade Mean Values, by School Type 375
10.9	Years of School Autonomy, Sixth Grade
10.10	Sixth-Grade Descriptive Statistics for Incentive Variables 376
10.11	Sixth-Grade Descriptive Statistics for Infrastructure/
10.12	Material Resources, by School Type
10.12	Sixth-Grade Descriptive Statistics for Professional
10.13	Development, by School Type
10.14	Sixth-Grade Achievement Scores, by School Type
10.15	Third-Grade Spanish Achievement
10.16	Third-Grade Mathematics Achievement
10.17	Third-Grade Mean Difference in Scores between
-0	Autonomous and Centralized Schools, by Process
10.18	Sixth-Grade Spanish Achievement
10.19	Sixth-Grade Math Achievement
10.20	Sixth-Grade Mean Difference in Scores between
	Autonomous and Centralized Schools, by Process
11.1	Relationship of Incentives to Attributability of Results403
11.2	Promotion Criteria According to Ley del Profesorado408