The Cost of Job Security Regulation: Evidence from Latin American Labor Markets

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Governments introduce labor market regulations with the stated objective of improving workers' welfare. Mandated benefits and social security programs improve workers' income security in case of sickness, work accidents, and old age. Job security provisions are designed to reduce a worker's odds of losing her job and her means of living. But, as is often true in economics, benefits usually come at a cost: mandated benefits may reduce employment; job security provisions may protect some workers at the expense of others.

This paper analyzes the costs of job security policies, using evidence from existing studies as well as new data. Latin America has implemented a wide range of labor market policies that provide natural experiments with which to evaluate the impact of these polices. Our evidence challenges the prevailing view that labor market regulations do not affect employment and have minimal costs.[1] We establish that job security policies have a substantial impact on the level and distribution of employment in Latin America. The evidence for their effect on unemployment is much weaker, but there are good conceptual reasons why this should be so.

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1. See, for example, Abraham and Houseman (1994); Blank and Freeman (1994); Freeman (2000) and the papers he cites.

Our focus on the cost side does not imply that we believe the benefits of labor policies for protected workers to be small or irrelevant. However, while the benefits to recipients are well documented, the costs are often unintended and not well understood. Thus while the evidence suggests that regulations promoting job security reduce covered workers' employment exit rates, it also indicates that demand curves are downward sloping, that regulation reduces aggregate employment, and that the greatest adverse impact of regulation is on youth and groups marginal to the work force. Insiders and entrenched workers gain from regulation, but outsiders suffer. As a consequence, job security regulations reduce employment and promote inequality across workers.

The outline of the paper is as follows. The following section describes and quantifies job security regulations in Latin America and the Caribbean. We then summarize the existing evidence on the impact of job security provisions on employment, unemployment, and turnover rates in Latin America. Next we present new evidence and finally summarize the paper and present our conclusions.

Job Security Regulation in Latin America and the Caribbean

In this paper, we define job security legislation to include all those provisions that increase the cost of dismissing a worker. This section quantifies the costs of abiding by the legislation, in terms of wages, in order to address three questions. How high are the implied costs of job security provisions in Latin America and the Caribbean? Within the region, which countries have costlier termination provisions and which are more deregulated? How do Latin American and Caribbean countries compare with industrial countries in terms of job security legislation?

In Latin American countries, labor codes based on the civil law system regulate the permissible types, duration, and conditions for termination of labor contracts. In contrast, most Caribbean countries are based on the common law system, such that the law enforces a contract with which both parties privately agree. Consequently, some countries do not have a specific body of law regulating employer-employee relationships, while others regulate some aspects and leave other aspects to the courts.

Latin American labor codes favor full-time indefinite employment over part-time, fixed-term, or temporary contracts. These types of contracts dif-

fer not only in the length of the employment relationship, but also in the conditions for termination. Whereas indefinite contracts carry severance pay obligations, temporary contracts can be terminated at no cost provided that the duration of the contract has expired. In contrast, most Caribbean countries do not regulate the range of admissible contracts. Such decisions are left to the parties involved in collective bargaining.

Important differences are also found in the conditions for terminating contracts. Latin American countries severely restrict the termination of a contract. Labor codes mandate a minimum period for notifying workers prior to termination, determine which causes are considered just or unjust causes for dismissal, and establish compensation to be awarded to workers for each possible cause of termination. In some countries, firms must also request permission to dismiss more than a certain fraction of their labor force. Finally, some countries allow a worker to be reinstated if the courts find the dismissal be unjustified, although many countries have eliminated this provision. In some of the Caribbean countries, advance notice and severance pay are negotiated as part of collective agreements, so there are no specific laws regulating such provisions.

Termination laws (or collective agreements) require firms to incur four types of costs: advance notification costs, compensation for dismissal, seniority premium for dismissed workers, and forgone wages during any trial in which the worker contests dismissal. The period of advance notification is included in the computation of costs because the various laws generally allow firms to choose between providing advance notice or paying a compensation equivalent to the wage corresponding to that period. Moreover, since productivity can decline substantially after notice, advance notification represents a dismissal cost even when firms choose to notify workers in advance. Advance notification periods vary from country to country, ranging from zero in Guatemala, Peru, and Uruguay to three months in Bolivia and Venezuela for workers with more than 10 years at a firm (see table A1 in appendix A).

The second component of dismissal costs is compensation for unjustified dismissal. Since the economic difficulties of a firm are not considered a just cause for dismissal in most Latin American countries, all labor force reductions fall in this category. The formula for calculating this compensation is based on multiples of the most recent wage and years of service. In contrast, in the Caribbean severance pay is only awarded to a worker when a firm needs to reduce the work force for lack of work or

technological change. In most other cases, employment at will is still the norm provided that the firm gives reasonable advance notice to a worker. Finally, in Belize, Bolivia, Chile, and Nicaragua, the law mandates compensation to the worker even in the case of voluntary quits.[2]

Some countries require employers to make an additional payment, known as a seniority premium, upon termination of the work relationship regardless of the cause or party initiating the termination. In Colombia, Ecuador, Panama, Peru, and Venezuela, this benefit is available to workers both in the case of a voluntary quit and in the case of unjustified dismissal: when workers quit, they obtain this payment; when workers are dismissed, they obtain this payment *plus* the compensation for dismissal. In Brazil, this additional payment is only available in the case of unjustified dismissal; workers who quit do not receive the payment. In all the above-mentioned countries, firms must deposit a certain fraction of workers' monthly wages in an individual trust fund to provide for this payment.[3] In Brazil, Colombia, Ecuador, and Peru, the worker gains access to the principal plus a yield.[4] In Panama and Venezuela, the seniority premium is fixed in terms of multiples of monthly wages, and either the amount accrued in the fund (Panama) or the fund plus a certain yield (Venezuela) pays for the seniority premium. However, the firm is responsible for covering the difference between the required seniority premium and the amount accumulated in the seniority premium fund.

Finally, some countries also require firms to pay a worker's forgone wages during the period of any legal process if the worker brings an action against the firm. This provision increases the overall cost of termination by increasing the overall compensation due and reducing workers' incentives to settle out of court.[5]

2. In Chile, compensation to a worker who quits occurs only after the seventh year of service and only if the worker chooses to set up an account.

3. In Brazil, the fund is called the Fundo de Garantia do Tempo de Serviço (Seniority Fund); in Peru, Compensación por Tiempo de Servicios (Seniority Compensation); in Colombia, Fondo de Cesantía (Dismissal Fund); and in Panama, Fondo de Antiguedad (Seniority Fund).

4. In Brazil a worker gains access to this fund only in the case of dismissal.

5. Another important component of dismissal costs in some countries stems from the specific regulations that govern collective dismissals. Because information on those regulations is not available for most countries of the region, we did not include them in our discussion or measurements.

In the 1990s seven countries (Colombia, Guatemala, Guyana, Nicaragua, Panama, Peru, and Venezuela) reformed their labor codes to reduce the cost of dismissing a worker. Not all labor reforms reduced job security, however. Chile and the Dominican Republic introduced legislation in 1991 and 1992, respectively, that significantly increased the amount a firm has to pay upon dismissing a worker.

To quantify all these provisions, Bertola, Grubb and Wells, and the Organization for Economic Cooperation and Development (OECD) construct ordinal measures of job security for industrial countries only, while Márquez constructs a similar measure for a sample of industrial, Latin American, and Caribbean countries.[6] Lazear quantifies firing costs as the amount (in multiples of monthly wages) owed to a worker who is dismissed after ten years of service.[7] These early measures are unlikely to accurately reflect the magnitude of dismissal costs, however. Ordinal measures can only state that one country is more regulated than another, but they cannot measure how much more regulated it is. Furthermore, job security tends to increase with tenure, and measures that are conditional on a certain tenure level only measure a given point in the severance-tenure schedule.

To address these shortcomings, we construct an alternative cardinal measure of firing costs that summarizes the entire tenure-severance pay profile using a common set of dismissal probabilities across a large sample of Latin American, Caribbean, and industrial countries. This measure computes the expected cost, at the time a worker is hired, of future dismissal due to unfavorable economic conditions.[8] The index is constructed to include only firing costs that affect a firm's decisions at the margin, and it therefore does not include the full cost of regulation on labor demand. It includes the cost of providing statutory advance notice and severance pay conditional on each possible tenure level that a worker can attain in the future.

The job security index does not incorporate the seniority premium as part of the cost because most countries provide for that payment through regular deposits to a fund. Since the deposits are not directly conditional on a dismissal, they are not likely to alter firing decisions. They clearly

6. Bertola (1990); Grubb and Wells (1993); OECD (1993; 1999); Márquez (1998).
7. Lazear (1990).
8. This measure is based on the index developed in Pagés and Montenegro (1999).

affect the firm's total labor costs, but together with other labor costs that do not affect firing decisions, they are not included in the index. The index also excludes the cost derived from forgone wages during trial. Although this component may represent a substantial share of the total cost of dismissal, information is not available for accurately estimating the full cost of the resolution of legal expenses arising from challenges to dismissals.

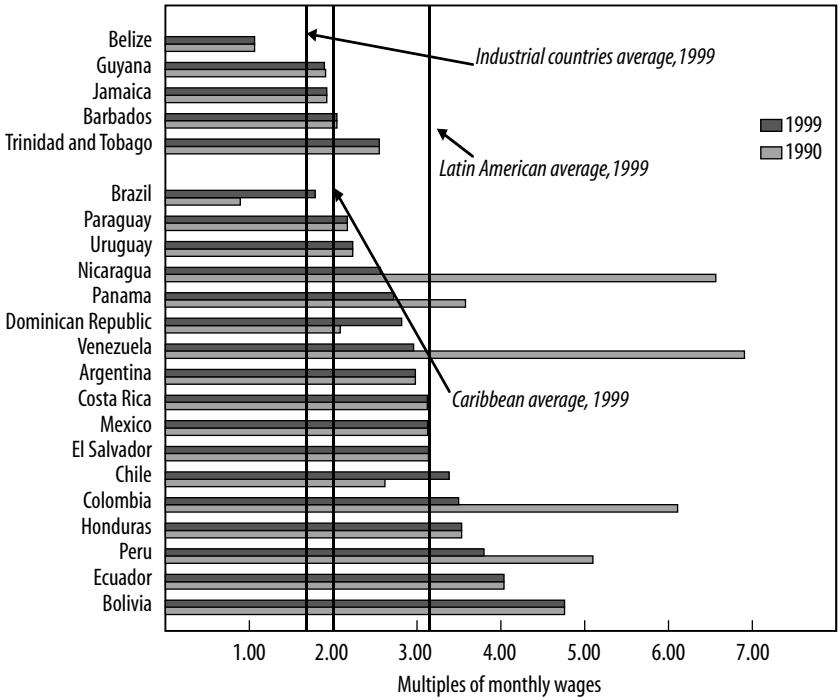
Our measure of job security thus reflects the marginal costs of dismissing full-time indefinite workers. It does not capture the effects of recent reforms that have made temporary and fixed-term contracts widely available in countries like Argentina and Peru. To the extent that fixed-term and indefinite contracts are not perfect substitutes—since temporary workers may be less productive—our index still captures the marginal cost of firing a tenured worker. Firms may be at the margin of firing temporary workers, however, so our index overstates the true marginal cost. The appendix provides additional information on the construction of this index. The measure will be used in the following section to quantify the impact of job security on different employment and unemployment measures in the sample countries.

Figure 1 shows the costs of advance notification and compulsory severance pay in Latin America and the Caribbean for 1990 and 1999, as summarized by the index. Even after many countries reduced dismissal costs in the 1990s, the average cost of dismissing a worker is still higher in Latin America than in the sample of OECD countries. In comparison, the Caribbean Basin countries exhibit much lower dismissal costs.

Surprisingly, Argentina and Mexico exhibit lower job security than Chile, which has traditionally been considered to have a more flexible labor market. This divergence arises because our index only measures one component of labor market rigidities. While Argentina and Mexico have stronger unions than Chile, and therefore are likely to have higher wage rigidity, Chile has higher individual job security provisions. Our index also discounts penalties that arise far in the future, so the fact that labor codes in Chile and other countries establish an upper limit in payments is discounted in our measure.

As reflected in the figure, five countries in Latin America (Colombia, Nicaragua, Panama, Peru, and Venezuela) undertook substantive reforms in their labor codes. Nicaragua and Venezuela reduced the expected dismissal cost by more than three monthly wages, while Panama and Peru reduced it by between one and one and a half monthly wages. Even after

FIGURE 1. Job Security Index: Expected Discounted Cost of Dismissing a Worker



Source: Authors' calculations based on national household surveys.

a decade of substantial deregulation, however, Latin American countries remain at the top of the job security list, with levels of regulation similar to or higher than those of the highly regulated countries of southern Europe (see table 1).

The Impact of Job Security Regulations

This section quantifies the impact of job security regulations on employment and turnover rates. Dismissal costs are significant in Latin America, as is clear from figure 1. It is therefore important to assess the impact, if any, that such policies have on the labor market.

TABLE 1. Job Security Index across Latin America, the Caribbean, and OECD Countries, Late 1990s

Country	*Job security index (monthly wages)*	*Annual wage (percent)*	*Ranking*
United States	0.000	0.000	1
New Zealand	0.221	1.844	2
Australia	0.443	3.696	3
Canada	0.553	4.610	4
Norway	0.912	7.599	5
Germany	1.140	9.498	6
France	1.143	9.526	7
Poland	1.219	10.160	8
Switzerland	1.247	10.395	9
United Kingdom	1.457	12.144	10
Belgium	1.729	14.407	11
Austria	1.784	14.864	12
Brazil	1.785	14.871	13
Greece	1.804	15.034	14
Guyana	1.890	15.750	15
Jamaica	1.920	16.003	16
Paraguay	2.168	18.068	17
Uruguay	2.232	18.599	18
Trinidad and Tobago	2.548	21.230	19
Nicaragua	2.563	21.358	20
Panama	2.718	22.652	21
Dominican Republic	2.814	23.454	22
Venezuela	2.955	24.625	23
Argentina	2.977	24.808	24
Costa Rica	3.121	26.005	25
Mexico	3.126	26.050	26
El Salvador	3.134	26.116	27
Spain	3.156	26.300	28
Chile	3.380	28.164	29
Colombia	3.493	29.108	30
Honduras	3.530	29.418	31
Peru	3.796	31.632	32
Turkey	3.973	33.110	33
Ecuador	4.035	33.621	34
Portugal	4.166	34.720	35
Bolivia	4.756	39.637	36

Source: Authors' calculations (see appendix A).

Theoretical Discussion

Analyzing the impact of job security provisions requires a complex framework that encompasses dynamic decisions of firms. Bertola develops a dynamic partial-equilibrium model to assess how a firm's hiring and firing decisions are affected by dismissal costs. In the face of a given shock, the optimal employment policy of a firm involves one of three state-contingent responses: dismissing workers; hiring workers; and doing nothing, in which case employment in that firm does not change. How are these decisions altered by firing costs? In the face of a negative shock and declining marginal value of labor, a firm may want to dismiss some workers. If it has to pay a mandatory dismissal cost, however, this cost discourages the firm from adjusting its labor force, resulting in fewer dismissals than in the absence of such costs. Conversely, in the face of a positive shock firms may want to hire additional workers, but they will take into account that some workers may have to be fired in the future if demand turns down. This prospective cost acts as a hiring cost, effectively reducing creation of new jobs in good states. The net result is lower employment rates in expansions, higher employment rates in recessions, and lower turnover rates as firms hire and fire fewer workers than they would in the absence of these costs.[9]

Bertola's model predicts a decline in employment variability associated with firing costs, but the implications of his model for average employment are ambiguous. In particular, whether average employment rates increase or decline as a result of firing costs depends on whether the decline in hiring rates more than compensates for the reduction in firings. Simulations suggest that average employment in a given firm is actually likely to increase when firing costs increase.[10] These results, however, are quite sensitive to different assumptions about the persistence of shocks, the elasticity of the labor demand, the magnitude of the discount rate, and the functional form of the production function. Thus, job security has a larger negative effect on employment in the presence of less persistent shocks and lower discount rates, because both factors reduce hiring relative to firing.[11] A higher elasticity of the demand for goods similarly implies a

9. Bertola (1990).
10. Bertola (1990); Bentolila and Bertola (1990).
11. Bentolila and Saint Paul (1994).

larger negative effect of job security on employment rates.[12] When investment decisions are also considered, firing costs lower profits and discourage investment, increasing the likelihood that firing costs reduce the demand for labor.[13]

These results analyze employment rates in individual firms without considering the impact of firing costs on the extensive margin, that is, how firing costs affect the creation and destruction of firms. Hopenhayn and Rogerson develop a general equilibrium model that accounts for entry and exit of firms, based on the U.S. economy. In their model, Bertola's partial equilibrium framework[14] is embedded in a general equilibrium framework in which jobs and firms are created and destroyed in every period in response to firm-specific shocks. They find that increasing firing costs in the U.S. would lead to an increase in the average employment of existing firms as a consequence of the reduction in firings. However, they also find that such a policy would result in lower firm entry and lower job creation in newly created firms. For the parameter values they consider, these two last effects offset the increase in employment in existing firms, resulting in a reduction of overall employment rates.[15]

Job security may also affect employment by changing the structure of wages. The insider-outsider literature emphasizes that job security provisions increase the insider power of incumbent workers. This effect results in higher wages for insiders and lower overall employment rates.[16] Caballero and Hammour consider a model in which job security provisions increase the ability of labor to appropriate capital by increasing capital specificity. That is, a larger part of invested capital becomes relationship specific and is lost if capital separates from labor. While in the short run, higher firing costs allow labor to extract higher rents from capital, in the long run firms invest in technologies that are less labor intensive, reducing employment demand.[17]

12. Risager and Sorensen (1997).
13. Risager and Sorensen (1997).
14. Bertola (1990).
15. Hopenhayn and Rogerson (1993).
16. Lindbeck and Snower (1987).
17. Caballero and Hammour (1997).

Recent literature also emphasizes the possible impact of job security regulations on the composition of employment. Kugler proposes a model in which job security regulations provide incentives for high-turnover firms to operate in the informal sector.[18] This decision entails producing at a small, less efficient scale in order to remain inconspicuous to tax and labor authorities. In this framework, high job security is likely to increase informality rates. Pagés and Montenegro develop a model in which tenure-related job security biases employment against young workers and in favor of older ones. As severance pay increases with tenure, and tenure tends to increase with age, it becomes more costly to dismiss older workers than younger ones. If wages do not adjust appropriately, negative shocks result in a disproportionate share of layoffs among young workers. Job security based on tenure thus results in lower employment rates for the young, relative to older workers, because it reduces hiring and actually increases firings for young workers.[19]

Higher job security provisions thus reduce turnover rates and bias the composition of employment against young workers and against employment in the formal sector. The implications for average employment in the economy at large, however, are somewhat less conclusive since they depend on specific configurations of parameters for the economy. To complicate matters further, the Coase theorem indicates that the impact of job security could be completely "undone" with a properly designed labor contract provided that there are no restrictions on transactions between workers and firms.[20] In a world without transaction costs, wages adjust to offset the possible negative impact highlighted above. Given the ambiguity of theoretical models, the magnitude and direction of the impact of job security on employment have to be resolved empirically.

Empirical Evidence for Latin America and the Caribbean

Despite strict job security regulation in most of the countries of the region, research assessing its impact has been extremely scarce. Fortunately, a recent series of empirical studies assesses the impact of job security regulation on employment and turnover rates in Latin America and the

18. Kugler (2000).
19. Pagés and Montenegro (1999).
20. Lazear (1990).

Caribbean, providing the first systematic evidence of its impact on the labor market.[21] With regard to turnover rates, changes in turnover are measured using changes in the duration of jobs (tenure), the duration of unemployment, and the employment and unemployment exit rates.[22] Higher employment exit rates indicate more layoffs (or more quits), while higher exit rates out of unemployment and into formal jobs indicate higher job creation in the formal sector. In the studies that examine the impact of job security on employment rates, the definition of employment changes depending on the data. Most of the studies focus on employment in large firms, although some incorporate more aggregated measures of employment. A small group of studies also examines the impact of job security on the composition of employment.

TURNOVER RATES. Evidence on the impact of job security is strongest with regard to turnover. As most theoretical models predict, the empirical evidence confirms that less stringent job security is associated with higher turnover in the labor market. Kugler analyzes the impact of the 1990 labor market reforms in Colombia. She finds that a reduction in job security is associated with a decline in average tenure and an increase in employment exit rates.[23] This decline is significantly larger in the formal sector, which is covered by the regulations, than in the informal, or uncovered, sector. In addition, the increase is larger in large firms and imprecisely determined in the smallest ones. Kugler's results show similar patterns within tradable and nontradable sectors, providing a clear indication that the decline in tenure cannot be attributed to contemporary trade reforms. The increasing use of temporary contracts only partly explains the increase in formal sector turnover rates, since job stability also declined for workers employed at permanent jobs.[24] Finally, the increase in turnover is larger for those workers who are more protected by high levels of job security, that is, middle-aged and older men employed in large firms.

21. Most of these projects were developed under the IDB research network project "Labor Market Legislation and Employment in Latin America," coordinated by James Heckman and Carmen Pagés-Serra.

22. These studies estimate hazard rates. The hazard rate is defined as the probability that an employment or unemployment spell ends at time *t*, conditional on its having lasted a given period of time (for example, one month, one year).

23. Kugler (2000). In this study, tenure is measured by the duration of incomplete spells.

24. In her study, Kugler performs two types of analysis. First, she uses a difference-in-difference estimator to analyze whether changes in average duration of employment (unemployment) are statistically significantly different in the formal than in the informal sector.

Kugler also finds a decline in the average duration of unemployment after the reforms. In addition, unemployment exit rates increase more for workers who exit to the formal sector than they do for those who exit to informal jobs. Her results show quite similar patterns across sectors, as well as a higher exit rate toward larger firms. Only two-thirds of the increase in the rate of entry into employment can be attributed to higher use of temporary contracts: the rest is explained by increased exit rates into permanent jobs in the formal sector. Her results for different workers suggest that young people and women benefit more from higher exit rates out of unemployment and into the formal sector.

The magnitude of the estimated effects is not negligible. Kugler estimates that in Colombia, the 1990 reform increased exit rates out of formal employment, relative to informal employment, by 6.4 percent, while exit rates out of unemployment and into formal jobs increased by 5.9 percent with respect to exit rates to the informal sector.

Saavedra and Torero conduct a similar evaluation of the impact of the 1991 reform in Peru.[25] Like the Colombian reform, the 1991 reform considerably reduced the cost of dismissing workers. The analysis shows a consistent decline in average job tenure from 1991 onward, suggesting higher employment exit rates. As in Colombia, the decline is significantly more pronounced in the formal sector than in the informal sector. In addition, tenure patterns are quite similar across economic sectors, suggesting that their findings cannot be explained by the far-reaching trade reforms that took place in Peru in the early 1990s.

Paes de Barros and Corseuil estimate the impact of the 1988 Brazilian constitutional reform on employment exit rates. In that year, the cost of dismissing workers was raised, and a reduction in exit rates would therefore be expected.[26] Their results confirm that aggregate employment exit rates declined in the formal sector relative to the informal sector for long employment spells (two years or more).

The credibility of these studies hinges on the validity of the informal sector as a control group unaffected by the reforms. Kugler (2000) shows

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Second, she estimates an exponential duration model to control for changes in demographic covariates, pooling data from before and after the reform and using interaction terms to assess the differential impact in the formal and in the informal sector.

25. Saavedra and Torero (2000).

26. Paes de Barros and Corseuil (2000).

that while estimates based on comparisons of the formal and informal sectors are likely to be biased, under plausible conditions such comparisons are still valid, at least as tests of the null hypothesis of no effect from the reform.[27] When taken together, these studies provide consistent evidence that dismissal costs and other employment protection mechanisms reduce worker reallocation in the labor market. Unfortunately, the studies do not identify whether increased worker reallocation is due to increased layoffs, higher quits, or both.

Hopenhayn provides further evidence of the link between job security and worker turnover rates, this time from Argentina.[28] In 1991 the Argentine government deregulated the use of temporary and fixed-term short-duration contracts. In 1995 additional contractual forms were allowed, including a three-month trial period. Such contracts reduced or eliminated the cost of terminating an employment relationship. Hopenhayn finds that after 1995 employment exit rates increase substantially for short-duration employment while they remain constant for long durations. This increase in separations is due to a rise in both quits and layoffs, although the increase in layoffs is higher.

Job security regulations protect workers against the risk of losing a job. From this point of view, the recent reforms have reduced the income security of formerly protected workers. However, the evidence also suggests that stringent job security provisions reduce exit rates out of unemployment and into formal jobs, prolonging the duration of unemployment. In other words, recent labor market reforms have also increased the probability of an unemployed worker finding a job in the formal sector.

AVERAGE EMPLOYMENT. The available evidence for Latin American and Caribbean countries shows that job security provisions have a consistent, though not always statistically significant, negative impact on average employment rates. Saavedra and Torero in Peru and Mondino and

27. Kugler shows that lower severance pay may induce high-turnover informal firms to move to the formal sector. Under the assumption of no overlap in the distribution of turnover between covered and uncovered firms, or that entry to the covered sector comes from the high end—or at least from the end that is higher than the formal sector—this shift results in higher turnover in both the formal *and* the informal sector. Fortunately, higher turnover in the informal sector biases the difference-in-difference estimator downward. Therefore, a positive estimate still provides substantial evidence of increased turnover in the formal sector.

28. Hopenhayn (2000).

Montoya in Argentina use firm-level panel data to estimate the impact of job security on employment. Both studies estimate labor demand equations in which an explicit measure of job security appears on the right-hand side of the equation, and both find evidence that higher job security levels are associated with lower employment rates.[29] In the case of Peru, Saavedra and Torero find that the size of the impact of regulations is correlated with the magnitude of the regulations themselves. The impact is very high at the beginning of their sample (1987–90), which coincides with a period of very high dismissal costs (see table A1). Afterward, the magnitude of the coefficient declines during a period of deregulation, only to increase again from 1995 onward, following a new increase in dismissal costs. Their estimates for the long-run elasticities of severance pay are very large (in absolute value): between 1987 and 1990 a 10 percent increase in dismissal costs, keeping wages constant, is estimated to reduce long-run employment rates by 11 percent. In subsequent periods, the size of the effect becomes smaller but is still quite large in magnitude (between 3 and 6 percent). In Argentina, the estimated long-run elasticity of a 10 percent increase in dismissal costs is also between 3 and 6 percent.[30]

29. Saavedra and Torero (2000); Mondino and Montoya (2000). The data for the Peruvian study cover firms with more than 10 employees in all sectors of the economy. The Argentinean study only covers manufacturing firms. Given the nature of these surveys, they are better proxies for formal employment than for employment as a whole. The data used in these two studies do not capture job creation by new firms, since both panels are based on a given census of firms, without replacement.

30. The job security elasticities obtained for Peru seem somewhat too large when compared with the wage elasticities estimated in that same study. One explanation for this seemingly high elasticity in Peru is that this measure is upwardly biased by a simultaneity problem arising from the construction of the job security variable. Thus, both the Peruvian and the Argentinean studies construct explicit measures of job security based on the equation

$$JS_{jt} = \lambda_j T_{jt} P_{jt} SP_{jt}$$

where λ_j is the layoff rate in sector j at time t, T_{jt} is average tenure in sector j, time period t, P_{jt} is the share of firms in sector j, time period t, that are covered by regulations, and SP_{jt} is the mandatory severance pay in sector j, given average tenure T_{jt}. Because this measure provides variability across sectors and periods, it affords a more precise estimation of the impact of job security than does a before-and-after comparison. Yet such measures may also be correlated with the error term in a labor demand equation, since the tenure structure of a firm might be correlated with its employment level. The fact that average layoff rates vary vary by sector may also lead to simultaneity if sectors with higher layoffs have lower

In a very different type of study, Kugler computes the net impact of Colombia's 1991 labor reform on unemployment rates.[31] Using estimates of the unemployment and employment exit rates for periods before and after the reform, she finds that the reforms caused a decline in unemployment between 1.3 and 1.7 percentage points. As in Argentina and Peru, then, Kugler's estimates indicate that the positive impact on the hiring margin outweighs the negative impact on the firing margin, resulting in a decline in unemployment rates.

Finally, Downes and others found a negative and statistically significant association between job security and employment in Barbados and no statistical association in Jamaica and in Trinidad and Tobago.[32]

Other studies find that job security has a negative, but not statistically significant, effect on average employment rates. Pagés and Montenegro find this to be the case for overall wage-employment rates in Chile.[33] Márquez, using data from a cross section of Latin American and OECD countries, finds a negative, but not statistically significant, coefficient of job security on aggregate employment rates.[34] Table 2 summarizes the various estimates of the effect of job security on employment.

Thus while the theoretical models exhibit some ambiguity regarding the impact of job security provisions on long-run employment rates, the empirical evidence for Latin America and the Caribbean is consistent across studies. Two additional sources of evidence complement these analyses. The existing evidence on the impact of job security on employment in OECD countries is briefly reviewed below. The following section then provides new evidence combining employment, unemployment, and job security measures from a panel of Latin American, Caribbean, and OECD countries.

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employment. Periods or sectors with low employment may be associated with less job creation, high average tenure, and, consequently, high measures of job security. The Argentine study shows that fixing tenure to the period average reduces the estimated elasticity of job security. A job security elasticity between ⅓ and ⅔ of the wage elasticity seems a more realistic estimate of its impact.

31. Kugler (2000).

32. Downes and others (2000). The relevance of these findings, however, is reduced by the limitations of their data. While most of the studies quoted in this section are based on individual firm or sectoral data, their study is based on nationwide data for a relatively short sample of years.

33. Pagés and Montenegro (1999).

34. Márquez (1998).

TABLE 2. Summary of Long-Run Job Security Elasticities in Latin America, the Caribbean, and OECD countries

Study	*Mean*	*Standard error*	*Employment rate*
Mondino and Montoya (Argentina)			
High estimate[a]	–0.684	0.0145	Employment in large firms
Low estimate[b]	–0.305	0.0060	Employment in large firms
Pagés and Montenegro (Chile)	–0.1198	0.2440	Wage employment/population
Saavedra and Torero (Peru)	–0.406	0.06	Employment in large firms
Heckman and Pagés, FE[c]	–0.0516	0.0318	Total employment/population
Heckman and Pagés, RE[c]	–0.0502	0.0168	Total employment/population
Heckman and Pagés, OLS[c]	–0.0502	0.0168	Total employment/population

Sources: Authors' calculations based on Mondino and Montoya (2000); Pagés and Montenegro (1999); Saavedra and Torero (2000); and national household surveys.

a. Based on table 9 in Mondino and Montoya (2000).

b. Based on table 10 (option B) in Mondino and Montoya (2000).

c. Estimates for Latin America and the Caribbean (fifteen countries). FE: fixed-effects estimates; RE: random-effects estimates; OLS: pooled ordinary least squares estimates. The Heckman and Pagés elasticities are obtained from a model identical to the one reported in table 6, but in which job security provisions enter the specification in logs.

The evidence from OECD countries reinforces the results found for Latin America. All the studies find a negative impact of job security on employment, with the exception of Anderson, who finds a positive association between dismissal costs and long-run employment.[35] Using panel data from OECD countries, for example, Lazear shows that more stringent job security measures are associated with lower employment and labor force participation rates.[36] Grubb and Wells find a negative correlation between job security and wage-employment rates.[37] Addison and Grosso reexamine Lazear's estimates using new measures of job security across countries and find similarly negative effects on employment rates.[38] Nickell finds a negative effect of job security provisions on total employment rates and no effect on the employment rates of prime-aged males.[39] Finally, a recent OECD study finds a negative, but not statistically significant, effect of job security on total employment rates.[40] In contrast, the evidence

35. Anderson (1993).
36. Lazear (1990).
37. Grubb and Wells 1993).
38. Addison and Grosso (1996).
39. Nickell (1997).
40. OECD (1999).

regarding the effect of job security on unemployment in OECD countries is ambiguous, but there are conceptual reasons for its being so. While Blanchard, Esping-Andersen, Jackman and others, and Nickell, among others, find no effect of job security on unemployment, Lazear, Elmeskov and others, and Scarpetta find positive effects.[41] Yet it should come as no surprise that a negative impact on employment is not necessarily reflected in a positive effect on unemployment. If workers' participation decisions are influenced by job security policies (as shown by Lazear),[42] a reduction in employment will be associated with a decline in participation rates. This is particularly true for workers with lower attachment to the labor force or less access to unemployment insurance benefits.

THE COMPOSITION OF EMPLOYMENT. Some recent evidence sheds new light on the possible impact of job security on the composition of employment in the region. Márquez constructs a job security indicator for Latin American, Caribbean, and OECD countries and uses it to estimate the effects of job security on the distribution of employment between the formal and informal sectors. He finds that more stringent job security provisions are associated with a larger percentage of self-employed workers.[43] Pagés and Montenegro find that more stringent job security in Chile is associated with a substantial decline in the rate of wage employment among young workers and an increase in the employment rates of older workers. This change in the composition of employment appears to be driven by the high costs of dismissing older workers relative to younger ones, as a result of tenure-related job security provisions.[44]

New Evidence

This section draws on substantial cross-country and time-series variability in job security provisions to estimate whether the negative effects of job security encountered in the studies of individual Latin American and

41. Blanchard (1998); Esping-Andersen (forthcoming); Jackman and others (1996); Nickell (1997); Lazear (1990); Elmeskov and others (forthcoming); Scarpetta (1996).
42. Lazear (1990).
43. Márquez (1998).
44. Pagés and Montenegro (1999).

Caribbean countries can be generalized to a wider sample of countries and reforms.

The Data

To construct a data set that spans both industrial countries and Latin America and the Caribbean, we first collect employment and unemployment data for the industrial countries using OECD statistics. We then follow the OECD definitions of these variables to construct the same indicators on the basis of Latin American household surveys. Table 3 provides summary statistics for the overall sample, the Latin American and Caribbean sample, and the OECD sample (excluding Mexico, which is included in the Latin American sample).

For the different variables, the number of countries in the total sample ranges from thirty-six to forty-three, and the average number of observations per country ranges from one to five. Around twenty-eight of the countries represented belong to the sample of OECD countries, while fifteen are from the Latin American and Caribbean region. Regarding the period spanned in our sample, the data from Latin America and the Caribbean include one or two surveys from the 1980s and one or two from the 1990s; the OECD sample only covers the 1990s. All employment rates are measured as a percentage of the working age population and all unemployment rates as a percentage of the active economic population (see the appendix for a definition of the variables used in this study).

Table 3 shows some remarkable differences between the OECD and Latin American samples. As noted above, average job security is higher in Latin America and the Caribbean than in OECD countries. At the same time, all employment rates (except that for prime-aged females) are higher and all unemployment rates are lower in Latin America and the Caribbean than in industrial countries. In particular, the region demonstrates a higher share of self-employment and a much lower share of long-term unemployment (more than six months). Finally, union density and female participation are both lower in the region.

Methodology and Results

Constructing our own data set from individual household-level surveys guarantees that all the labor market variables are comparable and reliable. One drawback of our data set is that it only comprises a few time series

TABLE 3. Summary Statistics

Variable[a]	*Number of observations*	*Number of countries*	*Observations per country*	*Mean*	*Standard deviation*
Full sample					
Total employment	221	43	5.1	66.09	8.44
Employment of prime-aged males	139	43	3.2	89.19	4.93
Employment of prime-aged females	139	43	3.2	56.88	14.85
Youth employment (aged 15–24)	140	43	3.3	53.05	15.47
Self-employment	84	40	2.1	26.92	11.87
Total unemployment	221	43	5.1	8.01	4.15
Unemployment of prime-aged males	221	43	5.1	8.01	4.15
Unemployment of prime-aged females	139	43	3.2	4.99	3.09
Youth unemployment (aged 15–24)	139	43	3.2	6.25	4.39
Long-term unemployment	140	40	3.5	13.42	7.71
Job security	205	36	5.7	2.62	1.74
GDP (1995 dollars)	212	42	5.0	5.E + 11	9.E + 11
GDP growth	179	41	4.4	2.90	3.30
Youth/Total population	221	43	5.1	0.16	0.03
Female participation	221	43	5.1	55.64	13.34
Union density	47	39	1.2	26.52	17.79
Latin America and the Caribbean (including Mexico)					
Total employment	59	15	3.93	71.950	4.222
Employment of prime-aged males	59	15	3.93	91.746	3.157
Employment of prime-aged females	59	15	3.93	47.191	10.699
Youth employment (aged 15–24)	59	15	3.93	63.662	11.078
Self-employment	59	15	3.93	32.742	8.269
Total unemployment	59	15	3.93	7.404	3.296
Unemployment of prime-aged males	59	15	3.93	3.881	2.578
Unemployment of prime-aged females	59	15	3.93	4.666	3.134
Youth unemployment (aged 15–24)	59	15	3.93	10.881	4.670
Long-term unemployment	42	15	3.93	14.548	7.262
Job security	108	16	2.69	3.512	1.567
GDP (1995 dollars)	66	20	5	1.24E + 11	1.99E + 11
GDP growth	59	17	3.88	3.312	3.837
Youth/Total population	71	17	3.47	0.197	0.016
Female participation	59	18	3.94	44.255	10.526
Union density	21	17	1.23	18	11.37
OECD countries (excluding Mexico)					
Total employment	162	28	5.79	63.96	8.59
Employment of prime-aged males	80	28	2.86	87.31	5.16
Employment of prime-aged females	80	28	2.86	64.02	13.39
Youth employment (aged 15–24)	81	28	2.89	45.33	13.54
Self-employment	25	25	1.00	13.17	6.47
Total unemployment	162	28	5.79	8.22	4.41
Unemployment of prime-aged males	162	28	5.79	8.22	4.41
Unemployment of prime-aged females	80	28	2.86	5.80	3.19
Youth unemployment (aged 15–24)	80	28	2.86	7.43	4.81
Long-term unemployment	81	24	3.38	15.28	8.90
Job security	97	16	6.06	1.63	1.36
GDP (1995 dollars)	146	25	5.84	6.25E + 11	1.07E + 12
GDP growth	120	24	5.00	2.70	3.00
Youth / Total population	150	25	6.00	0.15	0.02
Female participation	162	28	5.79	59.79	11.77
Union density	26	22	1.18	33.43	19.18

Source: Authors' calculations based on national household surveys and OECD data.

a. See appendix B for definition of variables.

observations per country (usually three or four), and not necessarily from consecutive years. Given the nature of the data, we decided not to average observations from a given period—as done in most of the OECD studies on job security—and instead control for the state of the business cycle in a given year using GDP growth.

We use a reduced form approach to investigate whether countries and periods with more strict job security regulations are associated with lower employment or higher unemployment rates. We thus estimate an average net effect of job security as it operates through intermediate variables which we do not include in the regression. In this paper, we do not estimate the theoretically more appropriate state-contingent demand functions because we lack the information on the states of demand confronting individual firms. Job security costs govern the marginal costs of labor when firms are firing, but they also affect overall labor demand through their effect on expected labor costs (across states). It is the latter effect that we attempt to identify. Since most of the variation is cross-sectional, we use different types of variables to control for country-specific factors that may be correlated with job security. First, we use demographic controls, such as female participation rates and the share of the population between 15 and 24 years of age. These variables account for the fact that southern European and Latin American countries, which feature high job security, tend to have low female participation and a large youth population. Since both factors affect overall employment rates, not including them in the specification may lead to substantial biases in the estimates. We protect against common country-specific unobservables that remain constant over time and that may affect both left-hand-side and right-hand-side variables by including country-specific fixed effects in a set of regression specifications reported below. Second, we use GDP (measured in 1995 dollars) to control for differences in development levels across countries. We also include a dummy variable for Latin America and the Caribbean to control for regional differences not controlled by GDP levels.[45]

Most of the variability in our sample comes from differences across countries and regions, as well as from some time-series variance within

45. These specifications should include a measure of labor costs encompassing both wages and nonwage labor costs. Unfortunately, a complete and comparable measure of labor costs across countries and time is not available.

Latin America and the Caribbean. The OECD sample exhibits very little time-series variability. Given this variation, fixed effect (FE) estimates are likely to be very imprecise because they only use the time-series variation within the Latin American sample. Instead, random effects (RE) or pooled ordinary least squares (OLS) estimates, which use both the cross-section and the time-series variation included in the sample, are likely to produce estimates with smaller standard errors. The latter estimates will be biased, however, if variables included as controls are correlated with country-specific error terms. To protect against the bias that results from using one estimator, we estimate our basic specification using pooled OLS, RE, and FE and then compare whether these different methodologies yield similar point estimates.

The results, which are presented in tables 4, 5, and 6, are striking. First, the point estimates for the job security coefficient in the total employment specifications are very similar across estimation methodologies. The three estimates suggest that job security has a large negative effect on employment rates. This effect is strongly statistically significant in the OLS and the RE estimates, while it is not statistically significant, at conventional levels, in the FE case. One obvious advantage of using a cardinal measure of job security is that we can quantify the impact of these provisions on employment. The magnitude of job security elasticities is quite large: an increase in expected dismissal costs equivalent to one month of pay is associated with a decline in employment rates of 1.8 percentage points. Given that in Latin America the average dismissal cost in 2000 was 3.04 months of pay (see figure 1), the estimated loss in employment—as a percent of the total working population—due to job security provisions is about 5.5 percentage points.

In addition, OLS, FE, and RE estimates suggest that job security does not affect the employment rates of all workers in the same fashion. While the impact on the employment rates of prime-aged males is half the impact on total employment, the impact on youth employment rates is almost two times larger. The magnitudes are huge. The OLS and the RE estimates suggest that job security reduces youth employment rates in the region by almost 10 percentage points. This effect is even larger in the FE estimates. These results are consistent with those obtained by Pagés and Montenegro for Chile.[46]

46. Pagés and Montenegro (1999).

TABLE 4. Pooled OLS Estimation for the Full Sample[a]

	Employment categories					*Unemployment categories*				
Variable	*Total* (1)	*Prime-aged male* (2)	*Prime-aged female* (3)	*Youth* (4)	*Self-employed* (5)	*Total* (6)	*Prime-aged male* (7)	*Prime-aged female* (8)	*Youth* (9)	*Long-term* (10)
Latin America	16.04***	4.70***	−11.37	28.47	11.67***	−2.12**	−2.75***	−4.23***	−7.16***	−44.14***
and the Caribbean	(1.33)	(.91)	(3.22)	(3.29)	(3.21)	(1.15)	(.70)	(1.11)	(2.57)	(3.76)
Job security	−1.37***	−0.81***	−1.46	−3.54***	1.37**	0.83***	.87***	.833***	.87*	.86
	(.32)	(.258)	(.90)	(3.97)	(.58)	(.28)	(.19)	(.31)	(.53)	(.89)
GDP growth	−.108	−0.05	−0.124	.008	.50**	0.06	−0.04	.10	0.083	−0.16
	(.133)	(.110)	(.387)	(.36)	(.23)	(.116)	(.08)	(.13)	(.21)	(0.36)
GDP level	−3E-12***	−1.97E-12	2.45E-12	−3.5E-12	−3.01E-12	3.51E-12	2.91E-12***	3.6E-11**	2.55E-12	6.71E-12*
	(1.28e-12)	(1.39e-12)	(4.86e-12)	(4.58e-12)	(3.33e-12)	(1.11e-12)	(1.06e-12)	(1.68e-11)	(2.69e-12)	(3.88e-12)
Female participation	0.399***	—	—	.334***	.240***	−.108***	—	—	−.186	−.65***
	(0.047)			(.12)	(.084)	(.04)			(.078)	(0.14)
Population aged 15–24	11.56	—	—	—	115.26**	−34.49	—	—	−69.89	−96.57
	(27.08)				(52.12)	(23.53)			(48.85)	(17.28)
Constant	41.63***	89.95***	62.81***	33.19***	−19.35	17.43	3.24***	5.09	36.21**	104.7***
	(5.21)	(1.21)	(4.27)	(8.32)	(10.59)	(5.07)	(.93)	(1.47)	(10.12)	(17.25)
R^2	0.73	0.33	0.29	0.53	0.57	0.23	0.32	0.26	0.30	.85
Number of observations	114	77	77	78	65	114	77	77	78	64

Source: Authors' calculations based on national household surveys and OECD data.

* Significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

a. Based on a sample of sixteen Latin American and Caribbean countries and twenty-eight OECD countries. Standard errors reported in parentheses. See appendix B for definition of variables.

TABLE 5. Random-Effects (RE) Estimation for the Full Sample[a]

	Employment categories					*Unemployment categories*				
Variable	*Total (1)*	*Prime-aged male (2)*	*Prime-aged female (3)*	*Youth (4)*	*Self-employed (5)*	*Total (6)*	*Prime-aged male (7)*	*Prime-aged female (8)*	*Youth (9)*	*Long-term (10)*
Latin America	15.26***	4.62**	−11.05**	29.99***	14.56***	−2.24	−2.36*	−3.79	−7.29	−48.61***
and the Caribbean	(2.15)	(1.82)	(5.47)	(5.23)	(3.90)	(1.93)	1.26	(1.92)	(3.81)	(6.35)
Job security	−1.84***	−1.04**	.526	−3.28***	.35	.69	.77**	1.06**	.99	.95
	(.505)	(.48)	(1.33)	(1.38)	(.87)	(.45)	(.34)	(.515)	(.86)	(1.49)
GDP growth	−0.001	.054	.218	0.164	.393***	−.04	.016	.12	−.084	−0.171
	(.073)	(.091)	(.199)	(.278)	(.166)	(.06)	(.07)	(.09)	.135	(.246)
GDP level	−4.14E-12	−2.68E-12	1.31E-11*	−7.18E-12	−5.36E-12	4.23E-11*	3.13E-12*	4.72E-12*	−5.36E-12	9.49E-12
	(2.51e-12)	(2.42e-12)	(7.03e-12)	(6.87e-12)	(4.39e-12)	(2.24e-12)	(1.71e-12)	(2.57e-12)	(4.39e-12)	(6.80e-12)
Female participation	0.33***	—	—	0.63***	.036	.021	—	—	.037	−.304*
	(0.047)			(.13)	(.08)	(.04)			.077	(.161)
Population aged 15–24	3.16	—	—	—	40.22	29.98	—	—	41.98	115.79
	(26.84)				(54.40)	(25.22)			(46.25)	(115.28)
Constant	47.77***	90.37***	54.06***	16.80*	6.95	.53	3.36**	4.23**	4.95	50.7***
	(5.74)	(1.89)	(5.34)	(9.43)	(11.13)	(5.38)	(1.36)	(2.01)	(9.81)	(22.22)
R^2	0.72	.32	.23	0.50	.57	.13	.31	.25	.17	0.82
Hausman test	5.46	3.90	2.17	9.43	53.56	9.53	4.87	3.75	8.78	8.06
	(.36)	(.27)	(.57)	(0.05)	(0.00)	(0.08)	(.18)	(.28)	(.11)	(.15)
Number of observations	114	77	77	78	65	114	77	77	78	64

Source: Authors' calculations based on national household surveys and OECD data.

* Significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

a. Based on a sample of sixteen Latin American and Caribbean countries and twenty-eight OECD countries. Standard errors reported in parentheses. See appendix B for definition of variables.

TABLE 6. Fixed-Effects (FE) Estimation for the Full Sample[a]

	Employment categories					*Unemployment categories*				
Variable	*Total* (1)	*Prime-aged male* (2)	*Prime-aged female* (3)	*Youth* (4)	*Self-employed* (5)	*Total* (6)	*Prime-aged male* (7)	*Prime-aged female* (8)	*Youth* (9)	*Long-term* (10)
Job security	−1.55	−0.013	3.27	−6.04*	−8.43***	−.187	−1.06	0.021	−1.16	1.51
	(1.07)	(1.183)	(2.29)	(3.55)	(1.73)	(.99)	(.96)	(1.28)	(1.62)	(4.64)
GDP growth	0.049	.143	.145	.278	.111	−0.09	−0.05	0.024	−.25*	−0.17
	(.078)	(.101)	(.19)	(.303)	(.150)	(.07)	(.08)	(.11)	(.13)	(.28)
GDP level	−1.92E-11	−2E-11***	5.5E-11**	−6.7E-11**	−3.01E-12	1.6E-11***	2.1E-11***	2.4E-11**	3.9E-11***	3.90E-11
	(8.84e-12)	(9.97e-12)	(1.93e-11)	(3.25e-11)	(3.74e-12)	(8.1e-12)	(8.15e-12)	(1.08e-11)	(1.48e-12)	(4.55e-11)
Female participation	0.34***	—	—	1.00***	.240	.07	—	—	.08	−.07
	(0.05)			(.19)	(.104)	(.05)			(.09)	(.23)
Population aged 15–24	−5.93	—	—	—	115.26	56.03*	—	—	60.71	529.05**
	(31.20)				(51.13)	(28.63)			(49.10)	(218.91)
Constant	59.67***	95.94***	27.14***	42.15***	−19.35	−9.05	3.00	−.008	−7.12**	−63.79***
	(7.21)	(3.37)	(6.54)	(11.35)	(10.37)	(6.62)	(2.76)	(3.66)	(11.63)	(45.53)
R^2	0.09	0.05	0.05	0.03	0.30	0.03	0.03	0.08	0.01	0.04
Number of observations	114	77	77	78	65	114	77	77	78	64
Number of countries	28	28	28	28	27	28	28	28	28	25

Source: Authors' calculations based on national household surveys and OECD data.

* Significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

a. Based on a sample of sixteen Latin American and Caribbean countries and twenty-eight OECD countries. Standard errors reported in parentheses. See appendix B for definition of variables.

Our estimates of the effect of job security on female employment rates, self-employment, and unemployment rates are less consistent. The point estimates for female employment rates change from negative to positive across methodologies, but in no case are the estimates statistically significant. These results suggest that the negative effects of job security are lower for women than for men, but as we will show, these results are not robust across regional sub-samples.

The estimates of the effect of job security on self-employment also change signs across OLS, FE, and RE estimates. The pooled estimates suggest a positive, statistically significant association between the strength of job security provisions and self-employment.[47] In contrast, the FE estimates show a negative and also statistically significant relation between the two variables. More empirical work is clearly required to reach a definitive conclusion on the relation between job security and self-employment.

Finally, the empirical results on unemployment also greatly depend on the methodology used to estimate the parameters. While OLS and RE yield positive, often statistically significant coefficients on job security in all the unemployment specifications, FE yields negative, statistically insignificant results. We do not find a significant relation between the strictness of job security provisions and the proportion of workers unemployed for more than six months. Since there is no a priori relation between disemployment and unemployment, these results are not surprising, especially given differences across regions in the levels of social insurance.

Divergence across estimation methods may result from regional differences in the relation between job security and some of the variables. This is particularly relevant for our exercise since FE estimates discard practically all of the information for OECD countries. We therefore investigate whether our results are driven by either of the two sub-samples, by estimating separate coefficients for the Latin American and Caribbean countries and for the OECD countries. The results are presented in table 7. While this approach leads to small samples and lower statistical significance, the results are still quite remarkable. First, in all the employment specifications except female employment rates, the coefficients on job security are negative across regions and estimation methods. Most of the coefficients are highly statistically significant.

47. This is consistent with Márquez (1998).

TABLE 7. The Impact of Job Security Provisions, by Sample Group[a]

Dependent variable	*No observations*	*OLS coefficient*	*OLS SE*	*RE coefficient*	*RE SE*	*FE coefficient*	*FE SE*
Latin America and the Caribbean							
Total employment	53	−1.29***	0.36	−1.62***	0.59	−1.83	1.34
Employment of prime-aged males	53	−1.03***	0.30	−1.44**	0.58	−0.48	1.24
Employment of prime-aged females	53	0.78	1.11	3.15**	1.52	3.10	2.59
Youth employment	53	−4.21***	0.94	−4.33***	1.30	−7.50*	3.70
Self-employment	53	1.09*	0.63	−0.58	0.98	−8.34***	1.73
Total unemployment	53	0.34	0.35	.06	0.04	0.13	1.26
Unemployment of prime-aged males	53	0.94***	0.24	0.91***	0.43	−0.74	1.02
Unemployment of prime-aged females	53	0.27	0.33	0.51	0.52	0.06	1.42
Youth unemployment	53	0.35	0.47	−0.22	1.60	−0.22	1.60
Long-term unemployment (percent)	30	0.13	0.98	−0.11	1.36	0.42	5.31
OECD countries (excluding Mexico)							
Total employment	61	−0.82	0.57	−3.30***	1.16	—	—
Employment of prime-aged males	24	−0.06	0.66	−0.07	1.13	—	—
Employment of prime-aged females	24	−5.80***	1.69	−6.16***	2.38	—	—
Youth employment	25	1.32	2.81	−4.41	4.58	—	—
Self-employment		Not enough observations					
Total unemployment	61	1.14**	0.56	2.27**	1.10	—	—
Unemployment of prime-aged males	24	0.50	0.49	0.48	0.77	—	—
Unemployment of prime-aged females	24	2.23***	0.85	2.04*	1.19	—	—
Youth unemployment	25	.586	1.98	4.70*	2.93	—	—
Long-term unemployment (percent)	35	2.003	1.85	3.31	3.62	—	—

Source: Authors' calculations based on national household surveys and OECD data.

* Significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

a. OLS: pooled ordinary least squares estimation; RE: random-effects estimation; FE: fixed-effects estimation; SE: standard error. Based on a sample of sixteen Latin American and Caribbean countries and twenty-eight OECD countries. See appendix B for definition of variables.

Second, with one exception, all coefficients of the effect of job security on unemployment rates are positive both in OECD countries and in Latin America and the Caribbean. The impact on unemployment rates seems much larger in the industrial countries, however, in particular for women and youth. It should not come as a surprise that the effect of job security on unemployment rates is smaller in developing countries. In the absence of unemployment insurance or other income support programs, workers either quickly find other, less attractive jobs or drop out of the labor force.[48] The positive and statistically significant coefficient of GDP level in the unemployment regressions reported in tables 4 and 5 confirms this effect.

Third, the ranking of effects between total, male, and youth employment rates is preserved. The point estimates tend to be larger (in absolute value) in Latin America and the Caribbean than in the OECD countries. It is very likely that the higher level and variability of job security in this region probably contributes to these larger point estimates (in absolute value). It is quite puzzling, however, that the estimates for female employment (and unemployment) rates are so different across regions. Thus while job security is negatively associated with female employment rates in the OECD sub-sample, this relation is actually positive in the Latin American and Caribbean sample. The added worker effect is more evident in Latin America and the Caribbean, where adult female attachment to the labor force is still weak. Understanding gender differences in the impact of job security remains an important issue for further research.

Finally, the evidence on the impact of job security on formal versus informal employment is not conclusive. A comparison of our estimates for Latin America and the Caribbean with the elasticities obtained from the individual country studies (see table 2) suggests that the decline in employment associated with job security is greater in the covered (formal) sectors—such as the manufacturing sector or sectors characterized by large firms—than in the aggregate. This would imply that an increase in job security is associated with a decline in formal employment and an increase in informal employment, although the increase is not large enough to compensate for the decline in formal jobs. The estimates for

48. In the case of Chile, Pagés, and Montenegro (1999) find that the large effect of job security on youth employment rates was offset by a large decline in participation rates with no significant effects on unemployment.

self-employment, which are usually considered a component of informal employment, indicate job security has an unstable effect on self-employment (see table 7). While the coefficient resulting from OLS estimation is positive and statistically significant, the coefficient resulting from FE estimation is negative and significant. More research is necessary to understand the relation between uncovered employment and job security in Latin America.

Conclusions

In a recent article, Freeman writes that "the institutional organization of the labour market has identifiable large effects on distribution, but modest hard-to-uncover effects on efficiency."[49] This view is shared by many economists.[50] The results summarized in this paper, however, suggest that job security regulations have a considerable impact on employment and turnover rates both in Latin America and the Caribbean and in OCED countries and that they substantially affect the efficiency of the labor market.

The assertion that job security does not have any impact on employment rates is based on evidence on unemployment, not on employment. Employment and unemployment are not mirror images of each other, however. In addition, while substantial evidence indicates that unions reduce earnings inequality in industrial countries, there is no evidence that job security provisions reduce income inequality. Indeed, given that job security reduces the employment prospects (and possibly wages) of younger and less experienced workers, who bear the brunt of regulation, it is likely that regulation widens earnings inequality across age groups. Job security provisions do not present a trade-off between employment and inequality. Such provisions worsen both. The choice of labor market institutions matters.

What policy lessons can be drawn from these results? Our evidence suggests that job security provisions are an extremely inefficient and inequality-increasing mechanism for providing income security to workers. They are inefficient because they reduce the demand for labor; they increase inequality because some workers benefit while many others are

49. Freeman (2000).
50. See Abraham and Houseman (1994); Blank and Freeman (1994).

hurt. Their impact on inequality is multifaceted: job security increases inequality because it reduces the employment prospects of young, female, and unskilled workers. It also increases inequality because it segregates the labor market between workers with secure jobs and workers with very few prospects of becoming employed. Finally, job security provisions increase inequality if they increase the size of the informal sector, as predicted by some theoretical studies and most of the available empirical evidence.

In this light, it seems reasonable to advocate the substitution of job security provisions by other mechanisms that provide income security at lower costs to efficiency and equality. However, reducing dismissal costs is a difficult policy to implement in most countries, because groups with political power demand income security. Such demands arise from the fact that job security lowers flows out of unemployment and into employment. Although job security reduces the probability of exiting employment, conditional on having lost a job, it also reduces the probability of finding a new one. This produces a sense of insecurity among protected workers, who exert pressure to maintain high levels of job security provisions. A balance of power that favors insider workers helps to sustain the provisions, in that those workers most likely to benefit from them are also more likely to be represented in the political process. Outsider workers are less likely to influence policy. Reform-minded policymakers should pursue broad coalitions including representatives of outsider workers—such as young, female, unemployed, and discouraged workers—to obtain support for labor market reforms.

Appendix A: Construction of the Job Security Index

The job security index is constructed according to the following formula:

$$Index_{jt} = \sum_{i=1}^{T} \beta^{i} \delta^{i-1} (1-\delta)\left(b_{jt+i} + aS_{jt+i}^{jc} + (1-a)S_{jt+1}^{uc}\right)$$

where j denotes the country, δ is the probability of remaining in a job, β is the discount factor, T is the maximum tenure that a worker can attain in a firm, $b_{j,t+i}$ is the advance notice (in months) to be given a worker that has been i years at a firm, a is the probability that the economic difficulties

of the firm are considered a justified cause of dismissal, SP_{ij}^{jc} is the mandated severance pay in such event to a worker that has been i years at the firm, and SP_{jt+1}^{uc} denotes the payment to be awarded to a worker with tenure i in case of unjustified dismissal.

The constructed index measures the expected discounted cost, at the time a worker is hired, of dismissing that worker in the future. The assumption is that firms evaluate future costs based on current labor law. The index only includes statutory provisions, and it does not include provisions negotiated in collective bargaining or included in company policy manuals. It addition, it does not include dismissal costs awarded by a judge if a firm is taken to court. This assumption explains why the index shows zero dismissal costs for the United States, despite the substantial potential costs associated with legal actions. High values of the index indicate periods or countries characterized by high job security, whereas lower values identify periods or countries in which dismissal costs are lower. By construction, this index gives equal weight to notice periods and to severance pay, since both are added up in the calculation of the dismissal costs. The index gives a higher weight to dismissal costs that may arise soon after a worker is hired—since they are less discounted at the time of hiring—while it discounts firing costs that may arise further in the future.

In computing the index, we assume a common discount rate of 8 percent and a common turnover rate of 12 percent. The choice of the discount rate is based on the average return of an internationally diversified portfolio. The choice of turnover rate is based on the fact that real turnover rates are unobservable in countries with job security provisions, since the turnover rate is, itself, affected by job security. We therefore input all countries with the turnover rates observed in the United States, which is the country in the sample with the lowest job security. The minimum tenure at a firm is considered to be one year, and the maximum is assumed to be twenty years.

We compute SP_{ij}^{jc} and SP_{ij}^{uc} based on the two different sources. For Latin American and Caribbean countries, we use the legislation characteristics summarized in table A1, which was obtained directly from the Ministries of Labor in the region. In the case of Colombia, we consider that severance payment prior to the 1990 reform was one and a half months per year of work instead of one month as prescribed by law; this reflects the fact that prior to the 1990 reform, advance withdrawals from the seniority premium fund were accounted in nominal terms, such that high inflation rates

TABLE A1: Legislation on Conditions for Worker Dismissal, 1990 and 1999[a]

Country	Date of reform	Advance notice		Seniority premium		Compensation if worker quits?		Compensation for dismissal due to economic reasons		To whom do the reforms apply?	Upper limit to compensation for dismissal?	
		1990	1999	1990[b]	1999	1990	1999	1990	1999		1990	1999
Argentina	None	1–2 months	1–2 months	0	0	0	0	$^2/_3 \times *N$, min. 2 months	No changes	—	Max. lim. in X	No changes
Bahamas	None	2 weeks to 1 month	No changes	0	0	0	0	Negotiable	No changes	—	No	No changes
Barbados	None	Negotiable; in practice 1 month	No changes	0	0	0	0	0.41$*X*N$ if $N \geq 2$	No changes	—	Max.$X*N = 3.75$	No changes
Belize	None	2 weeks to 1 month	No changes	0	0	$^1/_6 \times *N$ if $N > 10$	No changes	$^1/_4 \times *N$ if $N > 5$	No changes	—	Max 42 weeks	No changes
Bolivia	None	3 months	No changes	0	0	1 $X*N$. if $N \geq 5$	No changes	1 $X*N$.	No changes	—	No	No changes
Brazil	1988	1 month	No changes	Fund (8% wage + r)	Fund (8% wage + r)	0	0	0.4*FUND	No changes	—	No	No changes
Chile	1991	1 month	No changes	0	0	No	$^1/_2$ $X*N$ (2) if $N \geq 7$	1 $X*N$. (3)	No changes	All workers	Max.$X*N = 5$	Max.$X*N = 11$
Colombia	1990	45 days	No changes	$X*N$ Double retroactivity given lack of inflationary adjustment of withdrawals	Fund (8% wage + r)	Fund	No changes	$X*4.0$ if $N = 5$; $X*6.6$ if $N = 10$; $X*16.5$ if $N = 15$; $X*21.5$ if $N = 20$	$X*4.0$ if $N = 5$; $X*6.6$ if $N = 10$; $X*21.5$ if $N = 15$; $X*28.5$ if $N = 20$	All workers	No	No changes
Costa Rica	None	1 month	No changes	0	0	0	0	$X*N$	No changes	—	Max.$X*N = 8$	No changes
Dominican Republic	1992	1 week to 1 month	No changes	0	0	0	0	$^1/_2 *X*N$	.67$*X*N$ if $N = 1–4$; .74$*X*N$ if $N \geq 5$	New employees	No	No changes
Ecuador	None	1 month	No changes	Fund (8% wage + r)	Fund (8% wage + r)	Seniority premium	No changes	$^1/_4 X*N$ plus $3*X$ if $N \leq 3$ plus $X*N$ if $N = 3–25$ plus pensionif $N \geq 25$	No changes	—	No	No changes
El Salvador	1994	0–7 days	No changes	0	0	0	0	$X*N$; 0 if bankruptcy	$X*N$ Changes in max.X	All workers	Max. base wage = 4 min. wages (4)	No changes

Guatemala	None	0	0	0	0	0	0	2 days to 4 months if bankruptcy; otherwise $X*N$	No changes	—	No	No changes
Guyana	1997	2 weeks	1 month if $N \geq 1$	0	0	0	0	Negotiable; in practice, 2 1/2 weeks per N	$1/4*X*N$ if $N = 1–5$; $1/2*X*N$ if $N = 5–10$	All workers	No	Max.$X*N = 12$
Honduras	None	1 day to 2 months	No changes	0	0	0	0	$X*N$	No changes	—	Max.$X*N = 15$	No changes
Jamaica	None	2–12 weeks	No changes	0	0	0	0	$1/3*X*N$ if $X = 2–5$; $1/2*X*N$ if $X > 5$	No changes	—	No	No changes
Mexico	None	0–1 month	No changes	0	0	0	0	$2/3\ X*N$ (Min. $3*X$)	No changes	—	No	No changes
Nicaragua	1996	1–2 months	0	0	0	0	$X*N$ if $N = 1–3$; $3\times*N + 2/3\times*N$ if $N > 3$	Negotiable; in practice, $2\ X*N$	$X*N$ if $N = 1–3$; $3\times*N + 2/3\times*N$ if $N > 3$	—	No	Max.$X*N = 5$ No changes
Panama	1995	1 month	No changes	$1/4*X*N$ if $N \geq 10$	$1/4*X*N$	$1/4*X*N$ if $N \geq 10$	$1/4*X*N$	$X*N$ if $N \leq 1$; $3*X$ if $N = 2$; $3*X + 3/4*X*N$ if $N = 2–10$; $9*X + 1/4*X*N$ if $N \geq 10$	$3/4\ X*N$ if $N < 10$ $7.5*X + 1/4*X$ if $N < 10$	New employees	No	No changes
Paraguay	None	1–2 months	No changes	0	0	0	0	$1/2\ X*N$	$1/2\ X*N$	—	No	No changes
Peru	1996; 1995; 1991	0	0	Determined by judge in legal proceedings	Fund (8% wage+r)	Fund (8% wage+r)	Seniority premium	$3\ X*N$	FUND + $1.5*X*N$	1996 All workers 1995 All workers 1991 New employees	Max.$X*N = 12$	No changes
Suriname	None	1 week to 6 months	No changes	0		0	0	Negotiable	Negotiable	—	No	No changes
Trinidad and Tobago	None	2 months	No changes	0	0	0	0	$1/3\ X*N$ if $N = 1–4$; $1/2\ X*N$ if $N > 5$	No changes	—	No	No changes
Uruguay	None	0	0	$X*N$	No changes	0	0	$X*N$	No changes	—	Max.$X*N = 6$	No changes
Venezuela	1997	1 week to 3 months	No changes	$X*N$	$2X*N$	$X*N$	$2X*N$	$2/3$-$2\ X*N$	$X*N$	All workers	No	Max $X*N = 5$

Source: Ministries of Labor of each of the respective countries.

a. X = monthly wages; N = years of tenure.

b. For Brazil, data are for 1988 instead of 1990.

substantially increased overall dismissal costs. In all Latin American countries but Argentina and Chile, economic conditions are not a just cause for dismissal; consequently, we assume that $a = 0$ for those countries, while in Argentina and Chile, where economic conditions are a justified cause of dismissal, $a = 1$.

For OECD countries, we use official OECD information on the legislative characteristics of sixteen member countries to parameterize severance payments and advance notice.[51] In all cases except Spain, $a = 1$. In Spain before the 1997 reform, mandatory severance pay for unjustified dismissal was substantially larger than severance pay for justified dismissal. Consequently, most workers who were fired for just cause appealed to the courts, where there was a high probability that a judge would declare a dismissal unjustified. Based on Bertola, Boeri, and Cazes, we assume that prior to the 1997 reform, $a = 0.2$, while after 1997 the scope for ambiguity was reduced, and $a = 0.5$.[52] For Canada, we use information relevant to the federal jurisdiction, although job security provisions may vary across states. Finally, in some European countries statutory dismissal costs vary across blue- and white-collar workers. To obtain a single measure per country, we compute a separated index for blue- and white-collar workers and perform a simple average among the two.[53]

The Latin American and Caribbean sample is made up of sixteen countries selected on the basis of weight in the regional economy and availability of comparable data. The employment and unemployment data were directly processed from individual country household surveys. The sizes of these surveys range from 2,308 households and 11,507 individuals to 129,713 households and 682,636 individuals. Most of the surveys were undertaken during the third quarter of the given year; this varies somewhat among countries, but not within countries for different years of the same survey. The household surveys used to compile the data set are as follows: in Argentina, Encuesta Permanente de Hogares (Current Household Survey) in Bolivia, the Encuesta Nacional de Empleo (National Employment Survey), 1996 and 1997; in Brazil, the Pesquisa Nacional por Amostra de Domicilios (National Household Survey), 1981, 1983, 1986,

51. OECD (1999).

52. Bertola, Boeri, and Cazes (2000).

53. See OECD (1999) for a description of dismissal costs in OECD countries and the cost divergences between blue- and white-collar workers.

1988, 1992, 1993, 1995, and 1996; in Chile, the Encuesta de Caracterización Socioeconómica Nacional (National Socioeconomic Survey), 1987, 1990, 1992, 1994, and 1996; in Colombia, the Encuesta Nacional de Hogares—Fuerza de Trabajo (National Household Survey—Labor Force), 1995 and 1997; in Costa Rica, the Encuesta Nacional de Hogares—Empleo y Desempleo (National Household Survey—Employment and Unemployment), 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, and 1997; in the Dominican Republic, the Encuesta Nacional de Fuerza de Trabajo (National Labor Force Survey), 1996; in Ecuador, the Encuesta de Condiciones de Vida (Living Standards Measurement Survey), 1995; in El Salvador, the Encuesta de Hogares de Propósitos Múltiples (Multiple Purposes Survey), 1995; in Honduras, Encuesta Permanente de Hogares de Propósitos Múltiples (Current Multiple Purposes Household Survey), 1989, 1992, 1996, and 1998; in Mexico, Encuesta Nacional de Ingreso Gasto de los Hogares (Income Expenditure National Household Survey), 1984, 1989, 1992, 1994, and 1996; in Nicaragua, Encuesta Nacional de Hogares Sobre Medicion de Niveles de Vida (Living Standards Measurement Survey), 1993; in Panama, Encuesta Continua de Hogares—Mano de Obra (Household-Labor Force Survey), 1979 and 1991, the Encuesta Continua de Hogares (On-going Household Survey), 1995, and the Encuesta de Hogares (Household Survey), 1997; in Paraguay, Encuesta de Hogares—Mano de Obra (Household Survey—Labor Force), 1995; in Peru, Encuesta Nacional de Hogares sobre Medición de Niveles de Vida (Living Standards Measurement Survey), 1985–86, 1991, 1994, 1996, and 1997; and in Venezuela, Encuesta de Hogares por Muestra (Household Survey), 1981, 1986, 1989, 1993, 1995, and 1997.

Appendix B: Definition of Variables

The following definitions refer to the variables used in the empirical analysis. All the variables are calculated on the basis of OECD statistics and Latin American and Caribbean household surveys unless otherwise indicated.

Total employment: All employed workers aged sixteen to sixty-five who declared having a job in the week of reference. It is measured as a percentage of the total population aged sixteen to sixty-five. All measures

of aggregate employment include formal and informal workers, as well as unpaid workers.

Employment rate of prime-aged males: Percentage of men aged twenty-five to fifty who were employed during the week of reference.

Employment rate of prime-aged females: Percentage of women aged twenty-five to fifty who were employed during the week of reference.

Youth employment: Percentage of people aged sixteen to twenty-four who were employed during the week of reference.

Self-employment: Share of nonagricultural workers who are self-employed or who are owners of firms.[54]

Total unemployment: Number of people aged sixteen to sixty-five who did not work in the week of reference but who are actively looking for a job, expressed as a percentage of the total active population in that age group.

Unemployment rate of prime-aged males: Number of men aged twenty-five to fifty who did not work in the week of reference but who are actively looking for a job, expressed as a percentage of the male active population in that age group.

Unemployment rate of prime-aged females: Number of women aged twenty-five to fifty who did not work in the week of reference but who are actively looking for a job, expressed as a percentage of the female active population in that age group.

Youth unemployment: Number of people aged sixteen to twenty-four who did not work in the week of reference but who are actively looking for a job, expressed as a percentage of the active population in that age group.

Long-term unemployment: Number of people aged sixteen to sixty-five who have been without a job and actively looking for employment for more than six months, expressed as a percentage of the total active population in that age group.

Female participation: Percentage of total female workers aged sixteen to sixty-five who are either employed or actively seeking employment.

GDP: Gross domestic product measured in 1995 dollars.[55]

Population aged 15–24: Proportion of total population that falls in this age group.[56]

54. Data are from Maloney (1999).
55. Data are from World Development Indicators Database (World Bank).
56. Data are from United Nations Population Statistics.

Comments

Alejandra Cox Edwards: This paper aims at measuring the impact of labor market regulations on various indicators of labor market performance. To accomplish this objective, the paper gathers and systematically organizes a substantial amount of information on labor policies in Latin America and the Caribbean. The paper focuses primarily on job security regulations, which is thus also the focus of my comments.

The main challenges that researchers face in the economic analysis of labor market regulations are a lack of sufficient variation in labor policies within countries for testing hypotheses based on time series and a lack of comparable measures of labor market interventions across countries for testing hypotheses based on cross sections.

In the specific case of job security regulation, the authors' strategy is to develop a measure of firing costs that summarizes the entire profile of tenure and severance pay, using a common set of dismissal probabilities. The indicator of firing costs (the job security index) is presented in table 1, and the numbers are interpreted as follows: if the cost of job security is three monthly wages in Argentina, for example, then the expected cost of labor in that country is whatever wage is paid plus an up-front investment of three monthly wages on average. The key elements included in this measure are advance notice requirements and compensation for dismissal with and without cause.

This measure is an important contribution to the literature. It may prove to be as important for informing policymakers on the effect of labor interventions as was the concept of effective protection for informing policymakers on the true impact of tariffs. However, if the measure is to be taken seriously, it needs to incorporate changes in at least three areas.

First, the authors must find a way to distinguish the case of Mexico from the case of Chile. These two countries both appear with a number close to 3 in table 1. Both countries have established minimum severance and advance notice regulations, which results in the similar estimates, but

the two systems differ in key ways. Mexico places no real limits on short-term contracts, meaning that employers who enter into long-term contracts choose do so. In Chile, on the other hand, any short-term contract that is renewed becomes de facto a permanent contract. When long-term contracts are truly an option, as in Mexico, they are more likely to internalize the cost of severance.

Second, the calculation rests on some measure of turnover, and Heckman and Pagés assume the turnover rate of the United States in all cases. Although they may have legitimate reasons for preferring a unique measure of turnover, I question the appropriateness of using the same measure for all countries. My own work indicates that turnover varies significantly by sector. In particular, it is much higher in services than in manufacturing or the public sector. My question is this: should the estimated effect of job security on the cost of labor incorporate the sectoral distribution of employment in each country? I think it should.

Finally, the authors themselves question the validity of their job security measure given that severance payments are transfers from employers to workers and as such are, in part, a form of compensation. They recognize that "the impact of job security could be completely 'undone' with a properly designed labor contract provided that there are no restrictions on transactions between workers and firms." Lazear, who pointed in this direction with his 1990 paper, stated that the impact of job security could only be undone if dismissal costs were paid in all separation cases and if payments took the form of lump-sum or deferred payments. Lazear shows that under those conditions, severance payments have a well-defined counterpart in current salaries, and the contract can fully internalize the severance.[1] However, as Heckman and Pagés indicate in this paper, most Latin American and Caribbean countries have established severance payments that (a) are a multiple of the last salary, or the salary at the time of dismissal; (b) depend on the existence of just cause; and (c) do not apply in the case of voluntary quits. Therefore, the capacity to internalize the cost of severance is generally low. Some countries have moved closer to the Lazear conditions or are considering reforms along those lines. In particular, some countries have established severance in all separations (for example, Bolivia and Brazil) or severance based on individual accounts. If the job security measure could distinguish cases in which severance is

1. Lazear (1990).

partially or fully internalized from cases in which severance cannot be internalized, then the truly distortionary component of mandated severance could be isolated, and the Lazear effect could be tested empirically.

The section on empirical evidence summarizes the results from a series of country studies. Based on these studies, the authors argue that job security reduces turnover, reduces employment, and changes the composition of employment to the detriment of youth employment. The authors build a cross-section time-series data set to test these effects. This section needs further work both in defining the variables used and in justifying the empirical specification. The data include Latin America and the Caribbean, European countries, and the United States. The discussion highlights similar results on employment level and composition in all three regions.

The paper also presents a series of equations that estimates the effects on unemployment rates. Here, the empirical specification should probably incorporate the differences in unemployment insurance systems across these three regions. Latin American and Caribbean countries typically do not have unemployment insurance systems, European countries have unemployment insurance systems financed by a flat payroll tax rate, and the United States has an unemployment insurance system financed by an experience-rated payroll tax. The incentives generated by the unemployment insurance system are likely to encourage longer unemployment spells and higher unemployment rates in Europe than in the United States, other things being constant. The lack of unemployment insurance systems in Latin America and the Caribbean may imply a lower unemployment rate.

To close, I congratulate Carmen Pagés and Jim Heckman for persevering on the difficult path of producing empirical evidence on the impact of job security regulations. Their work represents a step forward on at least three fronts: developing a measure of the cost of job security regulation; showing that job security regulations reduce turnover; and demonstrating that the negative (undesired) effect of job security is the reduction of labor demand. The evidence that job security tends to reduce turnover and employment at the same time suggests a possible link between these two variables. Some of the literature on labor market dynamics already points in this direction, and the paper should incorporate that evidence.

Pablo Guidotti: This stimulating paper surveys existing sources of information and provides new evidence on the costs of a specific set of labor policies. Specifically, it tries to determine how job security provisions in

labor legislation affect employment. The paper finds that contrary to what has been argued recently in the literature, labor market regulation designed to improve job security brings about significant costs in terms of employment, although the effect of such provisions on the rate of unemployment is rather weak.

To put this paper into perspective, it is useful to review briefly the main challenges facing labor markets in the major Latin American economies. I focus on Argentina, which at present has the highest unemployment rate in the region. Furthermore, Argentina pursues an exchange rate regime (namely, convertibility) that requires labor market flexibility to improve the economy's ability to respond to real external shocks.

In the 1990s the debate on labor markets covered four main areas. The first area relates to the role of unions in the process of labor contract negotiation. The central question here is how efficiency and labor flexibility in the economy are related to the prevailing type of collective bargaining, in particular whether it is centralized at the sectoral or economy-wide level or whether it is decentralized at the firm level. Although it is generally agreed that decentralization favors efficiency, in practice sectors featuring centralized collective bargaining agreements have sometimes introduced significant flexibility in their labor contracts. In the Argentine context, employers' representatives have voiced a wide spectrum of opinions on the convenience of decentralized negotiations; their views on this issue appear to be strongly influenced by the relative attitude that central unions and individual firms' union representatives adopt during negotiations.[1]

The second area in the debate refers to the political power of unions, in particular their ability to push through legislation that imposes mandatory contributions (taxes) on firms to finance the unions' bureaucracy or the monopolistic provision of health services *(obras sociales).* The third area, which is strongly linked to the second, encompasses tax policy and, more specifically, to the level of social security contributions levied on firms.

1. In Argentina, the government observed that during discussions on proposed modifications to existing legislation, employers' representatives from the financial and construction sectors favored centralized over decentralized negotiations while the opposite was true in the case of representatives from industry. Also, employers' representatives from large firms were rather indifferent to this issue, while representatives from small firms expressed a strong preference for decentralized labor negotiations.

Finally, the fourth area refers specifically to labor legislation, focusing on the provisions in labor contracts that affect a firm's ability to hire and dismiss workers or that raise the cost of doing so. Severance payments, advance notification, and seniority provisions are central elements in this part of the debate. The discussion of the effects and costs of labor provisions is not independent from the consideration of legal risks for firms in countries where the courts have produced significant jurisprudence favoring workers in the litigation process.

Within this debate, Heckman and Pagés focus essentially on the last set of issues, and this is where they produce their main contributions. The paper briefly covers the issues of collective bargaining and labor taxes, but the analysis of these two topics is too brief to obtain significant insights into the debate. Also, I disagree with the paper's classification of payroll contributions which finance a pay-as-you-go system (which are equivalent to taxes) together with personal contributions to private pension funds (which are more like savings).

Turning to the main part of the paper, the authors' first contribution is to provide a comprehensive survey of job security provisions in Latin American and Caribbean countries, focusing on their general legal framework. The paper provides valuable information on whether labor contracts are regulated by specific labor codes or whether they are subject to common law, and it examines the major job security provisions such as advance notification, dismissal compensation (whether with just or unjust cause), and the existence of a seniority premium.

The authors then construct a job security index based on these elements. The index maps regulatory provisions into a cost measure as a percentage of wages. In this way, the authors claim, one can move from a qualitative to a quantitative analysis of the impact of these labor regulations on employment.

I find this section of the paper and the job security index useful. However, inspection of table 1 leaves me with some doubts about the implied ordering of different countries in their sample. It is somewhat surprising to find most European countries (which are famous for their inflexible labor legislation) ranked as having less labor market regulation than Latin American and Caribbean countries. Within Latin America it is quite surprising that Chile has one of the highest values of the job security index. Given the importance of the rankings presented in table 1 for the empirical analysis,

it would be useful for the reader to have a better idea of the sensitivity of the index to various assumptions.

In particular, because the index is constructed exclusively using provisions existing in labor codes, it generates a bias in favor of common law countries where effective job security provisions emanate directly from private contracts and the legal jurisprudence applied by courts. In some countries with fairly rigid labor legislation, de-facto labor flexibility has been brought about through collective agreements. Thus an excessively "legalistic" approach may miss some of the actual characteristics of labor markets in the region.

A second element affecting the construction of the index is the discount rate. The authors use a single discount rate for all countries in the sample. However, the relevant discount rate for calculating the expected discounted cost of dismissing a worker is significantly higher in developing than in industrial countries. A possible notion of the relevant discount rate in developing countries could be obtained using existing measures of country risk. Again, it would be useful for the reader to have a sense of how the values in table 1 are sensitive to changes in the discount rate.

The main objective of the paper is to estimate the impact of labor regulations on employment. The paper addresses this issue in two ways. First, it relies on existing estimates of labor demand elasticities obtained from a sample of studies to simply infer the effect of labor regulations on employment. The authors find that the static labor demand elasticities estimated in the literature range between zero and negative one, with most of the cases clustered between –0.2 and –0.6. Even assuming that workers may bear part of the cost of labor regulations in the form of lower equilibrium wages, these estimates of labor demand suggest prima facie a potentially significant effect of job security provisions on employment. Of course, the size of the effect is measured directly by the labor demand elasticity, although the values of the elasticities may be directly influenced by how efficiently the labor market functions. In countries with relatively rigid labor markets, price elasticities of labor demand may tend to be large relative to the output elasticities of labor demand. Compare, for example, the relative size of price and output elasticities of labor demand in Argentina and Chile. Thus the measure of the effect of job security provisions on employment may be influenced by other elements affecting the functioning of labor markets.

The authors also survey a number of studies that attempt to measure more directly the impact of job security provisions on employment. They report that a number of studies find that such labor market regulations have a significant effect on turnover rates. The impact on average employment, however, appears to be somewhat weaker.

In view of these results, the authors construct a data set spanning industrial and Latin American countries to estimate the effect of job security provisions, as measured by the job security index, on employment, its composition, and the rate of unemployment. Their results convincingly show a significant effect of labor market regulation on employment rates. Their results also show a strong impact of regulations on youth employment. Somewhat surprisingly, the effect on unemployment in Latin American countries appears to be much weaker. The authors suggest that this finding may reflect the fact that in the absence of unemployment insurance or equivalent support programs, workers tend to either find jobs quickly or drop out of the labor force. This explanation, however, does not appear to be consistent with the fact that some Latin American countries currently report unemployment rates comparable to those of some European economies.

This paper is thus valuable in two ways. First, it provides an important survey of current labor legislation in Latin America and the Caribbean. Second, the results are relevant to the current policy debate, as they offer evidence that some provisions in labor legislation intended to protect workers may indeed end up causing lower employment rates.

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