Labor Market Regulations and Income Inequality: Evidence for a Panel of Countries

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The fact that labor market regulations are at the cornerstone of the debate on economic policy and political economy in many countries shows that changes in regulations may have nontrivial effects. At the very least, they have different consequences for protected and unprotected groups. They may also face interesting tradeoffs, specifically regarding efficiency and equity. In this paper, we empirically study one particular ingredient of this type of tradeoff, namely, the effect of labor regulations on income distribution.

For that purpose, we present evidence on the impact of labor regulations on income inequality using two recently published databases on labor institutions (or de jure regulations) and outcomes (or de facto regulations) (Rama and Artecona, 2002; Djankov and others, 2003). We consider other country characteristics that may affect income distribution, including income level and growth, education, and the structure of the economy. We use a battery of cross-section and panel data analysis techniques to evaluate the robustness of the results. In particular, we use cross-section ordinary least squares (OLS), pooled OLS, OLS with time and country fixed effects, cross-section instrumental variables (IV), IV with time and country fixed effects, and generalized method of moments (GMM) estimators. The sample

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we consider covers 121 countries over the 1970–2000 period. We focus on two groups: the total sample and the sample of developing countries.

This paper is closely related to Calderón and Chong (in this volume) and should, in certain dimensions, be taken as its complement. To begin with, it is based on the same data sets (except for inequality) and considers similar estimation techniques. Taken together, the papers allow the reader to determine whether the tradeoff mentioned above exists and to evaluate its relative importance.

We report four main findings. First, de jure regulations (that is, what the labor codes prescribe) do not improve income inequality. Our results using the Rama-Artecona database are not robust, but in a few cases, they indicate that regulations worsen income distribution. When we consider the Djankov–La Porta data set, we find that regulations on employment and industrial relations (although not on social security) do have a negative effect on income distribution.

Second, compliance with labor regulations, measured as the ratio between a de facto index and a de jure index, has a positive effect on income distribution. Since this result cannot be explained by summing up the individual effects of each index separately, it may capture institutional development rather than labor market considerations.

Third, de facto regulations are weakly associated with a better income distribution. This result could be due to endogeneity of labor regulations. When we control for this problem, the effect frequently is not different from zero, although in some cases these regulations improve income distribution.

Finally, aside from the endogeneity problem, these mixed results are partly explained by the fact that the results can differ markedly across specific de facto regulations. In this regard, the most robust results are the following: minimum wages, especially when measured as a percentage of per capita income, worsen income inequality; trade union membership (as a percentage of the labor force) has a positive effect on income distribution, although its effect on the poorest 20 percent is smaller and less robust than for the middle class; government employment at the general level (less so at the central level) has a positive effect on income distribution, but no effect on the poorest quintile; days of maternity leave have a positive effect on income distribution; and neither the ratification of the International Labor Organization's convention 87 nor social security contributions has a robust effect on income inequality across estimation methods and samples.

The paper is organized as follows. Section 1 presents a brief literature review on the impact of labor market regulations on income

inequality. Section 2 reviews the data sets and the methodology we use. Section 3 presents the results of the different estimation techniques. Section 4 discusses our overall results and concludes.

1. Literature Review

In a seminal paper, Kuznets (1955) argues that the relation between income inequality and the level of development follows an inverted-U-shaped curve. Inequality rises in the face of economic expansion during the initial stages of development, and it declines afterwards. The relation stipulated by Kuznets has recently been simulated successfully within a general equilibrium framework (Galor and Tsiddon, 1996). Recent evidence also shows that unemployment is one of the major sources of inequality (Jenkins, 1995, 1996) and labor market policies are a potential instrument for reducing inequality (Rama, 2001a).

Saint-Paul (1999) claims that labor markets institutions across the world usually consist of tax systems or other transfer mechanisms that shift resources from the working to the nonworking population. These institutions include unemployment benefits, employment protection laws, and active employment policies by the government. Some analysts argue that these institutions are necessary to protect workers from bad outcomes and unexpected shocks (Blanchard, in this volume). In general, labor market institutions are supposed to help achieve socially desirable redistributive goals (Emerson and Dramais, 1988; Rama, 2001a, 2003). In this context, labor market policies may be an effective tool for reducing income inequality, but there is increasing debate on the benefits of labor policies such as minimum wages, mandated benefits, collective bargaining, job security, and public sector employment in developing countries (Rama, 2001a, 2003).

Regarding the imposition of minimum wages, Saint-Paul (1994) argues that it may have an adverse effect on the income distribution. Minimum wages redistribute income from skilled to unskilled labor, as well as from the poorest to the lower-middle quintiles by generating unemployment.[1] Microeconomic studies suggest that the impact

1. Saint-Paul (1994) claims that minimum wages create unemployment among unskilled workers and reduce the income of skilled workers, thus lowering output. In addition, the impact of minimum wages on inequality is affected by other forms of labor rigidities. For example, income is shared equally among unskilled workers in a world with high job turnover, so minimum wages have a small impact on inequality among the unskilled.

of minimum wages on income inequality is small in many developing countries (Maloney and Nuñez, 2001). On the other hand, Rama (2001b) analyzes the doubling of minimum wages (in real terms) in Indonesia in the early 1990s. He finds that the elasticity of average to minimum wages was approximately 10 percent over this period, and the doubling of minimum wages was associated with a slight decline in total wage employment and a substantial increase in unemployment among small enterprises. Trade union membership, in turn, seems to guarantee a higher wage for union members relative to nonmembers. However, union wage premiums in developing countries is smaller than among industrial countries. This finding may be due to the role of trade unions in keeping wage rates invariant in periods of economic adjustment (Nelson, 1991).

Rama (2001a) reviews studies on the impact of public sector employment on income inequality. Public sector wages could have a significant effect on private sector wages in countries with a small formal sector, as in sub-Saharan Africa, (Rama, 2000).

The impact of separation costs on employment and income distribution depends on the tightness of job security regulations. Fallon and Lucas (1991) find that very strict regulations on job security depressed labor demand in India and Zimbabwe. Separation costs—in the form of mandatory severance payments—may also reduce the level of employment (Heckman and Pagés, 2000).

Rama (2003) analyzes the impact of labor market interventions on indicators of income inequality after controlling for some of their determinants.[2] He shows that social security programs help reduce income inequality. Collective bargaining is less effective at improving the income distribution: its impact is statistically significant only for the share of the second richest quintile of the population. The core conventions supported by the International Labor Organization (ILO) seem ineffective for reducing inequality.[3] In summary, countries pushing to adopt ILO labor standards, raise minimum wages, or expand government employment may not generate any significant effect on inequality.

Finally, Vanhoudt (1997) analyzes the impact of labor market policies on income inequality in member countries of the Organization

2. Rama (2003) includes the following as determinants of income inequality: educational attainment, civil liberties, and financial development.

3. According to Rama, the core ILO conventions are those addressing the abolition of forced labor, the effective elimination of child labor, nondiscrimination in the workplace, and freedom of association and the right to collective bargaining.

for Economic Cooperation and Development (OECD). He finds that the Gini coefficient is not affected by labor market policies, although other measures of inequality are. Specifically, he finds that active labor market policies—such as expenditures for public employment services, labor market training, and subsidized employment—improve the income share of the bottom quintiles of the population and reduce the income gap between the top and bottom quintiles. Passive labor markets—that is, income compensation schemes—have a negligible impact.

2. The Data and Methodology

This section describes the database used in our regression analysis, as well as our estimation strategy. Since our discussion draws heavily on Calderón and Chong (in this volume), we present only a brief description of both the data and the methodology used.

2.1 The Data

We use two recently developed databases on labor regulations to test whether labor regulations have been an effective tool for reducing income inequality: namely, the Rama-Artecona database (Rama and Artecona, 2002) and the Djankov–La Porta database (Djankov and others, 2003).[4]

The Rama-Artecona Database

Rama and Artecona (2002) collect data on labor market regulations and outcomes in 121 countries over the period 1945–99. The data is organized in five-year averages and distinguishes between de jure regulation and de facto regulation. De jure regulation is approximated by the number of ILO standards ratified by the national labor laws.[5] De facto regulation is approximated by information on categories such as

4. This subsection draws heavily on Calderón and Chong (in this volume).

5. The ratified conventions included in this index encompass universal legislation on issues such as child labor, compulsory labor, equal remuneration for male and female workers, equal opportunity, the right of collective bargaining, and organization in unions.

minimum wages, conditions of work and benefits, trade union membership and collective bargaining, and public sector employment. The distinction between de jure and de facto regulation is very important because the ability of developing countries to enforce the regulations stipulated in their labor laws is quite limited (Squire and Suthiwart-Narueput, 1997).

We define aggregate indices of the overall extent of labor regulations in the economy following the strategy pursued by Rama (1995) and Forteza and Rama (2002). We define an index of de jure regulation, $\mathbf{L}_0$, as the cumulative number of ILO conventions ratified by a country over time. This index reflects the ideal regulatory framework of the country from an institutionalist point of view (Freeman, 1993a, 1993b), while it also captures the thickness of the labor code (Forteza and Rama, 2002). The $\mathbf{L}_0$ index includes the ratification of ILO conventions on the minimum age of employment, compulsory labor, the abolition of forced labor, equal remuneration for men and women, the right to collective bargaining, and the discrimination on equality of opportunity or conditions of employment on the basis of race, religion, sex, political opinion, or social origin. However, the number of existing regulations does not give us information on a country's ability to implement and enforce these regulations. For this reason, we require an index that reflects the practical extent of labor regulations instead of their number.

Rama (1995) constructs an aggregate index of de facto regulations using information on the following four categories: minimum wages, mandated benefits, trade union membership, and public sector employment. Unfortunately, data on job separation costs are only available for a quite limited sample of countries.[6] Following Rama (1995) and Forteza and Rama (2002), we construct two aggregate indices of de facto labor regulations, both of which include different proxies for these four dimensions. The first aggregate index of labor de facto regulations, $\mathbf{L}_1$, includes the simple average of the ratio of the minimum wage to unit labor costs in the manufacturing sector; social security contributions as a percentage of salaries; total trade union membership as a percentage of total labor force; and the share of general government employment in total employment. The second aggregate index of de facto regulations, $\mathbf{L}_2$, comprises the simple average of the ratio of

6. Heckman and Pagés (2000) construct data on job separation costs for Latin America; they find that these costs have a substantial impact on the level of employment in the region.

minimum wage to income per capita; the number of days of maternity leave for a first child born without complications; the ratification of ILO convention 87, which allows workers to establish organizations; and the ratio of central government employment to total employment.

To make all these variables comparable across countries, we normalize all the labor market regulation indicators in such a way that their values fluctuate between zero and one, with one representing the highest practical extent of labor regulation and zero the lowest. The aggregate indices of de facto regulation, $\mathbf{L}_1$ and $\mathbf{L}_2$, are computed for countries with at least two of the four dimensions involved in the analysis.

The Djankov-La Porta Database

Djankov and others (2003) evaluate the degree of labor market regulation in the labor codes of eighty-five countries. Their sample thus represents a cross-section of labor regulation indices for a broad sample of countries. Since these measures are extracted from labor codes, they are closer in spirit to de jure labor rigidities than de facto enforcement.

These measures focus on three types of labor laws: employment laws, industrial relations laws, and social security laws. Employment laws contemplate the laws governing individual employment contracts in the economy. This type of law specifically regulates aspects of individual labor contracts, terms of reference, and contract termination. It covers the restrictions placed on alternative employment contracts, the conditions of the employment contract, and job security.

Industrial relations laws regulate the adoption, bargaining, and enforcement of collective agreements, the unionization of workers, and industrial actions by workers and employers. These laws capture aspects of the worker-employer relationship, such as collective bargaining, the participation of workers in the company's management, and the resolution of collective disputes (such as strikes and lockouts).

Finally, social security laws contemplate the social response to quality-of-life conditions and requirements. They protect workers against the risk of disability, sickness, and unemployment.

Income Inequality and its Determinants

The dependent variable in our regression analysis is the Gini coefficient. Our main source of data is information gathered by Deininger

and Squire (1996), but this source only covers through 1995. For the final five years, we extrapolate data for income shares and the Gini coefficient for the countries present in the analysis of Milanovic (2002a, 2002b). For countries that are absent in Milanovic's papers, we generate information on the Gini coefficient based on the coefficient of variation of income and income's linear correlation with ranks, as in Milanovic (1997). We also use the income shares of the top, bottom, and middle quintiles of the population. This allows us to analyze the robustness of our results to changes in the dependent variable and to assess the impact of labor market policies on the income of the poor.

Our choice of the set of determinants of income inequality follows the empirical literature on income distribution (Milanovic, 2000; Gradstein, Milanovic, and Ying, 2001; Chong, 2002; Clarke, Xu, and Zou, 2003). We include the log of the level of GDP per capita and its squared value. This variable is obtained from the Penn World Table 6.1 (Heston, Summers, and Aten, 2002). The squared specification of the GDP per capita allows us to test for the presence of the Kuznets curve (that is, whether income inequality rises in the early stages of development and declines in later stages). We also consider indicators of education, such as the level of secondary schooling (Barro and Lee, 2000), and of financial depth, such as the ratio of credit to the private sector to GDP (Beck, Demirgüç-Kunt, and Levine, 2000). The number of physicians per 1,000 people is included as a proxy for improvements in the health sector. Macroeconomic instability is proxied by the consumer price index (CPI) inflation rate, and the size of the modern sector is calculated as the share of industry and services in the economy's total value added.

2.2 The Methodology

Our main goal is to assess the impact of labor regulations on income distribution by running the following regression:

$$y_{it} = \mu_i + \eta_t + X_{it}\beta + L_{it}\Gamma + \xi_{it} \ . \tag{1}$$

According to this equation, income inequality in country i during period t (y_{it}) depends on a set of determinants described by the matrix $\mathbf{X}_{it}$, as well as on unobserved country- and period-specific effects (μ_i and η_t, respectively). Our set of long-term growth determinants follows the work of Milanovic (2000), Gradstein, Milanovic, and Ying (2001), and Chong (2002). The determinants of income inequality include (in logs)

the initial level of per capita output and per capita output squared, human capital, financial depth, health, inflation, and the size of the modern sector (manufacturing and services).

Our income inequality regression framework also includes a set of variables that captures the extent of regulations in the labor market, as represented by the matrix $\mathbf{L}_{it}$ in equation (1). This matrix includes different indicators that focus on specific policy or institutions in the labor market, such as minimum wages, mandatory benefits, trade union membership, government employment, social security laws, and collective bargaining. The matrix $\mathbf{L}_{it}$ consists of a series of K labor regulations,

$$\left\{\ell_{it}^{\,k}\right\}_{k=1}^{K} .$$

The larger the values of these variables, the more regulated are the labor markets. We do not assume that labor regulations and outcomes are time invariant, but rather expect them to change over longer horizons.

We normalize these variables in such a way that they are equal to one (zero) if labor markets are fully regulated (deregulated).[7] If our dependent variable is the Gini coefficient, a negative estimate for the parameters in the Γ matrix implies that deregulating labor markets may enhance the distribution of income.

We encounter additional problems when we attempt to run a regression of equation 1, in that some variables in the $\mathbf{L}_{it}$ matrix may be highly correlated with each other. Trade unions and public employment display the highest correlation at 0.8, while mandated benefits and minimum wages have a correlation of 0.5. In this case, we may be unable to identify the parameters of the Γ matrix. To address this issue, we create aggregate indices of labor market regulations, as in Rama (1995) and Forteza and Rama (2002). We compute a simple average of the normalized values of our labor regulation indicators as

7. The variables are not all expressed in comparable units, so we need to normalize them before we can aggregate them. We defined our labor market rigidity indicator above as $\ell_{it}^{\,k}$, for $k = 1,\ldots, K$. Next, we define $\ell_{t\,\max}^{\,k}$ and $\ell_{t\,\min}^{\,k}$ as the closest and farthest a country can get to perfect competition in the labor markets. We then define our normalized labor market rigidity indicator as

$$\tilde{\ell}_{it}^{\,k} = \frac{\ell_{it}^{\,k} - \ell^{k}_{\min}}{\ell^{k}_{\max} - \ell^{k}_{\min}} .$$

described above.[8] We then use the aggregate index of regulations in the labor market, ℓ_{it}^{A}, to test the overall effects of labor market regulation on income inequality. We reformulate our income inequality regression in equation (1) as follows:

$$y_{it} = \mu_i + \eta_t + X_{it}\beta + \gamma_A \ell_{it}^{A} + \xi_{it} \ . \tag{2}$$

The nature and magnitude of the overall impact of labor market regulations on income inequality is captured by the sign and size of γ_A. However, individual regulations may have different consequences that cancel each other to some extent in the aggregate. One of the shortcomings of this approach is that a significant parameter estimate for γ_A may not help identify the specific regulations that need to be reformulated. Consequently, we still need to estimate the individual effect of different regulations, as captured by the γ_j parameters.

If we replace the aggregate index, ℓ_{it}^{A}, in equation (2) by one of our individual measures of labor market regulations, the coefficient estimate will be biased due to omitted variables. That is, the coefficient of the individual regulation will capture the effects of the labor market rigidity, *k*, as well as some of the effects of all of the other missing rigidities. Since the different rigidities are likely to be correlated with each other, the value obtained for γ_k might reflect the effects of these other rigidities. We can partially solve this problem by defining complementary labor market regulations, $\tilde{\ell}_{it}^{-k}$, as the average of the indicators that are different from *k*. This complementary variable can be used to control for all other labor market features, apart from itself, based on the following model:

$$y_{it} = \mu_i + \eta_t + X_{it}\beta + \gamma_k \tilde{\ell}_{it}^{k} + \gamma_{-k} \tilde{\ell}_{it}^{-k} + \xi_{it} \ , \tag{3}$$

where the coefficient γ_k captures the effect of labor market rigidity, *k*, on long-term growth.

The Estimation Strategy

We estimate our regression equation on two dimensions: cross-section and panel data.[9] Our cross-section regressions are estimated

8. In principle, we compute the average of *J* out of the *K* relevant labor market rigidities (where $J \leq K$). Our aggregate index takes values between zero and one, but unless all of the labor market rigidities are perfectly correlated with each other, the actual range of variation across countries should be significantly narrower for the aggregate measures than for any of the individual indicators.

9. Here again, we draw heavily on Calderón and Chong (in this volume).

using least squares with robust standard errors (White, 1980). We then use an IV estimator in which we control for the endogeneity of labor market regulations using a set of instruments outlined by Djankov and others (2003). We discuss the outline of the IV strategy when we analyze the panel data techniques.

For the panel estimation of equations (2) and (3), we first use a series of three least-squares-based estimators: the pooled OLS estimator, which is the simplest regression technique given that we do not account for either unobserved effects or endogeneity; the time-effects estimator (that is, least squares with time dummies), through which we can explain differences in income inequality across country stemming from differences in the extent of labor market regulations; and the within-group or country-effects estimator (that is, least squares with country dummies), with which we analyze the movement of income inequality indicators in a country to changes in its labor market regulations. We complement these least-squares-based estimation techniques with methods that control for endogenous regressors. We thus present several estimators from the instrumental variables family.

Because it is very likely that labor regulations are partly endogenous, we focus our final analysis on techniques that account for the endogeneity problems. We tackle this issue using two different strategies. Our first strategy is based on IV techniques in which we select external instruments for labor regulations. We present pooled IV estimates, IV with time effects, and IV with country effects. This set of instruments follows the literature on the choice of labor regulations, as outlined by Djankov and others (2003). According to Djankov and associates, the choice of labor regulations across countries is explained by efficiency considerations, political power theories, and legal theories.

North (1981) claims that a set of regulations is usually chosen based on an efficiency criterion. Efficiency theory focuses on the distinction between regulation and social insurance. Some economists argue that social insurance may be an efficient way to deal with market failures in countries with lower social marginal cost of tax revenues—in other words, in richer countries (Becker and Mulligan, 2000). Poor countries regulate to protect workers from being mistreated by employers, while rich countries provide unemployment insurance, sick leave, and early retirement since they can raise taxes cheaply to finance such operations. Efficiency theory may argue the opposite, however. Government officials may use labor regulations to force firms to hire and keep excess labor or to empower unions that are

friendly with the government. In this case, countries with good governance have a comparative advantage at regulation relative to other forms of social control of business.

According to political power theories, institutions are designed to transfer resources from those without political power to those with power (Olson, 1993). Institutions are thus designed to be inefficient by political leaders aiming to help themselves and their favored groups. Political power theorists argue that regulations protecting workers are introduced by socialist, social-democratic, and more generally leftist governments to benefit their political constituencies (Hicks, 1999). In addition, labor regulations are a response to pressure from trade unions, and the degree of regulations should be higher when unions are more powerful. Dictatorships are less constrained than democratically elected governments, so they will have more redistributive laws and institutions. Constitutions, legislative constraints, and other forms of checks and balances are all conducive to fewer regulations (Djankov and others, 2003). Likewise, open economies may find it expensive to introduce regulations, since competition makes it less lucrative for governments to raise firms' regulatory costs (Ades and Di Tella, 1999).

Finally, legal theories suggest that the legal tradition is at the root of the way countries control economic activities (Djankov and others, 2003). Common law countries tend to rely on markets and contracts, civil law countries on regulation, and socialist countries on state ownership.[10] This implies that civil law countries and socialist law countries should regulate labor markets more extensively than common law countries. Common law countries may also have a less generous social security system since they rely on markets to provide insurance.

10. Common law emerged in England and is mostly characterized by the importance of decisionmaking by juries, independent judges, and judicial discretion as opposed to codes. Common law was transmitted to the British colonies, including Australia, Canada, India, New Zealand, Pakistan, the United States, and a number of countries in the Caribbean, East Africa, and Southeast Asia. Civil law evolved from Roman law in Western Europe and was incorporated into civil codes in France and Germany in the nineteenth century. It is characterized by less independent judiciaries, the relative unimportance of juries, and a greater role of both substantive and procedural codes as opposed to judicial discretion. French civil law was transplanted throughout Western Europe, including Belgium, Holland, Italy, Portugal, and Spain, and subsequently to the colonies in North and West Africa, Latin America, and parts in Asia. German codes became accepted in Germanic Western Europe, but were also transplanted to Japan and from there to China, Korea, and Taiwan. Socialist law was adopted in countries that came under the influence of the Soviet Union, while a Scandinavian legal tradition developed in Denmark, Finland, Iceland, Norway, and Sweden (Djankov and others, 2003).

Our set of instruments reflects these different theories on the processes affecting labor regulation. To capture efficiency effects, we use the log of GDP per capita. To test political power theories, we analyze the significance of the index of institutionalized autocracy from the Polity IV codebook (Marshall and Jaggers, 2003), the leftist political orientation of the government and congress (Beck and others, 2001), and measures of trade openness. Finally, we include dummy variables for countries with British common law and the German civil code to test legal theories (La Porta and others, 1999).

Our second strategy for tackling the endogeneity of labor rigidities is to use the GMM estimators developed by Arellano and Bover (1995) and Blundell and Bond (1998). This technique takes into account the presence of unobserved period- and country-specific effects. Time effects are accounted for by the inclusion of period-specific dummy variables, whereas country-specific effects are dealt with via differencing, given the dynamic nature of the regression. We also control for biases resulting from simultaneous or reverse causation. A more detailed reference to the GMM-IV techniques is presented in appendix B in Calderón and Chong (in this volume).

3. Empirical Assessment

This section present our empirical assessment of the link between income inequality and labor market regulation. We gather data for a sample of 121 countries over the 1970–2000 period (see appendix A for a list of the countries). We present some basic statistics on income inequality and labor regulations, as well as the correlation analysis. We then perform the regression analysis. Our assessment is undertaken along two dimensions: a cross-section analysis over the 1970–2000 period and a panel data analysis of nonoverlapping five-year-average observations over the same period.

3.1 Basic Statistics

Table 1 reports simple averages of income inequality and the indicators of labor regulation across the world for a cross-section of countries over the 1970–2000 period. First, we find that the distribution of income is more egalitarian among industrial nations (with an average

Gini coefficient of 0.32) than among developing countries (0.41). Income distribution in Latin America is more unequal, on average, than among the whole set of developing countries in our sample. Second, labor codes in industrial countries (as proxied by the $\mathbf{L}_0$ index of labor market rigidity in the Rama-Artecona data set) contain more regulations (that is, ILO standards) than developing countries. Third, industrial countries have a higher ability to enforce regulations than developing countries (as displayed by the $\mathbf{L}_1$ and $\mathbf{L}_2$ indices in the Rama-Artecona data set). Latin American countries have an even lower enforcement capability. Among the component variables in the aggregate $\mathbf{L}_1$ and $\mathbf{L}_2$ indices (not shown in the table), the ratio of minimum wages to income per capita is larger in developing economies

Table 1. Basic Statistics for Labor Market Regulation and Income Inequality, 1970–2000[a]
Average across groups of countries

Variable	*All countries*	*Industrial economies*	*Developing countries*	*East Asia*	*Latin America*	*Chile*
Income distribution[b]						
Gini coefficient (0–1)	0.39	0.32	0.41	0.39	0.48	0.53
Income shares by quintile (percent)						
Top quintile	46.4	39.3	48.9	46.8	55.0	61.6
Second quintile	67.5	62.6	69.3	68.3	74.7	77.4
Third quintile	15.5	17.8	14.8	15.0	13.0	12.0
Fourth quintile	16.9	19.6	16.0	16.7	12.2	10.6
Bottom quintile	6.3	7.0	6.0	6.1	4.2	3.9
Labor market rigidity[c]						
De jure index $\mathbf{L}_0$	0.30	0.49	0.25	0.09	0.34	0.33
De facto index $\mathbf{L}_1$	0.28	0.36	0.25	0.18	0.25	0.17
De facto index $\mathbf{L}_2$	0.29	0.32	0.28	0.14	0.32	0.08
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.04	–0.12	–0.01	0.08	–0.09	–0.16
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.02	–0.17	0.03	0.06	–0.02	–0.26
Labor regulation[d]						
Employment laws	1.53	1.36	1.60	1.39	1.79	1.46
Industrial (collective) relations law	1.25	1.22	1.26	1.12	1.44	1.18
Social security laws	1.70	2.21	1.53	1.58	1.69	1.98

Source: Authors' calculations, based on data from Deininger and Squire (1996); Milanovic (2000); Rama and Artecona (2002); Djankov and others (2003).
a. Based on a cross-section sample of 121 countries for the period 1970–2000. All variables are normalized. For the mean of the different subcategories of the aggregate indices of labor institutions, see Calderon and Chong (in this volume).
b. Indicators of income distribution are from Deininger and Squire (1996) and Milanovic (2000).
c. Indicators of labor market rigidity are from Rama and Artecona (2002).
d. Indicators of labor regulations are from Djankov and others (2003).

than in industrial countries, while social security contributions as a percentage of workers' salaries, trade union membership, and public sector employment (proxied by employment in the central or general government) are larger in industrial countries than in developing nations.

Finally, using the Djankov-La Porta data set of labor regulations, we find that labor codes in developing countries contain more regulations regarding employment laws and industrial (collective) relations laws than do labor codes in industrial countries. Latin American countries, in particular, appear to have a high degree of regulations. On the other hand, labor codes in industrial countries contain more benefits in their social security laws. Further analysis of the components of the different aggregate indices of laws protecting workers (not shown in the table) indicates that regulations on the conditions of employment are significantly larger among developing nations than among industrial countries; industrial countries have more regulations regarding the participation of workers in management than developing countries, although the latter group has more regulations on collective bargaining and collective disputes; and workers in industrial countries are more protected than those in developing countries in terms of the benefits stipulated in their social security laws, especially in the area of unemployment benefits.

In table 2, we present the evolution of the sample averages by decade over the 1970–2000 period. Our panel statistics are reported for all of countries, and for the sample of developing, Latin American countries and Chile. We find that income inequality decreased over the period regardless of the sample of countries evaluated. Gini coefficients decreased (from 0.40 in the 1970s to 0.38 in the 1990s), the income shares of the top quintiles decreased, and the income shares of middle and bottom quintiles increased. Second, labor codes incorporated more ILO standards over time. Specifically, the $\mathbf{L}_0$ index increased from 0.27 in the 1970s to 0.32 in the 1990s for the full sample of countries. Third, the enforcement of labor regulations also increased, on average, over time for the full sample of countries (whether we use the aggregate $\mathbf{L}_1$ or $\mathbf{L}_2$ index). Finally, a closer look into the components of the aggregate $\mathbf{L}_1$ and $\mathbf{L}_2$ indexes (not shown in the table) yields the following result: the increase in the aggregate $\mathbf{L}_1$ and $\mathbf{L}_2$ indices among developing nations is explained by upward trends in minimum wages and social security contributions.

Table 2. Basic Statistics for Labor Market Regulation and Income Inequality over the Decades[a]

	All countries			*Developing countries*			*Latin America*			*Chile*		
Variable	*1970s*	*1980s*	*1990s*	*1970s*	*1980s*	*1990s*	*1970s*	*1980s*	*1990s*	*1970s*	*1980s*	*1990s*
Income distribution												
Gini coefficient (0–1)	0.40	0.39	0.38	0.43	0.41	0.40	0.49	0.48	0.47	0.49	0.56	0.56
Income shares by quintile (percent)												
Top quintile	47.4	46.3	45.7	50.4	48.8	47.9	53.9	55.3	56.0	59.7	64.5	60.6
Top two quintiles	68.4	67.5	66.9	70.4	69.2	68.4	75.0	74.4	74.8	75.0	78.3	78.9
Middle quintile	15.2	15.6	15.8	14.2	14.8	15.2	12.3	13.4	13.3	13.8	11.6	10.9
Bottom two quintiles	16.4	16.9	17.3	15.4	16.1	16.4	12.7	12.1	11.9	11.2	10.1	10.2
Bottom quintile	6.1	6.3	6.5	5.8	6.1	6.2	4.4	4.2	4.1	4.2	3.9	3.7
Labor market rigidity												
De jure index $\mathbf{L}_0$	0.27	0.29	0.32	0.23	0.25	0.27	0.30	0.34	0.39	0.32	0.32	0.36
De facto index $\mathbf{L}_1$	0.27	0.27	0.28	0.24	0.25	0.26	0.24	0.26	0.24	0.15	0.17	0.20
De facto index $\mathbf{L}_2$	0.28	0.29	0.30	0.27	0.27	0.29	0.31	0.33	0.32	0.06	0.06	0.11
De jure versus de facto												
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	0.00	−0.02	−0.06	0.01	0.00	−0.03	−0.06	−0.08	−0.14	−0.16	−0.15	−0.16
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.01	−0.01	−0.04	0.05	0.03	0.01	0.01	−0.01	−0.07	−0.26	−0.26	−0.26

Source: Authors' calculations, based on data from Deininger and Squire (1996); Milanovic (2000); and Rama and Artecona (2002).
a. Based on panel data of a sample of 121 countries for the period 1970–2000, in nonoverlapping five-year-average observations. All variables are normalized. For the mean of the different subcategories of the aggregate indices of labor institutions, see Calderon and Chong (in this volume). Indicators of income distribution are from Deininger and Squire (1996) and Milanovic (2000); indicators of labor market rigidity are from Rama and Artecona (2002).

3.2 Correlation Analysis

Table 3 presents the cross-section correlation analysis of income inequality and labor regulation indicators for the full sample of countries and for developing countries.[11] For the sake of robustness, we use not only different sets of labor market rigidity indicators, but also different measures of income inequality (namely, Gini coefficients and income shares). We first present the cross-section correlation between inequality and the labor market rigidity indicators in the Rama-Artecona data set. In general, we find that de jure labor regulation (as proxied by the $\mathbf{L}_0$ index) and de facto labor regulation (as proxied by the aggregate $\mathbf{L}_1$ and $\mathbf{L}_2$ indices) have a negative association with the Gini coefficient for the full sample of countries. All three labor regulation indices have a negative correlation with the income shares of the top quintiles of the population and a positive association with the income shares of the middle and bottom quintiles (see table 3). In particular, the aggregate $\mathbf{L}_1$ index of de facto rigidities has a larger negative correlation with the Gini coefficient than the $\mathbf{L}_2$ index (–0.46 versus –0.12).

A further look in the correlation between income inequality (as proxied by the Gini coefficient) and the aggregate indices of labor regulation yields two important results. First, minimum wages and trade union membership in the $\mathbf{L}_1$ index display the largest correlation with the Gini coefficient (approximately –0.5). Second, trade union membership and public sector employment in the $\mathbf{L}_2$ index exhibit the largest negative association with the Gini coefficient (with a correlation coefficient of approximately –0.1). This preliminary evidence suggests that the countries with greater labor regulations (independently of whether they are de jure or de facto) tend to display lower levels of income inequality.

Table 3 also presents the cross-section correlation between income inequality and the labor regulation indicators in the Djankov–La Porta data set. We find that the aggregate index of employment laws (as well as the different subindices) are positively correlated with the Gini coefficient, with the largest positive correlation displayed by regulations on job security. We also find a negative association between the index of industrial relations laws and the Gini coefficient that is mainly driven by worker participation in management.

11. For reasons of space, we comment only on the results for the full sample of countries. Where necessary, we point out some differences in the correlation analysis between industrial and developing countries.

Table 3. Cross-section Correlation Analysis for Labor Market Regulation and Income Inequality, 1970–2000[a]

	Full sample of countries						*Developing countries*					
		Income quintile						*Income quintile*				
Variable	*Gini coeff.*	*Top*	*Top two*	*Middle*	*Bottom two*	*Bottom*	*Gini coeff.*	*Top*	*Top two*	*Middle*	*Bottom two*	*Bottom*
Labor market rigidity[b]												
De jure index $\mathbf{L}_0$	−0.28	–0.23	–0.25	0.29	0.20	0.17	–0.08	0.02	–0.05	0.15	–0.02	0.02
De facto index $\mathbf{L}_1$	−0.46	–0.44	–0.44	0.36	0.43	0.36	–0.44	–0.39	–0.43	0.34	0.42	0.37
Minimum wage[c]	−0.49	–0.47	–0.43	0.34	0.44	0.36	–0.48	–0.42	–0.42	0.29	0.44	0.38
Social security contribution	−0.08	–0.15	–0.13	0.15	0.10	0.08	–0.17	–0.28	–0.27	0.25	0.26	0.28
Trade union membership	−0.48	–0.46	–0.43	0.32	0.44	0.37	–0.42	–0.36	–0.36	0.24	0.38	0.33
General government employment	−0.41	–0.40	–0.38	0.34	0.36	0.27	–0.40	–0.33	–0.35	0.28	0.35	0.30
De facto index $\mathbf{L}_2$	−0.12	–0.14	–0.13	0.16	0.09	0.04	–0.08	–0.08	–0.08	0.13	0.04	0.00
Minimum wage[d]	−0.06	–0.08	–0.05	0.09	0.02	–0.04	0.00	0.00	0.03	0.03	–0.06	–0.11
Maternity leave (no. days)	0.24	0.06	0.06	–0.06	–0.06	–0.02	0.18	–0.05	–0.05	0.04	0.06	0.11
Ratification of ILO convention 87	−0.10	–0.12	–0.10	0.16	0.05	0.00	0.01	0.00	0.00	0.09	–0.06	–0.10
Central government employment	−0.09	0.02	0.03	–0.06	–0.01	–0.07	–0.03	0.18	0.18	–0.17	–0.16	–0.18
De jure versus de facto												
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	−0.09	–0.14	–0.11	0.01	0.16	0.12	–0.36	–0.43	–0.39	0.20	0.46	0.36
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.15	0.09	0.12	–0.15	–0.08	–0.11	–0.06	–0.16	–0.10	0.03	0.14	0.05
Labor regulation[e]												
Employment laws	0.10	0.09	0.06	–0.08	–0.05	–0.03	0.07	–0.03	0.01	0.00	–0.01	–0.08
Alternative employment contracts	0.07	0.02	0.03	–0.02	–0.03	–0.05	0.17	0.09	0.12	–0.09	–0.12	–0.16
Conditions of employment	0.05	0.06	0.01	–0.02	0.00	0.05	–0.10	–0.17	–0.16	0.16	0.14	0.13
Job security	0.10	0.10	0.10	–0.13	–0.08	–0.09	0.10	0.03	0.07	–0.07	–0.07	–0.14

Table 3. (continued)

Variable	Full sample of countries						Developing countries					
		Income quintile						Income quintile				
	Gini coeff.	Top	Top two	Middle	Bottom two	Bottom	Gini coeff.	Top	Top two	Middle	Bottom two	Bottom
Industrial (collective) relations law	–0.01	0.03	0.01	0.03	–0.04	–0.01	0.03	0.03	0.02	0.08	–0.07	–0.05
Collective bargaining	0.11	0.13	0.11	–0.07	–0.12	–0.10	0.13	0.12	0.11	–0.07	–0.13	–0.14
Worker participation in management	–0.23	–0.23	–0.17	0.12	0.18	0.16	–0.12	–0.17	–0.11	0.11	0.09	0.12
Collective disputes	0.14	0.23	0.11	0.02	–0.19	–0.13	0.05	0.14	0.02	0.14	–0.12	–0.09
Social security laws	–0.38	–0.36	–0.35	0.39	0.29	0.19	–0.27	–0.21	–0.24	0.27	0.20	0.14
Old age, disability, and death benefits	–0.23	–0.31	–0.25	0.29	0.20	0.07	–0.10	–0.15	–0.12	0.12	0.11	0.02
Sickness and health benefits	–0.17	–0.11	–0.15	0.22	0.10	0.05	–0.10	–0.03	–0.10	0.17	0.05	0.02
Unemployment benefits	–0.47	–0.45	–0.42	0.41	0.37	0.28	–0.36	–0.31	–0.31	0.29	0.28	0.22

Source: Authors' calculations, based on data from Rama and Artecona (2002) and Djankov and others (2003).
a. Based on a cross-section sample of 121 countries for the 1970–2000 period. All labor indicators are normalized as specified in the paper.
b. Indicators of labor market rigidity are from Rama and Artecona (2002).
c. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
d. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.
e. Indicators of labor regulations are from Djankov and others (2003).

The other two components of the aggregate industrial relations index (namely, collective bargaining and collective disputes) exhibit a positive correlation with income inequality. Finally, we find a negative association between social security laws and the Gini coefficient; this is the largest negative coefficient among the aggregate indices, at –0.38. Of the different benefits covered by social security laws, unemployment benefits display the largest negative correlation with the Gini coefficient (–0,47), while sickness and health benefits display the smallest correlation (–0.17). In summary, countries with more egalitarian distribution usually offer a better social security environment (with a legal framework that entails more benefits on old age, sickness, and unemployment than in other countries).

Table 4 reports the panel data correlation analysis between the Gini coefficient and the different indicators of labor market regulations from the Rama-Artecona database. We find that most of our indicators (both aggregate indices and individual categories) have an unconditional negative correlation with income inequality. The correlation coefficient between $\mathbf{L}_0$ and the Gini coefficient is –0.32, while the correlation between $\mathbf{L}_1$ and income inequality is higher than between $\mathbf{L}_2$ and income inequality (–0.47 and –0.20, respectively).[12]

The table also shows the evolution of the correlation between these variables over decades. The correlation between income inequality and de jure labor regulations (the $\mathbf{L}_0$ index) is negative in all decades, although it decreases from –0.34 in the 1970s to –0.30 in the 1990s. In the case of de facto regulations (as proxied by the aggregate $\mathbf{L}_1$ and $\mathbf{L}_2$ indices), the correlations decreased in the 1980s relative to the 1970s, but they then increased in the 1990s (although very slightly for $\mathbf{L}_1$). Finally, regulations on minimum wages (whether normalized by industrial wages or per capita income) are positively associated with income inequality for industrial countries (not shown in the table). For developing countries, we find a positive correlation only for minimum wages normalized by per capita income. Of course, we need to control for other determinants of inequality and possible reverse causation before we can properly conclude whether labor regulations affect inequality.

12. The largest negative correlation among the categories of the aggregate $\mathbf{L}_1$ index is with trade union membership (–0.50), followed by general government employment (–0.36) and social security contribution (–0.30). The smallest correlation is exhibited by minimum wages (–0.10). Days of maternity leave and trade union membership (as proxied by the ratification of ILO convention 87) show a negative correlation with the Gini coefficient among the $\mathbf{L}_2$ components (–0.31 and –0.18, respectively), while minimum wages and central government employment display a positive correlation (0.16 and 0.03, respectively).

Table 4. Panel Data Correlation Analysis for Labor Market Regulation and Income Inequality (Gini coefficient), 1970–2000[a]

	Full sample of countries				*Developing countries*			
Labor rigidity indicator	*1970-2000*	*1970s*	*1980s*	*1990s*	*1970-2000*	*1970s*	*1980s*	*1990s*
De jure index $\mathbf{L}_0$	–0.32	–0.34	–0.32	–0.30	–0.13	–0.18	–0.11	–0.11
De facto index $\mathbf{L}_1$	–0.47	–0.51	–0.45	–0.45	–0.43	–0.46	–0.39	–0.45
Minimum wage[b]	–0.10	–0.13	–0.06	–0.11	–0.18	–0.21	–0.10	–0.25
Social security contribution	–0.30	–0.23	–0.30	–0.34	–0.24	–0.17	–0.22	–0.28
Trade union membership	–0.50	–0.60	–0.50	–0.44	–0.46	–0.56	–0.45	–0.40
General government employment	–0.36	–0.38	–0.33	–0.38	–0.25	–0.23	–0.17	–0.35
De facto index $\mathbf{L}_2$	–0.20	–0.24	–0.15	–0.20	–0.17	–0.19	–0.07	–0.21
Minimum wage[c]	0.16	0.17	0.18	0.16	0.07	0.09	0.11	0.06
Maternity leave (no. days)	–0.31	–0.36	–0.32	–0.29	–0.34	–0.41	–0.34	–0.33
Ratification of ILO convention 87	–0.18	–0.19	–0.15	–0.17	–0.08	–0.09	–0.04	–0.10
Central government employment	0.03	0.09	0.07	–0.09	0.15	0.28	0.17	–0.00
De jure versus de facto								
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.02	0.03	–0.01	–0.08	–0.26	–0.15	–0.26	–0.36
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.17	0.19	0.23	0.12	–0.05	–0.01	0.02	–0.13

Source: Authors' calculations, based on data from Rama and Artecona (2002).

a. Based on a panel data sample of 121 countries for the 1970–2000 period, in five-year nonoverlapping observations. The income inequality indicator is the Gini coefficient (0–1); indicators of labor market rigidity are from Rama and Artecona (2002).

b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.

c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

3.3 Cross-section Regression Analysis

We first analyze the impact of labor regulations on income inequality for our cross-section of 121 countries over the 1970–2000 period. We start with our cross-section OLS estimates and then instrument for labor regulation in our simple IV estimates, where our dependent variable is the Gini coefficient. Table 5 presents the OLS and IV estimates including the three indicators of labor market regulations at the same time, both for the full sample and developing countries.[13] In this table, we report the coefficients, their standard errors and the R squared.[14] Tables B1 and B2 in appendix B present a similar exercise, but including only one labor market indicator at a time.

De jure regulations (the $\mathbf{L}_0$ index) do not seem to have a significant relationship with income inequality, regardless of the sample and estimation technique used. The $\mathbf{L}_1$ index of de facto regulations has a negative coefficient that is significant only for the OLS regression for developing countries. The $\mathbf{L}_2$ index has no significant association to the Gini coefficient. Using our IV estimates, we find that the following variables have a robust negative impact on the Gini coefficient across samples: the share of unionized labor, the share of general government employment, and the ratio of minimum wages to per capita income. Based on their estimated coefficients in table 5, we infer that a one-standard-deviation increase in trade union membership and public employment would reduce the Gini coefficient (0–1) by 0.094 and 0.082, respectively, while an analogous increase in the ratio of minimum wages to per capita income would increase income inequality by 0.15 over the thirty-year period. Finally, improving the ratio between $\mathbf{L}_1$ and $\mathbf{L}_0$, which serves as a measure of compliance, significantly improves income inequality in both samples.

13. Following the strategy applied by Calderón and Chong (in this volume), we base our choice of instruments for the labor market rigidity indicators on the literature summarized in Djankov and others (2003). Our main findings are that labor markets are more regulated in wealthy countries and in countries with a left-oriented government, while they are less regulated in countries with common law (British legal tradition). In addition, wealthy countries, more open countries, and countries with a British legal tradition have fewer labor regulations (proxied by employment laws, industrial relations laws, and social security laws). For the sake of brevity, we do not report the first-stage regression results; they are available on request.

14. The income inequality regression includes the following explanatory variables: output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, number of physicians per 1,000 people, and the different indicators of labor regulation. A full report of the regression results is available on request.

Table 5 also reports our results for the Djankov–La Porta indicators of labor regulations. We find that the aggregate index of employment laws has a positive and significant relationship with the Gini coefficient, regardless of the sample and estimation technique used. This positive relationship is mainly explained by regulations on alternative employment contracts. Industrial relations laws have a positive association with inequality, although it is only significant when we use IV. This effect on inequality is attributed to regulations on collective bargaining and collective disputes. Finally, social security laws also have a positive relation with inequality, which is significant only in the OLS estimations and is mainly attributed to the significance of regulations on sickness and health benefits. Economically speaking, a one-standard-deviation increase in the aggregate index of employment laws and industrial relations laws would increase the Gini coefficient by 0.02 over the thirty-year period (that is, the coefficient moves from an average of 0.39 for the full sample of countries to 0.37). An analogous increase in the regulations of both collective bargaining and disputes has a stronger negative impact on the distribution of income: the Gini coefficient increases by 0.04 and 0.10, respectively, over the thirty-year period.

3.4 Panel Data Regression Analysis

After performing our cross-section regression analysis, we evaluate the relation between labor market regulations and income inequality using a panel data set of nonoverlapping five-year observations for the 1970–2000 period. We take advantage of the additional dimension (that is, the time dimension) to draw some inferences on the impact of labor market regulations on income inequality with robust panel data estimation techniques.

Simple Techniques

We start by characterizing the relation between labor market regulations and income inequality using simpler techniques such as pooled OLS and OLS with time and country fixed effects. The pooled OLS does not take into account unobserved specific effects and endogeneity of the regressors. While the first problem can be accounted for by using time and country fixed effects, the second one is solved by including instrumental variables. We report estimates using IV with and without time and country fixed effects. In the next subsection, we

Table 5. Cross-country Regression Analysis for Labor Market Regulation and Income Inequality[a] (Dependent variable: Gini coefficient)

	Full sample of countries						*Developing countries*					
	Least squares			*Instrumental variables*			*Least squares*			*Instrumental variables*		
Variable	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
Labor market rigidity[b]												
De jure index $\mathbf{L}_0$	0.040	0.07	0.41	–0.008	0.18	0.41	0.084	0.10	0.23	0.047	0.21	0.22
De facto index $\mathbf{L}_1$	–0.123*	0.07	0.42	–0.125	0.23	0.41	–0.215*	0.11	0.24	–0.055	0.30	0.21
Minimum wage[c]	0.059	0.05	0.53	0.265	0.24	0.54	0.018	0.06	0.38	0.351	0.28	0.40
Social security contribution	–0.071*	0.04	0.42	0.107	0.16	0.42	–0.038	0.07	0.23	0.176	0.19	0.22
Trade union membership	–0.077	0.06	0.42	–0.421**	0.21	0.44	–0.144*	0.09	0.25	–0.399*	0.26	0.25
General government employment	–0.083*	0.05	0.44	–0.444*	0.25	0.44	–0.186**	0.08	0.30	–0.787**	0.38	0.29
De facto index $\mathbf{L}_2$	0.026	0.08	0.41	0.128	0.28	0.41	0.047	0.09	0.22	0.258	0.36	0.23
Minimum wage[d]	0.130	0.10	0.51	1.011**	0.33	0.54	0.118	0.11	0.36	1.623**	0.49	0.42
Maternity leave (no. days)	–0.023	0.08	0.41	–0.466	0.36	0.43	–0.138*	0.09	0.24	–1.372*	0.71	0.28
Ratification of ILO convention 87	–0.004	0.02	0.41	0.031	0.10	0.41	0.011	0.03	0.22	0.066	0.13	0.22
Central government employment	–0.069	0.09	0.39	–0.120	0.22	0.39	–0.109	0.10	0.20	0.078	0.37	0.21
De jure versus de facto												
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.077*	0.05	0.42	–0.495**	0.23	0.44	–0.152*	0.08	0.25	–0.582**	0.29	0.26
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.013	0.08	0.40	0.134	0.33	0.41	–0.014	0.11	0.22	0.107	0.41	0.22
Labor regulation[e]												
Employment laws (Djankov-La Porta)	0.054**	0.02	0.48	0.092*	0.05	0.48	0.084**	0.03	0.35	0.151**	0.06	0.36
Alternative employment contracts	0.105*	0.06	0.49	0.239	0.22	0.47	0.175**	0.08	0.38	0.479	0.34	0.34
Conditions of employment	0.046	0.06	0.48	0.185	0.13	0.50	0.062	0.10	0.35	0.282*	0.16	0.38
Job security	0.001	0.05	0.49	0.098	0.12	0.50	0.022	0.05	0.37	0.181	0.15	0.39

Table 5. (continued)

	Full sample of countries						*Developing countries*					
	Least squares			*Instrumental variables*			*Least squares*			*Instrumental variables*		
Variable	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
Industrial (collective) relations law	0.022	0.02	0.45	0.058*	0.03	0.48	0.031	0.03	0.26	0.096**	0.04	0.34
Collective bargaining	0.049	0.04	0.46	0.152*	0.08	0.50	0.071	0.05	0.28	0.234**	0.11	0.36
Worker participation in management	–0.021	0.03	0.48	–0.173	0.15	0.52	–0.012	0.04	0.29	0.064	0.15	0.29
Collective disputes	0.098*	0.06	0.47	0.602**	0.25	0.54	0.075	0.10	0.27	0.342**	0.15	0.38
Social security laws	0.043**	0.02	0.48	0.062	0.06	0.46	0.058**	0.03	0.34	0.107	0.08	0.29
Old age, disability, and death benefits	0.052	0.07	0.48	0.208	0.49	0.48	0.023	0.10	0.34	0.639	0.63	0.36
Sickness and health benefits	0.077**	0.04	0.50	0.277*	0.17	0.47	0.094**	0.04	0.37	0.208*	0.12	0.30
Unemployment benefits	–0.005	0.04	0.50	–0.103	0.20	0.47	0.014	0.04	0.36	0.014	0.21	0.37

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002) and Djankov and others (2003).
a. We report the regression coefficient for the indicator of labor rigidity according to equations 2 and 3 in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.
b. Indicators of labor market rigidity are from Rama and Artecona (2002).
c. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
d. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.
e. Indicators of labor regulations are from Djankov and others (2003).

present estimates using the GMM-IV system estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), which takes unobserved effects and endogeneity into account using both internal and exogenous instruments for the labor regulation indicators. Since the latter method is our preferred estimation technique, we emphasize these estimates in our discussion of the results.

Tables 6 and 7 report the panel data estimation results for pooled and time effects, using both OLS and IV country techniques, respectively.

We focus our discussion on the IV estimates since, in principle, they tackle the endogeneity problem (see table 7). We find that de jure labor regulations have no significant relation with income inequality in almost all cases. However, $\mathbf{L}_0$ has a negative and significant impact on inequality for the world sample using our country-effects estimator. The $\mathbf{L}_1$ index has a negative and significant impact on inequality in developing countries when using country-effects estimator, while the $\mathbf{L}_2$ index has no significant impact on income distribution regardless of the sample. If we look at the components of the $\mathbf{L}_1$ index, the share of unionized labor and the size of public employment seem to drive down inequality among developing countries. When we analyze the components of the $\mathbf{L}_2$ index, we find that maternity leave and public employment have a negative and significant effect on the Gini coefficient in developing countries.

Our extensive regression analysis using OLS and IV estimates (pooled and with time and country fixed effects) of income inequality and aggregate de jure and de facto labor regulations indices ($\mathbf{L}_0$, $\mathbf{L}_1$, and $\mathbf{L}_2$) is presented in tables B3 through B8 in appendix B. Our specification includes other explanatory variables such as per capita output (in logs), per capita output squared, secondary schooling, liquid liabilities (as a percentage to GDP), the number of physicians per 1,000 people, the CPI inflation rate, and the size of the modern sector.[15]

15. In general, we find a nonlinear relation between income inequality and output per capita that is consistent with the Kuznets curve hypothesis (an inverted-U-shaped curve for the Gini coefficient). We also find that countries with a relatively more equal income distribution also have a greater stock of human capital, deeper financial systems, better health systems, lower macroeconomic instability, and a larger agricultural sector than do countries in which the income distribution is more skewed (see tables B3 through B8 in appendix B for further detail).

The GMM-IV System Estimator

The previous section used simple panel data techniques to characterize the relation between income inequality and labor market regulations. In this section, we introduce the GMM-IV system estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The GMM-IV system estimator is our preferred estimator for two main reasons. First, it accounts for unobserved country-specific effects that may bias our estimates. Specifically, we incorporate time dummies to control for the presence of time effects, and we take care of the country-specific effects by expressing our equation in differences. Second, the estimator controls for the possibility of endogenous regressors. We use both internal instruments (that is, lagged levels as instruments for the differences and lagged differences as instruments for the levels) and exogenous instruments for labor regulations suggested by theory (namely, legal and institutional variables). To confirm the validity of our income inequality regressions, we compute the Sargan test of overidentifying restrictions, which tests the validity of the moment conditions that we set up to perform the IV regressions, and tests of higher-order serial correlation.[16] These specification tests validate our regressions for statistical inference: our instruments are valid according to the Sargan test, and we reject the possibility of our errors displaying high-order serial correlation.

Before we discuss our results on the variable of interest (namely, labor market regulations), we briefly comment on the coefficient estimates for the other explanatory variables. First, we find evidence in favor of the Kuznets hypothesis that income inequality increases in the early stages of development and then decreases in later stages. On average, the turning point for GDP (in logs) in the full sample of countries is 8.1 (approximately the initial level of GDP per capita in Morocco during the 1996–2000 period), whereas the mean in the regression sample is 8.6 (Colombia during the same period). Second, a larger stock of human capital (as proxied by a larger enrollment rate in secondary education or a larger number of physicians per 1,000 people) may help reduce income inequality. Deeper financial systems also drive inequality down. Income inequality increases if the country features high inflation or a large modern sector, although the

16. By construction, our error term displays first-order serial correlation. For more technical details on the estimation technique, see Calderón y Chong (in this volume).

Table 6. Panel Data Regression Analysis for Labor Market Regulations and Income Inequality: Ordinary Least Squares[a] (Dependent variable: Gini coefficient)

Estimation method and	*Full sample*			*Developing countries*		
labor regulation indicator	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
Pooled estimator						
De jure index $\mathbf{L}_0$	0.022	0.03	0.38	0.067*	0.04	0.27
De facto index $\mathbf{L}_1$	–0.174**	0.03	0.41	–0.248**	0.05	0.30
Minimum wage[b]	–0.014	0.02	0.48	–0.063**	0.03	0.36
Social security contribution	–0.038**	0.02	0.39	–0.030	0.03	0.29
Trade union membership	–0.087**	0.03	0.42	–0.112**	0.04	0.31
General government employment	–0.049**	0.02	0.45	–0.076**	0.03	0.36
De facto index $\mathbf{L}_2$	–0.065**	0.03	0.38	–0.053	0.04	0.26
Minimum wage[c]	0.041	0.05	0.44	0.027	0.05	0.31
Maternity leave (no. days)	–0.090**	0.03	0.39	–0.121**	0.03	0.26
Ratification of ILO convention 87	–0.015*	0.01	0.38	–0.008	0.01	0.26
Central government employment	–0.024	0.03	0.43	–0.014	0.04	0.32
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.084**	0.02	0.39	–0.142**	0.03	0.29
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.059*	0.03	0.39	–0.083**	0.04	0.28
Time-effects estimator						
De jure index $\mathbf{L}_0$	0.024	0.03	0.41	0.055	0.04	0.30
De facto index $\mathbf{L}_1$	–0.159**	0.04	0.43	–0.231**	0.06	0.32
Minimum wage[b]	–0.017	0.02	0.49	–0.063**	0.03	0.37
Social security contribution	–0.043*	0.02	0.41	–0.037	0.03	0.32
Trade union membership	–0.064**	0.03	0.44	–0.084**	0.04	0.34
General government employment	–0.032	0.03	0.48	–0.055*	0.03	0.40
De facto index $\mathbf{L}_2$	–0.061**	0.03	0.41	–0.054*	0.03	0.29
Minimum wage[c]	0.023	0.04	0.47	0.011	0.05	0.33
Maternity leave (no. days)	–0.089**	0.04	0.41	–0.126**	0.06	0.30
Ratification of ILO convention 87	–0.014*	0.01	0.41	–0.010	0.01	0.29
Central government employment	–0.012	0.03	0.45	0.002	0.04	0.35

Table 6. (continued)

Estimation method and	*Full sample*			*Developing countries*		
labor regulation indicator	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.076**	0.03	0.42	–0.124**	0.04	0.32
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.055**	0.03	0.42	–0.074**	0.03	0.32
Country-effects estimator						
De jure index $\mathbf{L}_0$	–0.110*	0.06	0.91	–0.030	0.13	0.91
De facto index $\mathbf{L}_1$	0.162**	0.06	0.91	–0.360**	0.12	0.91
Minimum wage[b]	0.043	0.03	0.90	–0.269**	0.13	0.90
Social security contribution	0.083**	0.04	0.91	–0.357**	0.13	0.91
Trade union membership	0.071**	0.03	0.91	–0.318**	0.09	0.91
General government employment	–0.032	0.03	0.91	–0.462**	0.14	0.92
De facto index $\mathbf{L}_2$	0.126**	0.05	0.90	–0.364	0.27	0.90
Minimum wage[c]	–0.075	0.07	0.90	0.706**	0.32	0.91
Maternity leave (no. days)	0.128**	0.04	0.91	–0.677**	0.26	0.91
Ratification of ILO convention 87	0.039**	0.02	0.90	–0.056	0.07	0.90
Central government employment	–0.003	0.04	0.91	0.125**	0.05	0.91
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	0.190**	0.04	0.91	–0.489**	0.18	0.91
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.149**	0.04	0.91	–0.083	0.17	0.91

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.
b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

Table 7. Panel Data Regression Analysis for Labor Market Regulations and Income Inequality: Instrumental Variables[a] (Dependent variable: Gini coefficient)

Estimation method and	*Full sample*			*Developing countries*		
labor regulation indicator	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
Pooled estimator						
De jure index $\mathbf{L}_0$	0.033	0.07	0.40	0.102	0.09	0.30
De facto index $\mathbf{L}_1$	–0.103	0.08	0.39	0.023	0.12	0.28
Minimum wage[b]	0.075	0.10	0.49	0.105	0.12	0.38
Social security contribution	0.122**	0.06	0.39	0.151**	0.08	0.29
Trade union membership	–0.547**	0.14	0.42	–0.534**	0.17	0.31
General government employment	–0.368**	0.13	0.44	–0.681**	0.21	0.35
De facto index $\mathbf{L}_2$	0.091	0.10	0.39	0.181	0.13	0.29
Minimum wage[c]	0.282*	0.16	0.47	0.465**	0.21	0.37
Maternity leave (no. days)	–0.841**	0.29	0.41	–0.645*	0.36	0.30
Ratification of ILO convention 87	0.087*	0.05	0.40	0.051	0.05	0.29
Central government employment	–0.297**	0.13	0.43	–0.352*	0.21	0.33
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.347**	0.11	0.41	–0.513**	0.14	0.32
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.051	0.12	0.40	–0.010	0.16	0.29
Time-effects estimator						
De jure index $\mathbf{L}_0$	0.015	0.07	0.42	0.055	0.08	0.33
De facto index $\mathbf{L}_1$	–0.130	0.10	0.42	–0.028	0.13	0.31
Minimum wage[b]	0.045	0.11	0.51	0.137	0.27	0.38
Social security contribution	0.108*	0.06	0.42	0.119*	0.07	0.32
Trade union membership	–0.557**	0.15	0.45	–0.539**	0.18	0.35
General government employment	–0.443**	0.13	0.48	–0.661**	0.21	0.39
De facto index $\mathbf{L}_2$	0.059	0.10	0.41	0.109	0.13	0.31
Minimum wage[c]	0.323*	0.17	0.49	0.430*	0.23	0.39
Maternity leave (no. days)	–0.880**	0.29	0.43	–0.761**	0.36	0.33
Ratification of ILO convention 87	0.106*	0.06	0.42	0.066	0.11	0.31
Central government employment	–0.391**	0.15	0.46	–0.400*	0.24	0.35

Table 7. (continued)

Estimation method and	*Full sample*			*Developing countries*		
labor regulation indicator	*Coefficient*	*Std. dev.*	R^2	*Coefficient*	*Std. dev.*	R^2
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.352**	0.11	0.44	–0.440**	0.15	0.35
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.050	0.12	0.43	0.028	0.16	0.34
Country-effects estimator						
De jure index $\mathbf{L}_0$	–0.154**	0.07	0.89	0.007	0.15	0.89
De facto index $\mathbf{L}_1$	0.160**	0.07	0.89	–0.498**	0.16	0.90
Minimum wage[b]	0.054	0.04	0.88	–0.434**	0.18	0.88
Social security contribution	0.100**	0.05	0.89	–0.417**	0.15	0.89
Trade union membership	0.047	0.04	0.89	–0.449**	0.12	0.90
General government employment	–0.031	0.04	0.89	–0.738**	0.20	0.90
De facto index $\mathbf{L}_2$	0.159**	0.05	0.89	–0.143	0.31	0.88
Minimum wage[c]	–0.087	0.08	0.88	0.719*	0.39	0.88
Maternity leave (no. days)	0.158**	0.05	0.90	–0.826**	0.31	0.89
Ratification of ILO convention 87	0.043**	0.02	0.89	0.336**	0.13	0.89
Central government employment	0.125*	0.07	0.89	–0.895**	0.24	0.90
De jure versus de facto						
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	0.198**	0.05	0.90	–0.576**	0.20	0.90
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	0.170**	0.04	0.90	–0.077	0.20	0.89

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations 2 and 3 in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.
b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

Table 8. GMM-IV Panel Data Regression Analysis for Labor Market Regulations and Income Inequality: GMM-IV[a] (Dependent variable: Gini coefficient)

	Full sample of countries			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2
Constant	–0.548**	–0.865**	–1.115**	–0.580**	–1.130**	–2.134**
	(0.28)	(0.15)	(0.21)	(0.66)	(0.71)	(0.63)
Output per capita (logs)	0.214**	0.333**	0.364**	0.193**	0.377**	0.604**
	(0.07)	(0.04)	(0.05)	(0.17)	(0.19)	(0.16)
Output per capita squared	–0.013**	–0.020**	–0.023**	–0.012	–0.022**	–0.036**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Economic growth	–0.450**	–0.515**	–0.612**	–0.438**	–0.482**	–0.618**
	(0.06)	(0.05)	(0.04)	(0.07)	(0.08)	(0.11)
Secondary schooling	–0.018**	–0.008**	–0.019**	–0.035**	–0.058**	–0.040**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.015**	–0.039**	–0.057**	–0.045**	–0.024	–0.077**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Physicians per 1,000 people	–2.867**	0.556	–0.908**	–4.733**	0.451	–1.101
	(0.38)	(0.54)	(0.38)	(0.85)	(1.25)	(1.20)
Inflation rate	–0.002	–0.011**	–0.008	–0.005	–0.016*	–0.015*
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Modern sector	0.201**	0.047	0.257**	0.351**	0.136	0.240**
	(0.04)	(0.04)	(0.05)	(0.14)	(0.13)	(0.11)
Labor rigidity	0.046**	–0.289**	–0.222**	0.103**	–0.291**	–0.205**
	(0.02)	(0.02)	(0.02)	(0.05)	(0.07)	(0.06)
Summary statistic						
No. countries	65	65	65	52	51	51
No. observations	182	199	200	146	156	157
R^2	0.42	0.38	0.42	0.34	0.31	0.29
Turning point	7.96	8.23	8.08	8.16	8.55	8.42

Table 8. (continued)

	Full sample of countries			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2
Specification tests (*p* values)						
Sargan test	0.85	0.70	0.86	0.85	0.80	0.86
Second-order correlation	0.71	0.99	0.91	0.63	0.96	0.91

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. The dependent variable is the Gini coefficient (0–1). The estimation method is the GMM-IV system estimator (Arellano and Bover, 1995), based on a panel data set of 121 countries over the 1970–2000 period, with nonoverlapping five-year observations. Asymptotic standard errors robust to general cross-section and time-series heteroskedasticity are reported in parentheses.

coefficient estimate of inflation is not robust (see table 8 for additional details).

We now turn to the effect of labor market regulations on income inequality. First, we find that de jure regulations, as proxied by the $\mathbf{L}_0$ index, have a positive and significant impact on the Gini coefficient for both the full sample of countries and the sample of developing countries. Hence, income inequality worsens with the adoption of an increasing number of ILO standards. A one-standard-deviation increase in the $\mathbf{L}_0$ index (namely, 0.21 for the full sample of countries) would reduce the Gini coefficient by 0.01, while an analogous increase in the $\mathbf{L}_0$ index for developing countries (that is, 0.18) would raise the Gini coefficient by 0.025. This increase in the $\mathbf{L}_0$ index (again, 0.21 for the full sample of countries) is much larger than the average increase observed from 1976–80 to 1996–2000 (0.06). Only Brazil, Finland, Spain, and Uruguay experienced such a large change over that period (that is, an increase of approximately 0.21 in the normalized number of ILO standards between 1976–80 and 1996–2000). We should take this result with caution, however, since reducing the number of regulations contained in the labor codes does not necessarily enhance the enforcement abilities of the regulators.

In contrast with our results for de jure regulations, we find that both the $\mathbf{L}_1$ and $\mathbf{L}_2$ indices of labor de facto regulations have a negative and significant coefficient estimate for the full sample of countries and the sample of developing countries. Labor market regulations should thus reduce income inequality in countries with a solid capability to enforce the law. A one-standard-deviation increase in the $\mathbf{L}_1$ index (or 0.13) may reduce income inequality by 0.037, while an analogous increase in the $\mathbf{L}_2$ index (or 0.15) may reduce the Gini coefficient by 0.033. An analogous increase in the extent of de facto regulations would cause a decline in the Gini coefficient between 0.028 (when $\mathbf{L}_1$ declines) and 0.032 (when $\mathbf{L}_2$ declines).[17]

Tables 9 and 10 report—for the full sample and the sample of developing countries, respectively—the sensitivity analysis of our coefficient estimates of labor regulations to changes in the indicator of labor regulation used in the regression (here we use the different

17. From 1976–80 to 1996–2000, the $\mathbf{L}_1$ index increased more than one standard deviation in Bangladesh, Jordan, and South Africa, whereas it decreased one standard deviation or more in Australia, Bulgaria, Israel, Syria, and the United Kingdom. The $\mathbf{L}_2$ index increased at least one standard deviation in Bangladesh, Romania, Turkey, and Venezuela, while it decreased one standard deviation or more in Bahrain, Niger, and New Zealand.

components of the aggregate indices used in table 8) and to changes in the proxy of income inequality used as our dependent variable. In addition to the Gini coefficient, we use the income share of selected quintiles of the population.

We first analyze the impact of the different individual measures of labor market regulations on the Gini coefficient. The negative impact of the $\mathbf{L}_1$ index on income inequality for the full sample of countries is mainly attributed to a negative and significant impact of social security contributions, trade union membership, and government employment. A one-standard-deviation increase in social security contributions reduces the Gini coefficient by 0.008, whereas analogous increases in trade union membership and public employment generate a decline in the Gini coefficient of 0.028 and 0.01, respectively. In the case of the negative impact of the $\mathbf{L}_2$ index, we find negative and significant effects on income inequality from maternity leave and trade union membership (as proxied by the ratification of the ILO convention on organized labor). A one-standard-deviation increase in mandated benefits (as proxied by a one-standard-deviation increase in the days of maternity leave) may reduce the Gini coefficient by 0.01. When we restrict our regression analysis to developing countries, mandated benefits—that is, social security contributions—drive the redistributive impact of the $\mathbf{L}_1$ index, whereas maternity leave and trade union membership drive the redistributive effects of the $\mathbf{L}_2$ index. The impact of a one-standard-deviation increase in mandated benefits among developing nations generates a reduction in the Gini coefficient of 0.012 regardless of the proxy used.

Next we analyze the impact of the different aggregate indices on the incomes share of the top, middle, and bottom quintiles of the population. Our index of de jure regulations, $\mathbf{L}_0$, has a positive but insignificant impact on the income shares of the top quintiles, but it has a negative and significant impact on the income share of the middle class (as proxied by the income share of the middle quintile) and the poor (as proxied by the share of the bottom quintile). A one-standard-deviation increase in the (normalized) number of ILO standards ratified would reduce the income share of the middle and bottom quintiles by 0.005 and 0.003, respectively. For the sample of developing countries, de jure regulations have a positive and significant relation with the income share of the top two quintiles and a negative and significant relationship with the middle and bottom quintiles. A one-standard-deviation increase in the $\mathbf{L}_0$ index raises the income share of the top two quintiles by 0.03, and it reduces the income share of the middle and bottom quintiles by 0.015 and 0.008, respectively.

Table 9. GMM-IV Panel Regressions for Labor Market Regulations and Income Inequality: Full Sample[a] (Dependent variables: alternative measures of income inequality)

			Population quintile										
	Gini		*Top quintile*		*Top two quintiles*		*Middle quintile*		*Bottom two quintiles*		*Bottom quintile*		
Labor market rigidity indicator	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*No. obs.*
De jure index $\mathbf{L}_0$	0.046**	0.42	0.007	0.43	0.060	0.44	−0.026**	0.42	0.011	0.36	−0.017*	0.26	182
	(0.02)		(0.10)		(0.04)		(0.01)		(0.03)		(0.01)		
De facto index $\mathbf{L}_1$	−0.289**	0.38	−0.283**	0.40	−0.158**	0.41	0.041**	0.42	0.100**	0.31	0.036**	0.22	199
	(0.02)		(0.04)		(0.03)		(0.02)		(0.02)		(0.01)		
Minimum wage[b]	0.030	0.49	0.026	0.47	0.020	0.49	0.007	0.44	−0.032	0.41	−0.016*	0.32	198
	(0.02)		(0.03)		(0.04)		(0.01)		(0.02)		(0.01)		
Social security contribution	−0.038*	0.35	−0.034	0.38	−0.038**	0.38	0.014**	0.38	0.034**	0.29	0.019*	0.23	171
	(0.02)		(0.03)		(0.02)		(0.01)		(0.01)		(0.01)		
Trade union membership	−0.140**	0.42	0.037	0.37	0.027	0.37	−0.015	0.41	−0.034**	0.25	−0.021**	0.16	194
	(0.02)		(0.03)		(0.03)		(0.03)		(0.01)		(0.01)		
General government employment	−0.092**	0.48	−0.050*	0.43	−0.097**	0.43	0.012	0.46	0.056**	0.32	0.023	0.21	174
	(0.02)		(0.03)		(0.04)		(0.01)		(0.01)		(0.02)		
De facto index $\mathbf{L}_2$	−0.222**	0.42	−0.170**	0.42	−0.070**	0.41	0.016	0.41	0.040*	0.32	0.019**	0.21	200
	(0.02)		(0.03)		(0.03)		(0.03)		(0.02)		(0.01)		
Minimum wage[c]	−0.041	0.50	−0.024	0.52	−0.033	0.50	−0.007	0.43	0.001	0.44	−0.023	0.33	199
	(0.08)		(0.12)		(0.04)		(0.03)		(0.05)		(0.04)		
Maternity leave (no. days)	−0.049**	0.41	−0.121**	0.41	−0.085**	0.42	0.025**	0.43	0.061**	0.33	0.029**	0.22	175
	(0.02)		(0.04)		(0.03)		(0.01)		(0.03)		(0.01)		
Ratification of ILO convention 87	−0.018*	0.41	−0.017*	0.36	0.003	0.38	0.001	0.40	0.001	0.30	−0.005**	0.19	200
	(0.01)		(0.01)		(0.01)		(0.00)		(0.01)		(0.00)		
Central government employment	−0.048	0.45	−0.063	0.45	−0.007	0.45	0.005	0.45	0.013	0.34	−0.008	0.24	174
	(0.08)		(0.05)		(0.03)		(0.01)		(0.02)		(0.02)		

Table 9. (continued)

	Gini		Population quintile: Top quintile		Top two quintiles		Middle quintile		Bottom two quintiles		Bottom quintile		
Labor market rigidity indicator	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*No. obs.*
De jure versus de facto													
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.175**	0.35	–0.169**	0.43	–0.132**	0.41	0.074**	0.40	0.072**	0.33	0.037**	0.24	180
	(0.02)		(0.03)		(0.03)		(0.01)		(0.02)		(0.01)		
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.065**	0.46	–0.114**	0.45	–0.085	0.46	0.001	0.46	0.048*	0.35	0.018*	0.24	181
	(0.02)		(0.04)		(0.06)		(0.01)		(0.03)		(0.01)		

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. The dependent variable is the Gini coefficient (0–1). The estimation method is the GMM-IV system estimator (Arellano and Bover, 1995), based on a panel data set of 121 countries over the 1970–2000 period, with nonoverlapping five-year observations. Indicators of labor market rigidity are from Rama and Artecona (2002). Asymptotic standard errors robust to general cross-section and time-series heteroskedasticity are reported in parentheses.
b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

Table 10. GMM-IV Panel Regressions for Labor Market Regulations and Income Inequality: Developing Countries[a] (Dependent variables: alternative measures of income inequality)

			Population quintile										
	Gini		*Top quintile*		*Top two quintiles*		*Middle quintile*		*Bottom two quintiles*		*Bottom quintile*		
Labor market rigidity indicator	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*No. obs.*
De jure index $\mathbf{L}_0$	0.103**	0.34	0.140	0.21	0.170**	0.33	−0.083**	0.30	−0.099**	0.28	−0.043**	0.30	146
	(0.05)		(0.10)		(0.05)		(0.02)		(0.03)		(0.02)		
De facto index $\mathbf{L}_1$	−0.291**	0.31	−0.415**	0.23	−0.235**	0.27	0.101**	0.18	0.152**	0.24	0.077**	0.23	156
	(0.07)		(0.12)		(0.06)		(0.04)		(0.05)		(0.02)		
Minimum wage[b]	−0.071	0.34	−0.093	0.30	−0.057	0.36	−0.062**	0.20	0.048	0.38	0.017	0.35	128
	(0.06)		(0.06)		(0.05)		(0.03)		(0.04)		(0.02)		
Social security contribution	−0.053*	0.29	−0.094**	0.20	−0.084*	0.26	0.029	0.21	0.047*	0.23	0.022**	0.24	149
	(0.03)		(0.05)		(0.05)		(0.02)		(0.03)		(0.01)		
Trade union membership	−0.058	0.34	0.140**	0.16	0.096**	0.21	−0.037*	0.18	−0.088	0.16	−0.023	0.17	151
	(0.04)		(0.06)		(0.04)		(0.02)		(0.09)		(0.02)		
General government employment	−0.063	0.35	−0.047	0.25	−0.022	0.33	0.027	0.34	−0.016	0.28	−0.006	0.27	131
	(0.04)		(0.07)		(0.05)		(0.02)		(0.04)		(0.01)		
De facto index $\mathbf{L}_2$	−0.205**	0.29	−0.063	0.18	−0.029	0.29	0.040**	0.24	0.017	0.24	0.005	0.24	157
	(0.06)		(0.05)		(0.04)		(0.01)		(0.05)		(0.01)		
Minimum wage[c]	0.038	0.34	0.239	0.26	0.185	0.37	−0.127*	0.19	−0.115	0.37	−0.103**	0.37	132
	(0.19)		(0.22)		(0.15)		(0.08)		(0.10)		(0.04)		
Maternity leave (no. days)	−0.104**	0.29	−0.144**	0.24	−0.110**	0.33	0.035**	0.26	0.090**	0.29	0.033**	0.30	147
	(0.03)		(0.04)		(0.03)		(0.01)		(0.02)		(0.01)		
Ratification of ILO convention 87	−0.028**	0.34	0.014	0.17	0.017	0.29	0.003	0.25	−0.007	0.25	−0.007**	0.24	157
	(0.01)		(0.02)		(0.01)		(0.01)		(0.01)		(0.00)		
Central government employment	0.053	0.33	−0.035	0.17	−0.040	0.31	0.004	0.30	0.023	0.21	−0.017	0.25	131
	(0.09)		(0.07)		(0.05)		(0.03)		(0.03)		(0.03)		

Table 10. (continued)

			Population quintile										
	Gini		Top quintile		Top two quintiles		Middle quintile		Bottom two quintiles		Bottom quintile		
Labor market rigidity indicator	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*Coeff.*	R^2	*No. obs.*
De jure versus de facto													
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–0.323**	0.30	–0.244**	0.26	–0.242**	0.35	0.059**	0.32	0.127**	0.29	0.059**	0.30	144
	(0.05)		(0.06)		(0.04)		(0.01)		(0.04)		(0.01)		
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.163**	0.38	–0.249**	0.23	–0.178**	0.32	0.048**	0.29	0.101**	0.26	0.044**	0.25	145
	(0.02)		(0.05)		(0.02)		(0.01)		(0.02)		(0.01)		

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. The dependent variable is the Gini coefficient (0–1). The estimation method is the GMM-IV system estimator (Arellano and Bover, 1995), based on a panel data set of 121 countries over the 1970–2000 period, with nonoverlapping five-year observations. Indicators of labor market rigidity are from Rama and Artecona (2002). Asymptotic standard errors robust to general cross-section and time-series heteroskedasticity are reported in parentheses.
b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.
c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

The $\mathbf{L}_1$ index has a negative and significant impact on the top shares and a positive and significant effect on the middle and bottom shares. Social security contribution is the dimension that reduces the income share of the top quintiles and increases the income share of the middle quintile. Specifically, a one-standard-deviation increase in the social security contributions (0.22) may help reduce the income share of the top quintiles by around 0.01, increase marginally the income share of the middle quintile by 0.003, and increase the income share of the bottom quintiles between 0.008 and 0.004. Active labor policies that raise public employment also work as an effective tool in raising the income share of the bottom quintiles of the population (although the economic impact is negligible). When we analyze the sample of developing countries, we find that the redistributive impact of $\mathbf{L}_1$ across income shares is mainly attributed to mandated benefits (as proxied by the social security contributions as a percentage of salaries). The redistributive effects of increased social security contributions are larger for the full sample of countries: a one-standard-deviation increase in social security contributions would reduce the shares of the top quintiles by 0.018 to 0.02, increase the middle quintile by 0.01, and raise the income share of the bottom quintiles by 0.004 to 0.011.

In addition, an increase in labor market regulations—approximated by a rise in the $\mathbf{L}_2$ index—would reduce the income shares of the top quintiles of the population and increase the income shares of the bottom quintiles. Its impact on the income share of the middle quintile is statistically negligible. The redistributive effects across income shares are basically attributed to mandated benefits (as proxied by the number of days of maternity leave). A one-standard-deviation increase in mandated benefits (that is, in maternity leave) would reduce the shares of the top quintiles by between 0.013 and 0.0171, increase the middle quintile by 0.004, and raise the income share of the bottom quintiles by between 0.005 and 0.01. The number of days of maternity leave (our proxy for mandated benefits) drives the redistributive effects of the $\mathbf{L}_2$ index in developing nations, which is consistent with our findings for the $\mathbf{L}_1$ index. The quantitative effects of increasing mandated benefits are similar to those found for the full sample of countries.

Finally, an increase in our measures of compliance (as proxied by a reduction in the gap between de jure and de facto regulations) significantly improves income inequality. This proposition holds for the full sample of countries when the gap is measured with the $\mathbf{L}_1$ index and for the sample of developing countries regardless of the measure

of de facto regulations used. If the compliance in the extent of regulations in the labor markets improves (as proxied by a decrease in the gap between the $\mathbf{L}_0$ and $\mathbf{L}_1$ indices), the Gini coefficient would decrease by 0.03 (when using the full sample regressions) to 0.05 (when using the developing country regressions).

3.5 A Scorecard on the Redistributive Benefits of Labor Regulations

In similar fashion to Calderón and Chong (in this volume), we construct a scorecard to evaluate the redistributive benefits of labor market regulations for the full sample of countries and for the sample of developing countries. The scorecard assesses the relation between our indicators of labor regulations and inequality measures such as the Gini coefficient and the income shares of the top, middle and bottom 20 percent of the population. We summarize the information from our different panel estimations by inputting the value of –1 for a negative and significant coefficient estimate, +1 for a positive and significant coefficient estimate, and 0 for an insignificant coefficient. The proportion of these negative and positive coefficients is presented in table 11. Our discussion of the summary results centers on the full sample of countries.

Regarding the relation between labor regulations and the Gini coefficient, we find, first, that de jure regulations have a positive, but weak correlation with income inequality. Second, de facto regulations—measured by either the $\mathbf{L}_1$ or $\mathbf{L}_2$ aggregate index—have a negative association with income inequality. The robust relation between the $\mathbf{L}_1$ index and the Gini coefficient may be attributed to the redistributive effects of both trade union membership and public employment. Mandated benefits (as proxied by the number of days of maternity leave) seem to explain the robust relation between the $\mathbf{L}_2$ index and the Gini coefficient. Finally, our two measures of enforcement of labor regulations seem to have a negative and robust relation with the Gini coefficient.

The aggregate $\mathbf{L}_1$ index of de facto labor regulations is negatively associated with the income share of the top 20 percent of the population and positively associated with the income shares of bottom and middle quintiles. The negative relation between the $\mathbf{L}_1$ index and the income share of the top quintile may be explained by the robust negative relation with trade union membership and public employment. The positive correlation between the $\mathbf{L}_1$ index and the income share of the bottom quintile may be explained by social security contributions. Finally, the aggregate $\mathbf{L}_2$ index of de facto labor regulations

Table 11. A Scorecard of Labor Regulations and Income Inequality[a]

	Full sample of countries				*Developing countries*			
		Quintile				*Quintile*		
Labor rigidity indicator	*Gini*	*Top*	*Middle*	*Bottom*	*Gini*	*Top*	*Middle*	*Bottom*
De jure index $\mathbf{L}_0$	0.2	0.0	–0.6	–0.2	0.4	0.0	–0.6	–0.4
De facto index $\mathbf{L}_1$	–0.6	–1.0	0.6	0.6	–0.6	–0.6	0.6	0.4
Minimun wage[b]	0.0	–0.2	0.4	–0.2	–0.4	–0.4	0.2	0.0
Social security contribution	–0.2	–0.4	0.0	0.6	0.2	–0.6	–0.2	0.4
Trade union membership	–1.0	–0.8	0.4	0.4	–0.8	–0.8	0.2	0.6
General government employment	–0.8	–1.0	0.4	0.4	–0.8	–0.8	0.4	0.4
De facto index $\mathbf{L}_2$	–0.6	–0.6	0.4	0.2	–0.4	–0.2	0.2	0.0
Minimun wage[c]	0.4	0.4	0.0	0.0	0.4	0.4	–0.6	–0.2
Maternity leave (no. days)	–1.0	–1.0	0.6	1.0	–1.0	–1.0	0.8	0.8
Ratification of ILO convention 87	–0.2	–0.6	0.0	–0.2	–0.2	0.0	0.0	–0.2
Central government employment	–0.4	–0.2	0.0	0.0	–0.4	0.0	0.0	0.0
De jure versus de facto								
$\mathbf{L}_1$ relative to $\mathbf{L}_0$	–1.0	–0.6	0.6	0.8	–1.0	–1.0	1.0	0.8
$\mathbf{L}_2$ relative to $\mathbf{L}_0$	–0.6	0.0	0.4	0.2	–0.6	–0.6	0.6	0.2

Source: Authors' calculations, based on data from Rama and Artecona (2002).

a. Based on five different panel data, we input the value of –1 for a negative and significant coefficient estimate, +1 for a positive and significant coefficient estimate, and 0 for insignificant coefficients; the table reports the proportion of significant negative and positive coefficients.

b. Minimum wages are normalized with the average labor cost in the manufacturing sectors.

c. Minimum wages are normalized with real income per capita. All labor indicators are normalized as specified in the text.

has a robust negative relation with the income share of the top quintile of the population and a positive, but weak association with the income share of both the middle and bottom quintiles. The negative robust association with the income share of the top quintile may be attributed to mandated benefits (proxied by maternity leave rights) and trade union membership.

4. Conclusions

We have analyzed the relationship between labor regulations and income inequality. Finding robust results is not a straightforward process, however, because there are alternative ways of measuring regulations and alternative estimation techniques for addressing (albeit imperfectly) simultaneity and probable measurement errors. We thus used alternative econometric approaches and considered two data sets and two alternative samples. A number of results appear to be fairly robust.

The main results in our paper can be grouped in three types. First, we find that de jure regulations do not improve income distribution. The Rama-Artecona indicator (the $\mathbf{L}_0$ index) does not display any consistent pattern, and the Djankov-La Porta indicators either have no effect or worsen income distribution. Second, relative compliance with existing regulations, particularly the ratio between the $\mathbf{L}_1$ and $\mathbf{L}_0$ indices of the Rama-Artecona data set, seems to improve income distribution, although we cannot rule out the possibility that this measure is proxying for other factors such as institutional development. Third, de facto regulations are weakly associated, overall, with improving income inequality. This result is partly due to the fact that different regulations have quite distinct effects. In particular, we find that a higher minimum wage tends to worsen income distribution, whereas the extent of trade union membership, the importance of government employment and maternity leave improve it. Finally, some of these positive results do not carry through to the bottom quintile of the population.

Appendix A
List of Countries

— Industrial countries (twenty-two countries): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.
— Latin America and the Caribbean (twenty-one countries): Argentina, Bahamas, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, and Venezuela.
— East Asia and the Pacific (twelve countries): China, Hong Kong, Indonesia, Korea, Malaysia, Mongolia, Papua New Guinea, Philippines, Singapore, Taiwan, Thailand, and Vietnam.
— Eastern Europe and Central Asia (seventeen countries): Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovak Republic, Slovenia, Ukraine, and Yugoslavia.
— Middle East and North Africa (twenty-one countries): Algeria, Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.
— South Asia (five countries): Bangladesh, India, Nepal, Pakistan, and Sri Lanka.
— Sub-Saharan Africa (twenty-three countries): Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe.

Appendix B
Supplemental Tables

In addition to the exercises reported in this appendix, we performed cross-country regression analysis between income inequality and labor market regulations using income shares as a proxy for our dependent variable, for both the Rama-Artecona and Djankov-La Porta databases. We also carried out sensitivity analyses on panel regressions for different measures of labor regulations for the full sample of countries and the sample of developing countries, using OLS and IV with pooled and time-effects estimators. These results are available on request.

Table B1. Cross-section Regression Analysis for Labor Market Regulations and Income Inequality: Ordinary Least Squares[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*			*Full sample*			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2	EL_0	IR_0	SS_0	EL_0	IR_0	SS_0
Constant	0.362	–0.166	0.354	0.763	–0.375	0.700	0.235	0.460	0.188	0.534	0.866	0.373
	(0.88)	(0.85)	(0.94)	(1.08)	(1.05)	(1.16)	(1.04)	(1.05)	(0.86)	(1.23)	(1.25)	(1.02)
Output per capita (in logs)	0.125**	0.118**	0.119**	0.143**	0.175**	0.148**	0.057**	0.056**	0.058**	0.110**	0.170**	0.163**
	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)	(0.06)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Output per capita squared	–0.008**	–0.007**	–0.007**	–0.009**	–0.010**	–0.009**	–0.003**	–0.003**	–0.003**	–0.008**	–0.011**	–0.010**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Economic growth	–0.958*	–0.911*	–1.016*	–0.766*	–0.771*	–0.779*	–1.692**	–1.694**	–1.741**	–0.911**	–0.804**	–1.482**
	(0.62)	(0.60)	(0.62)	(0.47)	(0.48)	(0.48)	(0.79)	(0.83)	(0.71)	(0.45)	(0.39)	(0.71)
Secondary schooling	–0.020*	–0.020*	–0.021*	–0.028*	–0.034*	–0.027*	–0.016*	–0.020*	–0.019*	–0.018	–0.035	–0.047
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)	(0.04)	(0.04)
Liquid liabilities	–0.015	–0.023	–0.019	–0.007	–0.013	–0.010	–0.002	–0.013	–0.001	0.033	0.001	0.010
	(0.03)	(0.03)	(0.02)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)	(0.04)	(0.05)	(0.04)
Inflation rate	0.079**	0.076**	0.080**	0.069*	0.072*	0.085**	0.055*	0.064*	0.078*	0.049*	0.058*	0.088**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)
Modern sector	0.294*	0.274*	0.295*	0.285*	0.279*	0.289*	0.265*	0.299*	0.262*	0.261	0.312*	0.216
	(0.16)	(0.15)	(0.16)	(0.16)	(0.16)	(0.16)	(0.17)	(0.19)	(0.17)	(0.18)	(0.19)	(0.17)
Physicians per 1,000 people	–6.117**	–4.222**	–5.461**	–6.550**	–5.486**	–5.887**	–6.722**	–6.569**	–7.964**	–7.704**	–6.712**	–9.537**
	(2.17)	(1.55)	(2.00)	(2.68)	(2.43)	(2.53)	(1.99)	(1.91)	(2.06)	(2.40)	(2.49)	(2.50)
Labor regulation (L_0, L_1, L_2)	0.040	–0.123*	0.026	0.084	–0.215*	0.047	0.054**	0.022	0.043**	0.084**	0.031	0.058**
	(0.07)	(0.07)	(0.08)	(0.10)	(0.11)	(0.09)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)

Table B1. (continued)

	Full sample			*Developing countries*			*Full sample*			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2	EL_0	IR_0	SS_0	EL_0	IR_0	SS_0
Summary statistic												
No. observations	68	67	68	53	52	53	53	53	53	38	38	38
R^2	0.41	0.41	0.40	0.22	0.24	0.22	0.48	0.45	0.48	0.34	0.26	0.34
Turning point	8.0	8.6	8.1	8.4	8.6	8.5	8.5	8.3	8.6	7.2	7.8	8.0

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002) and Djankov and others (2003).
a. The dependent variable is the Gini coefficient (0–1). The $\mathbf{L}_0$, $\mathbf{L}_1$, and $\mathbf{L}_2$ indices are the Rama-Artecona aggregate de jure and de facto labor rigidity indices. The $\mathbf{EL}_0$, $\mathbf{IR}_0$, and $\mathbf{SS}_0$ indices are the Djankov-La Porta aggregate indices of employment laws, industrial relations laws, and social security laws, respectively. Standard errors are in parentheses.

Table B2. Cross-section Regression Analysis for Labor Regulation and Income Inequality: Instrumental Variables[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*			*Full sample*			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2	EL_0	IR_0	SS_0	EL_0	IR_0	SS_0
Constant	0.409	–0.039	0.495	0.609	0.062	0.863	0.372	0.402	0.354	1.170	0.890	0.863
	(0.87)	(0.86)	(0.92)	(1.08)	(1.05)	(1.18)	(1.08)	(1.08)	(1.06)	(1.26)	(1.22)	(1.25)
Output per capita (in logs)	0.077**	0.079**	0.059**	0.049*	0.052*	0.063*	0.068**	0.052**	0.060**	0.317**	0.295**	0.304**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Output per capita squared	–0.004**	–0.004**	–0.003**	–0.003**	–0.002**	–0.003**	–0.004*	–0.003*	–0.004*	–0.018*	–0.017*	–0.018*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Economic growth	–1.001**	–1.048**	–0.966**	–0.779**	–0.905**	–0.719**	–1.159**	–1.188**	–1.096**	–1.154**	–1.552**	–1.060**
	(0.17)	(0.17)	(0.18)	(0.09)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.21)	(0.27)	(0.22)
Secondary schooling	–0.021*	–0.023*	–0.022*	–0.028*	–0.027*	–0.024*	–0.012*	–0.017*	–0.018*	–0.027*	–0.037*	–0.029*
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Liquid liabilities	–0.033	–0.035	–0.028	–0.030	–0.018	–0.030	–0.002	–0.013	–0.010	–0.072	–0.103*	–0.052
	(0.04)	(0.04)	(0.03)	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)
Inflation rate	0.078**	0.074*	0.079**	0.077**	0.077**	0.078**	0.060	0.045	0.058	0.065*	0.051	0.061
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Modern sector	0.300*	0.251*	0.298*	0.304*	0.302*	0.305*	0.275*	0.302*	0.276*	0.278*	0.302*	0.255*
	(0.16)	(0.16)	(0.16)	(0.16)	(0.17)	(0.16)	(0.18)	(0.18)	(0.18)	(0.16)	(0.17)	(0.17)
Physicians per 1,000 people	–5.332**	–4.734**	–5.768**	–5.675**	–4.788**	–6.428**	–7.813**	–7.463**	–6.840**	–9.743**	–9.468**	–8.566**
	(1.93)	(1.76)	(2.12)	(2.56)	(2.41)	(2.76)	(2.14)	(2.11)	(2.22)	(2.44)	(2.36)	(2.80)
Labor regulation (L_0, L_1, L_2)	–0.008	–0.125	0.128	0.047	–0.055	0.258	0.092*	0.058*	0.062	0.151**	0.096**	0.107
	(0.18)	(0.23)	(0.28)	(0.21)	(0.30)	(0.36)	(0.05)	(0.03)	(0.06)	(0.06)	(0.04)	(0.08)

Table B2. (continued)

	Full sample			*Developing countries*			*Full sample*			*Developing countries*		
Explanatory variable	L_0	L_1	L_2	L_0	L_1	L_2	EL_0	IR_0	SS_0	EL_0	IR_0	SS_0
Summary statistic												
No. observations	66	65	66	51	50	51	51	51	51	36	36	36
R^2	0.407	0.409	0.409	0.216	0.210	0.225	0.482	0.479	0.456	0.359	0.342	0.285
Turning point	9.6	9.4	9.6	9.7	10.8	10.6	8.6	8.3	8.4	8.8	8.5	8.6

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002) and Djankov, and others (2003).
a. The dependent variable is the Gini coefficient (0–1). The $\mathbf{L}_0$, $\mathbf{L}_1$, and $\mathbf{L}_2$ indices are the Rama-Artecona aggregate de jure and de facto labor rigidity indices. The $\mathbf{EL}_0$, $\mathbf{IR}_0$, and $\mathbf{SS}_0$ indices are the Djankov-La Porta aggregate indices of employment laws, industrial relations laws, and social security laws, respectively. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; the set of instruments was chosen from the existing literature, following Djankov and others (2003). Standard errors are in parentheses.

Table B3. The Impact of De Jure Regulations: Panel Data Regression Analysis with Least Squares[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.180**	0.181**	0.068	0.200**	0.255**	0.138
	(0.08)	(0.09)	(0.12)	(0.10)	(0.11)	(0.15)
Output per capita squared	–0.011**	–0.010**	–0.004	–0.012*	–0.014**	–0.008
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.229	–0.164	0.135	–0.143	–0.060	0.172
	(0.16)	(0.15)	(0.10)	(0.17)	(0.17)	(0.13)
Secondary schooling	–0.021**	–0.027**	–0.018**	–0.027**	–0.039**	–0.031**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.040**	–0.050**	0.026	–0.047**	–0.048**	0.026
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–3.773**	–4.521**	1.260*	–5.565**	–6.157**	2.331*
	(0.84)	(0.90)	(0.76)	(1.02)	(1.12)	(1.29)
Inflation	0.022	0.026*	–0.011	0.022	0.034*	–0.013
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.294**	0.257**	–0.088	0.294**	0.263**	–0.075
	(0.06)	(0.07)	(0.08)	(0.06)	(0.07)	(0.09)
Labor rigidity indicator (L_0)	0.022	0.024	–0.110*	0.067*	0.055	–0.154*
	(0.03)	(0.03)	(0.06)	(0.04)	(0.04)	(0.09)
Summary statistic						
No. observations	327	327	327	263	263	263
R^2	0.378	0.410	0.908	0.267	0.303	0.892
Adjusted R^2	0.361	0.383	0.847	0.241	0.263	0.787
GDP turning point	7.97	8.68	8.08	8.52	8.87	8.46

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

Table B4. The Impact of De Jure Regulations: Panel Data Regression Analysis with Instrumental Variables[a]

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.221**	0.214**	0.112	0.372**	0.455**	0.232
	(0.08)	(0.09)	(0.14)	(0.12)	(0.14)	(0.19)
Output per capita squared	–0.014**	–0.013**	–0.007	–0.024**	–0.028**	–0.014
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.338**	–0.282*	0.116	–0.247	–0.158	0.143
	(0.17)	(0.16)	(0.11)	(0.17)	(0.18)	(0.14)
Secondary schooling	–0.019**	–0.025**	–0.020**	–0.025**	–0.039**	–0.033**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.048**	–0.056**	0.025	–0.067**	–0.074**	0.026
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–3.117**	–3.785**	0.741	–4.359**	–4.832**	1.145
	(0.82)	(0.85)	(0.72)	(1.04)	(1.07)	(1.23)
Inflation	0.018	0.022	–0.010	0.022	0.033*	–0.011
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.303**	0.268**	–0.090	0.316**	0.278**	–0.065
	(0.06)	(0.07)	(0.08)	(0.06)	(0.07)	(0.10)
Labor rigidity indicator (L_0)	0.033	0.015	–0.030	0.102	0.055	0.007
	(0.07)	(0.07)	(0.15)	(0.09)	(0.08)	(0.19)
Summary statistic						
No. observations	312	312	312	248	248	248
R^2	0.396	0.425	0.906	0.296	0.332	0.889
Adjusted R^2	0.378	0.398	0.840	0.269	0.292	0.769
GDP turning point	7.78	8.40	8.23	7.84	8.20	8.25

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

Table B5. The Impact of the L_1 Index of De Facto Regulations: Panel Data Regression Analysis with Least Squares[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.217**	0.213**	0.049	0.279**	0.311**	0.071
	(0.08)	(0.08)	(0.11)	(0.09)	(0.11)	(0.15)
Output per capita squared	–0.013**	–0.012**	–0.003	–0.016**	–0.017**	–0.004
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.159**	–0.116	0.129	–0.072	–0.034	0.170
	(0.16)	(0.14)	(0.10)	(0.16)	(0.16)	(0.12)
Secondary schooling	–0.025**	–0.029**	–0.023**	–0.034**	–0.043**	–0.035**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.058**	–0.065**	0.035*	–0.064**	–0.062**	0.031
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–1.883**	–2.590**	0.780	–1.852**	–2.582**	1.473
	(0.55)	(0.80)	(0.66)	(0.83)	(1.11)	(1.11)
Inflation	0.018	0.022	–0.015	0.019	0.029*	–0.015
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.219**	0.191**	–0.156**	0.205**	0.187**	–0.144*
	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)	(0.08)
Labor rigidity indicator (L_1)	–0.174**	–0.159**	0.162**	–0.248**	–0.231**	0.160*
	(0.03)	(0.04)	(0.06)	(0.05)	(0.06)	(0.09)
Summary statistic						
No. observations	341	341	341	269	269	269
R^2	0.41	0.43	0.91	0.30	0.32	0.89
GDP turning point	8.54	9.07	8.61	8.85	9.03	9.66

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

Table B6. The Impact of the L_1 Index of De Facto Regulations: Panel Data Regression Analysis with Instrumental Variables[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.277**	0.262**	0.161	0.423**	0.474**	0.252
	(0.08)	(0.09)	(0.12)	(0.11)	(0.14)	(0.17)
Output per capita squared	–0.017**	–0.015**	–0.008	–0.026**	–0.028**	–0.013
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.284**	–0.234*	0.068	–0.165	–0.111	0.077
	(0.16)	(0.16)	(0.10)	(0.17)	(0.18)	(0.13)
Secondary schooling	–0.024**	–0.030**	–0.017**	–0.030**	–0.042**	–0.031**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.060**	–0.069**	0.025	–0.079**	–0.081**	0.026
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–2.503**	–3.147**	0.780	–3.765**	–4.253**	1.297
	(0.73)	(0.81)	(0.68)	(0.96)	(1.103)	(1.15)
Inflation	0.018	0.022	–0.013	0.022	0.033*	–0.012
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.253**	0.222**	–0.174**	0.253**	0.231**	–0.155*
	(0.06)	(0.07)	(0.08)	(0.06)	(0.07)	(0.09)
Labor rigidity indicator (L_1)	–0.103	–0.130	–0.360**	0.023	–0.028	–0.498*
	(0.08)	(0.10)	(0.14)	(0.12)	(0.13)	(0.20)
Summary statistic						
No. observations	326	326	326	254	254	254
R^2	0.39	0.42	0.91	0.28	0.31	0.90
GDP turning point	8.36	8.94	9.93	8.21	8.44	9.95

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

Table B7. The Impact of the L_2 Index of De Facto Regulations: Panel Data Regression Analysis with Least Squares[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.185**	0.182**	0.101	0.217**	0.261**	0.154
	(0.08)	(0.09)	(0.12)	(0.10)	(0.12)	(0.15)
Output per capita squared	–0.012**	–0.011	–0.005	–0.013**	–0.015**	–0.008
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.281*	–0.238*	0.125	–0.203	–0.162**	0.172
	(0.16)	(0.15)	(0.10)	(0.17)	(0.17)	(0.12)
Secondary schooling	–0.024**	–0.029**	–0.022	–0.032**	–0.043**	–0.034**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.051**	–0.058**	0.025	–0.064**	–0.062**	0.022
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–2.753**	–3.398**	0.806	–3.963**	–4.574**	1.295
	(0.72)	(0.80)	(0.70)	(0.97)	(1.01)	(1.16)
Inflation	0.013	0.018	–0.018	0.017	0.028*	–0.017
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.265**	0.230**	–0.175	0.261**	0.232**	–0.168**
	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)	(0.08)
Labor rigidity indicator (L_2)	–0.065**	–0.061**	0.126	–0.053	–0.054*	0.159**
	(0.03)	(0.03)	(0.05)	(0.04)	(0.03)	(0.06)
Summary statistic						
No. observations	344	344	344	272	272	272
R^2	0.38	0.41	0.90	0.26	0.29	0.89
GDP turning point	7.98	8.60	9.34	8.53	8.82	9.49

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

Table B8. The Impact of the L_2 Index of De Facto Regulations: Panel Data Regression Analysis with Instrumental Variables[a] (Dependent variable: Gini coefficient)

	Full sample			*Developing countries*		
Explanatory variable	*Pooled*	*Time fixed effects*	*Country fixed effects*	*Pooled*	*Time fixed effects*	*Country fixed effects*
Output per capita (in logs)	0.215**	0.210**	0.158	0.330**	0.403**	0.269
	(0.09)	(0.09)	(0.13)	(0.12)	(0.15)	(0.18)
Output per capita squared	–0.014**	–0.012**	–0.010	–0.020**	–0.024**	–0.016
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic growth	–0.302*	–0.262*	0.073	–0.201	–0.158	0.104
	(0.17)	(0.16)	(0.11)	(0.17)	(0.18)	(0.14)
Secondary schooling	–0.021**	–0.027**	–0.017	–0.032**	–0.043**	–0.033**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquid liabilities	–0.048**	–0.055**	0.027	–0.065**	–0.069**	0.022
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Physicians per 1,000 people	–3.121**	–3.664**	0.994	–4.463**	–4.760**	1.521
	(0.85)	(0.86)	(0.73)	(1.06)	(1.08)	(1.26)
Inflation	0.016	0.020	–0.016	0.021	0.031*	–0.017
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Size of the modern sector	0.257**	0.224**	–0.130*	0.265**	0.234**	–0.122
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)	(0.10)
Labor rigidity indicator (L_2)	0.091	0.059	–0.364	0.181	0.109	–0.144
	(0.10)	(0.10)	(0.31)	(0.13)	(0.13)	(0.39)
Summary statistic						
No. observations	330	330	330	258	258	258
R^2	0.40	0.41	0.90	0.29	0.31	0.88
GDP turning point	7.90	8.44	8.30	8.15	8.37	8.54

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
Source: Authors' calculations, based on data from Rama and Artecona (2002).
a. We report the regression coefficient for the indicator of labor rigidity according to equations (2) and (3) in the text. The dependent variable is the Gini coefficient (0–1). Our control variables are output per capita (in logs), output per capita squared, secondary schooling, liquid liabilities, inflation, size of the modern sector, physicians per 1,000 people, and the labor regulation indicator. The pooled regressions include a constant. Our set of instruments for the labor indicators consists of the level of development, trade openness adjusted by geographic variables, leftist political orientation of the government, British legal origin, German legal origin, and institutionalized autocracy; this set of instruments was chosen based on the existing literature, following Djankov and others (2003). Standard errors are in parentheses and are robust to autocorrelation and heteroskedasticity (White, 1980). Full regression results and standard errors of the coefficients of the labor regulation variables are not reported for reasons of space, but they are available from the authors on request.

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