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Labor Market "Rigidity" and the Success of Economic Reforms Across more than One Hundred Countries

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Comments welcome

Abstract

This paper shows that labor market policies and institutions have an impact on the effectiveness of economic reform programs. The analysis compares annual growth rates across 119 countries, using data from 449 adjustment credits and loans given by the World Bank between 1980 and 1996. The results indicate that countries with relatively "rigid" labor markets experienced deeper recessions before adjustment and slower recoveries afterwards. The paper also disentagles the mechanisms through which labor market "rigidity" operates. It finds that minimum wages and mandatory benefits have a marginal impact only. The size and strength of organized labor, on the other hand, appear to be crucial. Labor market rigidity thus seem to be relevant for political reasons, more than for economic reasons. The paper shows that these findings are robust to changes in the sample and specification. Overall, the results suggest that insufficient attention has been paid to the compensation of vocal groups who stand to lose from economic reforms.

Resumen

Este artículo muestra que las políticas e instituciones del mercado de trabajo tienen un impacto en la efectividad de los programas de reforma económica. El análisis compara tasas de crecimiento anual a través de 119 países, usando datos de 449 préstamos de ajuste otorgados por el Banco Mundial entre 1980 y 1996. Los resultados indican que los países con mercados de trabajo relativamente "rígidos" experimentaron recesiones más profundas antes de los ajustes y recuperaciones más lentas después. El artículo también descompone los mecanismos a través de los cuales opera la "rigidez" de los mercados laborales. Se encuentra que los salarios mínimos y beneficios obligatorios tienen un efecto pequeño. El tamaño y la fuerza de las organizaciones de trabajadores, por otro lado, parecen ser cruciales. Por lo tanto, la rigidez del mercado laboral parece ser relevante por razones políticas más que por razones económicas. El artículo muestra que estos hallazgos son robustos a cambios en la muestra y en la especificación. Los resultados sugieren que se ha prestado insuficiente atención a la compensación de grupos influyentes que pierden con las reformas económicas.

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1. Introduction

What determines the success or failure of economic reforms? Confronted with adverse external conditions and self-inflicted imbalances, many developing countries have embarked in ambitious reform programs. Depending on the countries, the programs have aimed at removing trade barriers, revamping the tax system, restructuring government spending, spurring financial liberalization, privatizing state-owned enterprises, or some combination of these. Over the last two decades, reform programs have more often than not been supported by adjustment credits and loans from the World Bank. In fact, support by the World Bank (and the International Monetary Fund) is interpreted by the international community as a signal that the country is committed to reform. But not all these programs have worked. Earlier assessments compared the change in the economic performance of countries with and without programs supported by the World Bank or the International Monetary Fund, and concluded that these programs did increase economic growth (Goldstein and Montiel, 1986, Khan, 1990, and Corbo and Rojas, 1992). However, a study using a similar methodology found no impact on the economic growth of the poorest countries (Elbadawi, 1992). And based on a case-by-case evaluation of 182 adjustment programs, the World Bank's own Operations Evaluation Department concluded that 36 percent of them had not met their objectives (Dollar and Svensson, 1998). Given these mixed results, the conditions under which the programs were adopted are receiving increasing attention.

This paper evaluates whether the "rigidity" of the labor market matters for the success of economic reforms. If labor costs cannot vary freely in response to changes in labor demand, economic reforms could lead to a decline in output, at least for some time. Consider trade liberalization for instance. With a flexible labor market, real wages in the import-competing

sectors of the economy should decline, pushing labor costs down across the economy and thus making the export sectors more competitive. But if wages cannot be cut, the import-competing sectors could be forced to shed more labor than is warranted whereas the export sectors would remain uncompetitive. Overall, the reallocation process would take much longer than with a flexible labor market, and it could be associated with high unemployment or under-employment. Note that this argument is economic in nature. Although it has been made in more elaborate ways before (see Edwards, 1988, and Rama, 1997, among others), the basic idea stems from the second-best principle: economic reforms require labor reallocation, so that they could be counter-productive in countries where this reallocation cannot take place.

Labor market conditions may also affect the adoption and success of economic reforms through other, unrelated mechanisms. Most economic reforms create winners and losers. A vast political economy literature has emphasized resistance by potential losers as one of the main obstacles to adjustment (Alesina and Drazen, 1991, and Fernández and Rodrik, 1991, are two of the best-known examples). Without stretching the argument too far, resistance by losers could also lead to a half-hearted adoption of reforms, thus diluting their economic impact. In any event, workers in protected industries, in the public sector, or in banks are amongst the most obvious losers, at least in the short run. In countries where these workers are a large and well-organized group, resistance to reform could be fierce. In fact, the mere threat of prolonged strikes or massive street demonstrations could make a government delay the adoption of economic reforms, or water down their substance. Clearly, this argument is political in nature.

The economic and the political argument have different implications for the design of reforms. Based on the economic argument, labor market deregulation should be one of the components of the reform package. Policy measures such as the suppression or freeze of

minimum wages, and the abolition of mandatory benefits, would have to be considered. This conclusion has been reached by many in the international community. A recent report prepared by the World Bank for Latin America and the Caribbean concluded that "labor market reform is the area of structural reform where the least progress has been made in the region" (Burki and Perry, 1997, p. 57). This report proposed to "remove the distortions, many of them induced by *government regulations*, that make labor costly and risky in relation to its relative abundance in the economy" (p. 38, emphasis added). In a similar vein, the Inter-American Development Bank (1997) concluded: "*labor code* reforms have been few and not very deep", adding that "current *labor legislation* may have hindered the reabsorption of workers who were displaced during the reform process" (p. 79, emphases added).

The political argument leads, arguably, to an almost opposite conclusion. In the political economy literature, the more equal the distribution of adjustment costs the shorter and weaker the resistance to economic reforms. From this perspective, the appropriate complement to adjustment programs would not be labor market deregulation, but rather the introduction of mechanisms that compensate the workers affected by the reforms, at least partially. Examples include job separation packages, early retirement programs and unemployment benefits. These mechanisms have actually been used in many adjustment programs entailing substantial public sector downsizing, quite often with the financial support of the World Bank. Some of the separation packages offered to redundant workers in state-owned enterprises to be privatized would easily qualify as "golden handshakes" (Kikeri, 1997). Over a sample of 41 downsizing programs financially supported by the World Bank, Haltiwanger and Singh (1999) estimated the average spending per job separation at $2,400. The figure was as high as $13,000 in the civil

service of Senegal, $16,000 in the mining sector of Bolivia, and $17,000 in the public enterprises of India, although all three countries had a per capita income of less than $1,000 per year.

The fact that the economic and the political argument have different implications is somewhat blurred by the emphasis, by the proponents of the former, on enhanced safety nets. The aim of these safety nets is to prevent households from falling into poverty as a result of the reforms. Examples include public works programs and means-tested income transfers. However, the workers who are affected by liberalization and downsizing are better seen as part of the urban middle class. Adjustment might dramatically reduce their living standards, but relatively few of them become poor, even several years after losing their jobs (see Rama, 1999). As a result, these workers may not be eligible for, or interested in, most of the safety net initiatives. By combining labor market deregulation and enhanced safety nets, the economic argument would then lead to an income transfer from the urban middle class to the poor. By recommending compensation, on the other hand, the political argument would aim at mitigating (or even offsetting) the income loss of the urban middle class.

The results in this paper show that labor market "rigidity" is indeed a key determinant of the success or failure of economic reforms. They also show that the political mechanism is more plausible than the economic mechanism. The empirical analysis compares the annual growth rates of 119 countries, over period 1970-1986. These countries differ considerably in their labor market policies and institutions. Starting in 1980, many among them undertook substantial economic reforms with the support of the World Bank. The analysis thus combines information on economic growth, on labor market policies, and on adjustment lending. The labor market information is from a database of labor market policies and institutions across countries which is currently under construction at the World Bank (Rama and Artecona, 2000). This database

allows constructing a variety of rigidity indicators whose definition will be discussed in detail below. The results show that countries with more rigid labor markets experienced larger declines in growth rates before they adopted adjustment programs, and weaker recoveries afterwards.

This pattern is summarized in Figure 1, which compares the estimated growth rates of two adjusting countries, corresponding to the 25^{th} and the 75^{th} percentiles of an aggregate labor market rigidity indicator. These countries are identified hereafter as "flexible" and "rigid" respectively. The growth rates reported in the figure are annual averages, based on an econometric analysis that will be presented in the next section of the paper. The figure includes four periods or phases, corresponding to the 10^{th} to 4^{th} year before the launching of the first serious adjustment effort (D1, or "long before"), the three years up to the adoption of the program (D2, or "right before"), the three years immediately following the program (D3, or "right after"), and the 4^{th} to 10^{th} years after the beginning of economic reforms (D4, or "long after"). The figure shows that long before adjustment the growth rate is similar in both countries. But it subsequently declines more sharply, and recovers less rapidly, in the rigid country. Adjustment can be deemed successful in both countries, to the extent that the growth rate increases right after it. However, long after adjustment the flexible country grows faster than it did long before it, whereas the opposite is true for the rigid country. In the end, the difference in growth rates between the flexible and the rigid countries amounts to roughly two percentage points per year.

The paper then replicates the econometric analysis using four pairs of more narrowly defined indicators of labor market rigidity. These pairs measure the level of minimum wages, the cost of mandated benefits, the strength of the labor movement, and the size of government

employment respectively. Given that a vast majority of government employees are unionized in developing countries, the last two pairs of indicators arguably capture the ability of potential losers from reform to convey their grievances. The first two pairs, on the other hand, reflect the extent to which the government interferes with the adjustment of labor costs. At the risk of simplifying, the results reported in Figure 1 hold for the last two pairs of indicators, but not for the first two. Put differently, countries where organized labor is potentially influential experience deeper recessions right before adjustment, and slower recoveries afterwards, but their growth performance is not affected by the level of minimum wages and non-wage costs. These results provide support to the political argument, while questioning the validity of the economic argument.

2. The Empirical Strategy

Adjustment programs are comprehensive policy packages, usually affecting several areas of the economy at once. Changes in taxation, government spending, trade barriers, financial regulations and enterprise ownership are among their most frequent components, but they are not the only ones. Given the multiplicity of measures, it is not possible to spell out all the channels through which the programs could affect economic performance. Hence the need of a reduced-form approach to evaluation. Moreover, adjustment programs were launched at different points in time in different countries. This continuity of the reform process makes it difficult to identify a common program period, as earlier studies did (see, for instance, Corbo and Rojas, 1992, and Elbadawi, 1992). Hence the need for an empirical strategy explicitly accounting for economic reforms being adopted in different years depending on the countries.

The strategy chosen in this paper aims at evaluating the impact of labor market rigidity on growth rates over the decade preceding the adoption of a serious reform effort and the decade immediately after. These two decades are decomposed in four periods, as described in the Introduction. This strategy thus leads to the definition of four dummy variables, labeled D1 (long before), D2 (right before), D3 (right after) and D4 (long after). For all industrial countries and some (non-adjusting) developing countries, the dummies verify D1 = D2 = D3 = D4 = 0 in all years. But for most developing countries, some of the dummy variables take positive values in specific years. More specifically, in each of the 10^{th} to 4^{th} years before the first serious adjustment effort, D1 = 1, whereas the other dummies are set equal to zero. Subsequently, in the 3^{rd} year before adjustment D2 becomes equal to one while D1 switches back to zero. The same logic applies to D3 in the 1^{st} year following the launching of economic reforms and to D4 in the 4^{th} year. Even in adjusting country, all four dummies are equal to zero in all the years more than one decade before or after the beginning of the adjustment process.

The comparison between growth rates in these four periods is carried out for countries with different degrees of labor market rigidity. Let L be a rigidity indicator. Because labor market policies and institutions evolve gradually, and have seldom been the target of adjustment programs, the rigidity indicator L can be assumed to be relatively stable over time within each country. Under this hypothesis, the empirical approach adopted in this paper can be summarized by the following equation:

$$\begin{aligned} y_{it} &= \beta_0 + \beta_1 D1_{it} + \beta_2 D2_{it} + \beta_3 D3_{it} + \beta_4 D4_{it} + \\ &+ \lambda_1 D1_{it} L_i + \lambda_2 D2_{it} L_i + \lambda_3 D3_{it} L_i + \lambda_4 D4_{it} L_i + \lambda_5 L_i \\ &+ \mu_1 y_{it-1} + \mu_2 W_t + \mu_3 X_{it} + u_i + \varepsilon_{it} \end{aligned} \qquad (1)$$

where the subscript "i" is used for countries and the subscript "t" for periods. Equation (1) links the growth rate of output in a specific year (y_{it}) to its level in the previous year (y_{it-1}), the phase of the country's adjustment process ($D1_{it}$ to $D4_{it}$), its labor rigidity indicator (L_i), the external conditions (W_t) and other variables (X_{it}). Depending on the specification, the latter include year dummies, interaction terms between the external conditions and the phase of the adjustment process, and other controls. The assumptions made regarding the country-specific term u_i and the stochastic disturbance ε_{it} determine the appropriate way to estimate the coefficients in this equation, as will be discussed below.

The coefficients in equation (1) can be used to assess the impact of labor market rigidity on economic growth under a variety of circumstances. Consider two countries that differ in their labor market rigidity indicator by ΔL, but are otherwise identical. In a "normal" year, distant from an adjustment effort by more than one decade, the difference in growth rates between these two countries, Δy, verifies:

$$\Delta y = \lambda_5 \Delta L \tag{2}$$

Over the adjustment phase DK (with K = 1, 2, 3 or 4) this difference becomes:

$$\Delta y = (\lambda_K + \lambda_5)\Delta L \qquad \text{with } K = 1, \ldots, 4 \tag{3}$$

If all the λ_K coefficients were equal to zero, the success of economic reforms would not depend on the degree of labor market rigidity. But the latter could still affect long-run performance if

coefficient λ_5 were different from zero. The empirical strategy of this paper thus focuses on the sign and significance of coefficients λ_1 to λ_5.

Figure 1 can be interpreted as a graphical representation of this strategy. The two lines in the figure report the predicted levels of the growth rate y_i, based on equation (1). These levels are calculated under the assumption that the values of all exogenous variables, except the labor market indicator L, are the same in the two countries. In drawing the figure, the values of the exogenous variables are replaced by their sample means. The upper line corresponds to a country with a relatively small L, whereas the lower line is for a country with a relatively large L. The vertical distance between the two lines, in turn, represents the predicted value of Δy_i, based on equation (3). This distance varies across the four phases of the adjustment process, and increases with the assumed difference in the level of indicator L between the two countries.

Because it focuses on the determinants of growth rates before and after a policy change, equation (1) differs from "standard" growth regressions. The latter try to account for long-run performance, and therefore deal with average growth rates over relatively long periods. Within this literature there is a trend towards using higher frequency data, including five-year averages (see, for instance, Islam, 1995). This trend has been criticized, as it may confuse growth effects and business-cycle effects (Pritchett, 1998). However, relying on high-frequency data is not uncommon when assessing the effects of adjustment policies. Thus, annual growth rates were used to evaluate the effects of stabilization programs (Easterly, 1996; Calvo and Végh, 1999; Echenique and Forteza, 1999) and monetary policies (Karras, 1999), whereas average growth rates over two and three years were used to assess the consequences of programs supported by the International Monetary Fund (Khan, 1990) and the World Bank (Corbo and Rojas, 1992; Easterly *et. al*., 1997).

3. Defining Labor Rigidity

The empirical strategy just outlined crucially depends on the availability of at least one indicator of labor market rigidity. Ten of them are used in what follows. Two are intended to capture the aggregate rigidity level, whereas the other eight focus on specific distortions. In dealing with aggregate rigidity, it is important to keep in mind the limited enforcement capabilities of many developing countries. Their labor codes may include an impressive array of clauses aimed at protecting workers, but their labor inspection agencies are often too weak or corrupt to force employers to comply. This distinction suggests that the regulations that are most distortive on paper may well be the least enforced in practice (see Squire and Suthiwart-Narueput, 1997).

The number of ILO conventions ratified by a country is a reasonable proxy for the "thickness" of its labor code, hence for the degree of labor rigidity as stated on paper. This number will be identified as L0 in what follows. The conventions issued by the International Labour Organisation reflect the ideal regulatory framework from an "institutionalist" perspective (see Freeman, 1993). These conventions cover a variety of labor market issues, from child labor to placement agencies. Their ratification by a country gives them legal status, thus superseding domestic regulations on those issues. Because the institutionalist perspective sees employees as weaker than employers, ILO conventions usually restrict the ability of the latter to decide on the terms and conditions of work. Not surprisingly, these conventions are seen as a source of labor market distortion from a neoclassical perspective.

In practice, however, the degree of labor market rigidity depends on how labor market regulations are implemented and enforced. From this point of view, it is the outcome of the regulations that matters, rather than their number. Different observers emphasize different outcomes though. High minimum wages are a favorite candidate, as they mimic the standard textbook distortion of market equilibrium. Mandated benefits, such as old-age pension, health insurance or maternity leave, feature high in the list too. If workers do not "pay" for these benefits through lower wages, their burden falls on employers. Mandated job security and high firing costs are yet another typical example of a labor market distortion. Finally, the labor market can also be distorted when trade unions are large and powerful, or when governments employ a substantial share of the labor force. Note that distortions of this latter sort do not necessarily stem from a "thick" labor code, which re-emphasizes the distinction between rigidity on paper and in practice.

The available data can be used to construct indicators of labor market rigidity dealing with minimum wages, mandated benefits, trade unions and government employment. These indicators will be identified in what follows as MW, BF, TU and GT respectively. Unfortunately, there are not enough data to construct an indicator of job separation costs covering a large number of countries. This particular dimension of labor market rigidity is thus ignored in the empirical analysis, although it is admittedly important. Given that labor issues tend to be sensitive and controversial, two indicators are used for each of the other four dimensions of labor market rigidity. The preferred indicator carries the number one (for example, MW1). The aim of the second indicator (MW2 in the example) is to verify the robustness of the empirical results. All eight indicators, as well as L0, are normalized, so that the country with the highest level gets a one, the country with the lowest level gets a zero, and the

rest falls in between. Moving from zero to one can thus be interpreted as moving from maximum flexibility to maximum rigidity.

The four dimensions of labor market rigidity considered so far can be combined into a single indicator, identified as L1 in what follows. This indicator, which captures aggregate labor market rigidity in practice, is defined as:

$$L1_i = \frac{MW1_i + BF1_i + TU1_i + GT1_i}{4} \quad (4)$$

In countries where information on one of the four indicators in the numerator is missing, the denominator is adjusted accordingly. All the indicators in the numerator being normalized, L1 varies between zero and one, like each of its individual components. But unless the four dimensions of labor market rigidity are perfectly correlated, the variance of L1 is smaller than the variance of its components.

The potential correlation between the four dimensions of labor market rigidity implies that the corresponding indicators cannot be used in the empirical analysis without taking additional precautions. For the sake of the argument, suppose that minimum wages do not affect economic performance whereas mandated benefits do. Suppose also that minimum wages tend to be higher in countries with more generous mandated benefits. Under these assumptions, replacing L by MW1 in equation (1) could lead to statistically significant values for coefficients λ_1 to λ_5, thus suggesting that minimum wages matter. A possible solution to this problem would be to include the other three indicators among the X_{it} variables. But this solution could lead to a different problem. Because of the potential correlation between the different dimensions of labor market rigidity, the precision of the estimates would fall. Now, replacing L by BF1 in equation

(1) and using the other three indicators as controls could lead to statistically insignificant values for coefficients λ_1 to λ_5, thus suggesting that mandated benefits do not matter.

To avoid the omitted-variable bias and mitigate the multicolinearity problem, a set of complementary indicators is defined. For instance, if L is replaced by MW1 in equation (1), the complementary indicator (called L1-MW1) is given by:

$$(L1\text{-}MW)_i = \frac{BF1_i + TU1_i + GT1_i}{3} \qquad (5)$$

This indicator is then included among the X_{it} variables in equation (1), jointly with its interaction with the four phases of the adjustment process (dummy variables D1 to D4).

The definition of the labor market rigidity indicators used in this paper is partly inspired by criteria used in other cross-country studies aimed at evaluating the impact of specific policies or institutions on economic performance. The distinction between rigidity on paper (indicator L0) and in practice (L1) is reminiscent of the distinction between legal and effective central bank independence, explored by Cukierman (1995). The composite rigidity indicator (L1), which encompasses a variety of labor market distortions, bears some resemblance with the openness indicator constructed by Sachs and Warner (1995), which combined four possible distortions to international trade flows. The attempt to disentangle the role of the individual labor market distortions (MW, BF, TU and GT) is similar to the attempt, by Rodrik and Rodríguez (1999), to identify the role of each of the four possible distortions to trade combined by Sachs and Warner. Finally, the introduction of a complementary indicator for each of the individual labor market distortions (L1-MW to L1-GT) is directly borrowed from a previous study on labor market rigidity and economic performance by Rama (1995).

4. The Data

The implementation of the empirical strategy outlined in the previous section requires information on macroeconomic aggregates, on reform efforts, and on labor market policies and institutions. Information on macroeconomic aggregates is readily available. The World Development Indicators database of the World Bank (1999) reports annual data on output, measured in real terms, for a large number of countries. These data are used in this paper to account for the dependent variable y_{it}. Moreover, based on these data it is possible to calculate the annual growth rate of industrial countries, taken altogether. Because this growth rate is a good indicator of the external conditions facing individual countries, it can be used as the independent variable W_t. Data on y_i and W_i are for period 1970-1996, so as to cover one full decade before the beginning of structural adjustment programs.

Measuring the seriousness of reform efforts, or the extent of labor market rigidity, is not as simple. For reform efforts, this paper relies on a database of disbursements related to World Bank adjustment credits and loans over period 1980-1996 (World Bank, 1997). Based on this information, a country is assumed to begin its reform process in earnest when the ratio of accumulated adjustment borrowing to predicted (or trend) output exceeds a critical threshold. Predicted output is used instead of the actual output to avoid a situation where countries facing a recession would suddenly qualify as reformers, even if they did not borrow any additional resources to support adjustment programs. The critical threshold is set at the 25^{th} percentile of the ratio of adjustment borrowing to output over all the countries that did borrow for adjustment from the World Bank and all the years from 1980 to 1996. The Appendix identifies with the label "No program" the countries in the sample that never exceeded this critical threshold over

period 1980-1996. For the countries that did, the Appendix indicates the year in which the threshold was reached for the first time. This year is used to assign values to the dummy variables D1 to D4.

Indicators of labor market rigidity are constructed based on the cross-country database compiled by Rama and Artecona (2000). In addition to the number of ILO conventions ratified by the country, the following indicators are used: the ratio of minimum wages to average labor costs in large manufacturing firms (MW1), the ratio of minimum wages to income per capita (MW2), the percentage of salaries that employers and employees have to contribute to the social security administration (BF1), the legal number of days of maternity leave with full pay for a first child born without complications (BF2), the membership of the labor movement measured in percentage of the labor force (TU1), the ratification by the country of ILO convention 87 on the right to bargain collectively (TU2), employment in the general government, including local administrations, as a fraction of the labor force (GT1) and employment in the central government as a fraction of the labor force (GT2).

All these indicators are calculated as averages over period 1970-1999. Because comparable data on labor markets in developing countries are scattered, some of these averages actually result from a small number of observations, mainly in the 1980s and early 1990s. For some developing countries, information on specific indicators is missing altogether. The paucity of the data implies that time-variant indicators of labor market rigidity cannot be used in the empirical analysis. Data on indicators MW1, BF1, TU1 and GT1 are combined to construct the aggregate labor rigidity indicator L1, as defined by equation (4). The Appendix reports the estimated value of indicator L1 for each of the countries in the sample, and ranks them based on this indicator.

The coverage of the sample can be evaluated based on Table 1. The regions in this table are defined according to the geographic boundaries used by the World Bank in its operational work. Overall, almost sixty percent of the countries and territories in the world are included in the sample. Although there are regional disparities, only in East Asia and the Pacific islands does the fraction of countries included in the sample drop considerably. Moreover, the countries included in the sample tend to be large. Overall, the sample accounts for more than 90 percent of the world's population and output. The shares are similar across all regions, with the exception of Sub-Saharan Africa. But even there, the countries in the sample represent more than 70 percent of the region's population, and more than 80 percent of the region's output. Almost three quarters of the countries in the sample embarked in substantial economic reforms with support from the World Bank. Except for industrial countries, which do not borrow from the World Bank, all regions had a considerable share of reformers.

The regional averages of the ten rigidity indicators considered in the empirical analysis are shown in Table 2. By construction, the aggregate rigidity indicator varies between zero and one. The other labor market indicators are also normalized in the regression analysis below. In Table 2 they are presented without any transformation, so as to simplify their interpretation. Based on the aggregate labor rigidity indicator, the countries in East Asia and the Pacific Islands are the most flexible, whereas those in Eastern Europe and Central Asia are the most rigid. But the regional ranking varies across indicators. For instance, minimum wages are highest in South Asia, government employment is highest in industrial countries and social security contributions are lowest in Sub-Saharan Africa.

The extent of labor market rigidity varies considerably across countries. However, program and non-program countries do not differ systematically, as differences in means do not

reach one standard deviation for any of the ten indicators considered. Program countries exhibit slightly higher averages than non-program countries for minimum wages, social security contributions, maternity leave and the ratification of ILO convention 87. Non-program countries exhibit slightly higher averages for union membership and government employment. The labor rigidity indicator is larger in program than non-program countries, but the difference is only a quarter of a standard deviation. These figures suggest that the adoption of economic reforms is not directly related to the nature of the labor market policies and institutions in place.

The number of ILO conventions ratified and the aggregate rigidity indicator can be used to identify the most flexible, the median and the most rigid country in each region. This is done in Table 3. The results suggest that in spite of the relative arbitrariness underlying the definition of labor market rigidity, the resulting country classification is consistent with conventional wisdom. Thus, regardless of the indicator used, the USA appear as the most flexible of industrial countries, and Uruguay as the most rigid of Latin American countries. At the worldwide level, the most flexible countries are in East Asia (Korea or Hong Kong, depending on the indicator), whereas the most rigid are in Western Europe (Italy or Sweden).

The difference between rigidity on paper and rigidity in practice is also highlighted by Table 3. For example, based on the number of ILO conventions ratified, Uganda and Chile are the median countries in their regions. However, when actual rigidity is considered instead, they both turn out to be most flexible. The case of India is even more extreme, as its position in the South Asian region varies from most rigid on paper to most flexible in practice. Conversely, Korea is the most flexible country in East Asia based on the number of ILO conventions it has ratified, but it is the median country based on its aggregate labor rigidity indicator.

5. Main Results

Equation (1) was estimated replacing L by each of the ten labor market rigidity indicators, and using three different econometric techniques. The random-effects estimation is the most efficient technique, and it is consistent provided the country-specific term u_i is not correlated with the explanatory variables. The fixed-effects technique yields consistent estimations in static models, even if u_i is correlated with the explanatory variables. However, it cannot deal with variables that are constant over time, like the rigidity indicator L_i. Therefore, coefficient λ_5 cannot be estimated using the fixed-effects technique. This problem does not arise with the random-effects technique.

The fixed-effects technique does not yield consistent estimates in dynamic models. This technique proceeds by differentiation, so that it effectively removes country-specific effects and the bias they may cause. But in the process it introduces a different type of bias, known as Nickell's bias. Arellano and Bond (1991) develop several techniques to consistently estimate this type of models, using the Generalized Method of the Moments (or GMM for short). In particular, the GMM estimates reported in this paper use orthogonal deviations to get rid of the country-specific effects. These estimates were generated with DPD98 program designed by Arellano and Bond (1998).

Nickell's bias could be substantial in data sets covering a limited number of years. Whether it is relevant in a data set like the one used in this paper, which includes annual data over more than a quarter of a century, is unclear. Whereas the GMM technique corrects in principle the bias, it has its own shortcomings. Its asymptotic properties may not be verified over a sample containing scarcely more than one hundred countries. Also, the total number of

observations that can be used in the analysis drops substantially. This is because the data set is an unbalanced panel, and only consecutive observations for each country can be included.

It would be difficult to claim that one of the three econometric techniques is clearly preferable to the others in the context of this paper. Consequently, rather than choosing one over the others, this paper presents the results obtained with all three. The credibility of the results should be higher if they are similar regardless of the technique used. These results are reported in Tables 4 to 9. In order to interpret them, it is convenient to focus on the central panel of the tables. The independent variables included in this panel are the four phases of the adjustment process, D1 to D4, their interaction with the selected labor rigidity indicator, and the labor rigidity indicator itself. In terms of equation (1), the coefficients multiplying these variables are β_1 to β_4, λ_1 to λ_4, and λ_5, respectively.

Some results are similar across tables. In particular, in the absence of labor market rigidities, economic reforms are clearly successful. Growth rates always increase after adjustment, as shown by the positive and generally significant values of coefficients β_3 and β_4 in all specifications. Only in Table 4, where labor market rigidity is measured through the number of ILO conventions ratified, does the size and significance of coefficients β_3 and β_4 decline. But this decline might be due to the fact that the number of ILO conventions measures labor market rigidity on paper, not in practice. When indicators of actual labor market rigidity are considered, the values of coefficients β_3 and β_4 become remarkably consistent. Their averages across Tables 5 to 9 are 0.04 and 0.03 respectively. Over a ten-year period, adjustment programs can make an impressive contribution to economic growth.

Differences across tables are revealing too. The comparison between the central panels of Tables 4 and 5 shows that the success of economic reforms depends on how rigid a country is

in practice, but is not so much affected by its rigidity on paper. With the fixed effects and random effects techniques, coefficients λ_1 to λ_4 are all statistically insignificant when labor market rigidity is measured by the number of ILO conventions ratified. With the GMM technique, coefficient λ_1 is significantly positive, whereas coefficients λ_2 and λ_3 are significantly negative. Taken literally, the coefficients estimated with the GMM technique imply that rigid countries have a better economic performance long before adjustment programs, and a worse performance both right before and right after. However, the size of the estimated coefficients is relatively small. As regards coefficient λ_5, it is significantly negative, which suggests that the growth rate is lower in countries that ratified more ILO conventions, regardless of the phase of the adjustment process. But this result is not robust. When industrial countries are excluded from the sample, coefficient λ_5 becomes statistically insignificant, as will be discussed below.

When the aggregate labor rigidity indicator is used instead, as in Table 5, coefficients λ_2 and λ_3 become significantly negative regardless of the econometric technique used. Moreover, these coefficients are five to ten times larger, in absolute terms, than those obtained when measuring rigidity through the number of ILO conventions ratified. These results suggest that countries whose labor markets are rigid in practice experience dramatic drops in growth rates both in the years preceding adjustment, and weak recoveries (or continued recessions) in the following years. Again, coefficient λ_5 is significantly negative, suggesting a negative impact on aggregate labor market rigidity on long-run growth. But this result does not hold when industrial countries are excluded from the sample.

This analysis is replicated in Tables 6 to 9 for all the different dimensions of labor market rigidity. The number of columns in these tables is higher, as they include two rigidity indicators each. Because of this multiplicity of columns, the interpretation of the results is somewhat more

difficult. However, some distinct patterns emerge. The stronger effects are associated with employment in the general government. In the first three columns of Table 9, coefficients λ_2 and λ_3 are significantly negative, and large in absolute terms, regardless of the econometric technique used. It thus seems that recessions right before adjustment are more severe, and the subsequent recoveries weaker, in countries with large numbers of government employees. The pattern is not nearly as strong when focusing on employees in the central government. This is not surprising, as low employment at the central level is not incompatible with over-staffing at the provincial or the state level.

The pattern is similar regarding unionization. In Table 8, coefficients λ_1 to λ_4 are negative regardless of the econometric technique and the unionization indicator used. They are statistically significant in most cases. Coefficient λ_2, in particular, is significant in five out of six regressions, which can be interpreted as an indication of delayed adjustment. Overall, the absolute value of the coefficients is larger, and their significance higher, when using the preferred rigidity indicator, namely the share of the labor force organized in unions. To some extent, the fall in significance when using the ratification of ILO convention 87 was to be expected. The comparison between Tables 4 and 5 showed how substantial the difference between rigidity on paper and rigidity in practice could be. While the share of the labor force organized in unions is clearly an indicator of rigidity in practice, the ratification of an ILO convention is an indicator of rigidity on paper.

Mandated benefits, on the other hand, seem largely irrelevant to explain the success of adjustment programs. In table 7, coefficients λ_1 to λ_4 change signs depending on the rigidity indicator and the technique used. They always have very small absolute values and are almost always insignificant. The only exception is coefficient λ_4, which becomes significant when

using the second-best indicator (i.e. the number of days of maternity leave with full pay) and the GMM technique. But even this modest result is not robust, as will be discussed below.

Finally, results are potentially more controversial regarding minimum wages. In table 6, coefficients λ_1 and λ_3 are positive regardless of the indicator and technique used, and they are often statistically significant. The sizes of coefficients λ_1 and λ_2 are remarkably consistent across estimations, and coefficient λ_2 is statistically significant in five out of six cases. Taken literally, these results would imply that countries with relatively high minimum wages perform better before adjustment, and not necessarily worse afterwards.

6. Robustness

The regressions reported in Tables 4 to 9 were run several more times under different assumptions, so as to assess the robustness of their results. The changes concerned both the variables included in the right-hand side of equation (1) and the observations included in the sample. As regards the variables, the analysis described in the previous sections already considered a large number of labor market indicators. Therefore, the robustness evaluation aimed at changing the definition of other variables that were already present in equation (1), and at adding variables that were not. Concerning the sample, countries that were in one way or another "too different" from the rest were removed. None of these changes modified the main conclusions of the analysis.

A key element in the empirical strategy of this paper is the definition of the phases of adjustment, as captured by the dummy variables D1 to D4. These phases were determined in relation to the beginning of a "serious" reform effort, as identified by a critical threshold of the

ratio of accumulated adjustment borrowing to predicted output. To assess the robustness of the results, a different borrowing indicator and two other critical thresholds were considered. The new borrowing indicator was the accumulated credit from the World Bank for all purposes, and not just for adjustment. The two other thresholds were zero and the median of the ratio of accumulated borrowing to output. Using zero as a threshold means that reforms are assumed to begin in earnest when the country receives its first adjustment loan or credit from the World Bank. The median threshold is more demanding and leads to the classification of countries that borrowed small amounts as non-reformers.

Equation (1) implicitly assumes that all the coefficients are constant over time. However, the adjustment programs of the 1990s could be different from those of the 1980s, particularly in terms of their conditionality. For instance, the increased focus on poverty alleviation, after 1990, could have modified the nature of economic reforms, and also the labor market response to them. To account for this possibility, two sets of adjustment phases were defined, depending on whether reforms had been initiated before or after year T, with T ranging from 1985 to 1994. For each of these breakpoints, F-tests were computed for the hypothesis that the coefficients of interest (β_1 to λ_4) were the same for the two sets of dummies. Only for 1991 was this hypothesis rejected. Given that it was not rejected for 1990 or 1992, the stability of the coefficients seems plausible.

Several alternative specifications were tried for the control variables X_i. First, a set of annual dummies was included. In the resulting regressions, the growth rate of industrial countries was dropped, for it would be perfectly collinear to the annual dummies. Some of the annual dummies turned out to be statistically significant. When these dummies were introduced

in the specification containing the growth rate of industrial countries, the coefficients of interest did not change much.

Changes to the sample concerned industrial countries, transition economies, and outliers. All the regressions were re-run excluding industrial countries. This change substantially reduces the sample size, but it can be justified on the grounds that industrial countries do not borrow for adjustment for the World Bank. Moreover, their ability to enforce labor market regulations is higher than that of developing countries, which could considerably narrow the gap between rigidity on paper and rigidity in practice. As mentioned before, the exclusion of industrial countries made vanish the long-run impact of labor rigidity indicators on growth. The modest effect of maternity leave with pay on performance long after adjustment disappeared as well. On the other hand, the negative impact of unionization and government employment on the success of adjustment became stronger.

Transition economies were under central planning before the adoption of economic reforms, which took place as they became members of the World Bank. Although their labor market indicators before the beginning of the transition were formally comparable to those of market economies, their actual labor market policies and institutions were quite different. Pooling market and non-market economies in the years preceding the reforms could therefore be misleading. To assess the potential bias resulting from this pooling, the dummies D1 and D2 were not set equal to one if the country was not a member of the World Bank at that time. Again, the main conclusions were not altered.

Finally, outliers were set aside. Countries with extremely high or extremely low values of the labor market indicators were removed from the sample. For the countries that stayed in it,

years with extremely high or extremely low (negative) growth rates were excluded as well. The removal of observations was largely inconsequential.

7. Conclusion

This paper has shown that labor market policies and institutions do matter for the success of economic reforms, but they probably do so for political reasons, more than for economic reasons. In particular, high minimum wages or mandated benefits do not appear to hinder economic growth, neither before nor after adjustment. This result is consistent with the evidence available for industrial countries, where labor market policies arguably have modest, hard-to-uncover effects on economic efficiency (see Freeman, 2000). Even the controversial result that relatively high minimum wages are associated with a somewhat better performance before adjustment, and not necessarily with a worse performance afterwards, is to some extent consistent with recent findings for the US (see Card and Krueger, 1998).

The possible irrelevance of minimum wages and mandated benefits for the success of economic reforms questions the wisdom of efforts to deregulate the labor market. Admittedly, specific labor market regulations which are potentially very distortive, such as mandated job security, have not been considered in this paper (see Fallon and Lucas, 1991). Efficiency gains from removing or bypassing those regulations could be sizeable. But abolishing minimum wages or curtailing social security benefits might not contribute much to economic performance, if at all (note that heavier government intervention in the labor market would not be advisable either). Moreover, labor market deregulation might be effective at reducing rigidity on paper, but not necessarily in practice. For instance, based on the analysis above, repealing ILO

conventions would be a futile endeavor. Given that the usual ingredients of adjustment programs appear to be highly effective at raising output growth rates, it seems preferable to concentrate reform efforts on issues such as taxation, government spending, trade barriers, financial regulations and enterprise ownership, rather than on re-drafting the labor code.

On the other hand, unionization and government employment are associated with deeper recessions before adjustment, and weaker recoveries (or continued recessions) afterwards. One interpretation of this finding is that organized interest groups that stand to lose from the reforms may succeed in delaying their adoption and diluting their content. This is the natural interpretation from the perspective of the new political economy, which views distributional conflict as one of the main forces shaping economic policy. The contribution of this paper is to provide empirical evidence in support of this perspective. In the process, the paper identifies organized labor as a key opponent of economic reforms. We suspect that many policy makers around the world would consider this finding quite obvious. But its policy implications deserve some attention.

Recent analyses of the effectiveness of development assistance have focused on the need to identify the conditions for success. The probability of failure has been shown to be higher in countries with poorly defined property rights and high levels of corruption (Burnside and Dollar, 1998). It also has been shown to be higher in countries where governments have not been democratically elected or have been in power for a long time, as well as in countries that are ethnically fragmented (Dollar and Svensson, 1999). The recommendation emerging from these analyses is that development agencies should do a better job at selecting promising candidates for adjustment support. Unfortunately, few of the countries that most desperately need this kind of support would qualify.

The findings in this paper imply that the focus should not be on picking winners, but rather on compensating (vocal) losers. Based on the econometric results, reforms have been successful in countries where trade union membership and government employment are small. Arguably, this conclusion should be valid in spite of country differences in property rights, corruption, democracy or ethnicity, as the econometric analysis takes unobservable country heterogeneity into account through of the use of panel data. The failure of reforms in countries where trade union membership and government employment are large suggests that insufficient attention has been paid to the impact of economic reforms on urban, middle-class groups. This choice is justifiable on economic grounds, as these groups are not poor. But it might have been self-defeating on political grounds.

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Table 1

The Sample and the World

	All	Sub-Saharan Africa	East Asia/ Pacific Islands	Eastern Europe/ Central Asia	Industrial	Latin America/ Caribbean	Middle East/ North Africa	South Asia
The world								
Number of countries	200	47	31	27	28	39	20	8
Program countries	103	36	10	25	0	21	6	5
The sample								
Number of countries	119	23	12	17	23	21	18	5
Annual growth rate (%)	3.5	3.4	6.5	0.2	3.0	3.3	4.4	4.4
Program countries	76	20	8	17	0	20	6	5
Annual growth rate (%)	3.3	3.0	5.9	0.2	…	3.4	4.9	4.4
Sample/ World								
% of countries	59.5	48.9	38.7	63.0	82.1	53.8	90.0	62.5
% of 1995 GDP	99.1	82.4	98.0	93.3	99.9	96.2	98.3	99.9
% of 1995 population	93.4	71.1	95.4	81.5	99.9	94.7	98.9	99.9

Source: Authors' calculations using data from IMF and World Bank. Growth rates are averages over period 1970-1986.

Table 2

Labor Market Policies and Institutions across Regions

Labor market rigidity indicators	All	Sub-Saharan Africa	East Asia/ Pacific Islands	Eastern Europe/ Central Asia	Industrial	Latin America/ Caribbean	Middle East/ North Africa	South Asia
Minimum wage/Industrial wage (%)	29.7	18.0	26.8	32.1	32.6	30.2	28.4	44.1
Minimum wage/GDP per capita (%)	73.4	164.1	50.7	33.1	46.7	59.8	88.9	171.0
Social security contributions (%)	19.8	12.7	14.3	34.2	22.2	18.9	18.9	20.0
Maternity leave with full pay (days)	85.7	73.9	74.4	175.5	103.4	71.2	60.1	69.0
Union membership/Labor force (%)	23.8	9.9	14.7	67.3	37.3	18.3	16.6	9.1
Ratification of ILO convention 87 (0 or 1)	0.469	0.444	0.131	0.500	0.687	0.612	30.6	0.304
General government/Labor force (%)	10.8	5.2	6.5	14.6	15.6	10.2	12.5	5.3
Central government/Labor force (%)	4.9	3.2	3.3	3.6	5.7	6.0	7.9	3.0
ILO conventions ratified (number)	33.8	25.5	10.7	41.5	55.9	38.5	24.0	20.7
Aggregate rigidity index (0 to 1)	0.316	0.226	0.177	0.477	0.393	0.317	0.318	0.273

Source: Authors' calculations using data from Rama and Artecona (2000). Labor market indicators are averages over period 1970-1999.

Table 3

Labor Market Rigidity within Regions

Classification based on	All	Sub-Saharan Africa	East Asia/ Pacific Islands	Eastern Europe/ Central Asia	Industrial	Latin America/ Caribbean	Middle East/ North Africa	South Asia
ILO conventions ratified								
Minimum	Korea	Botswana	Korea	Croatia	USA	El Salvador	Oman	Nepal
Median	Pakistan	Uganda	Thailand	Romania	Portugal	Chile	Cyprus	Sri Lanka
Maximum	Italy	Guinea	Singapore	Bulgaria	Italy	Uruguay	Iraq	India
Aggregate rigidity indicator								
Minimum	Hong Kong	Uganda	Hong Kong	Turkey	USA	Chile	Jordan	India
Median	Colombia	Ghana	Korea	Poland	Finland	Guatemala	Kuwait	Sri Lanka
Maximum	Sweden	Burkina Faso	Philippines	Belarus	Sweden	Uruguay	Algeria	Bangladesh

Source: Authors' calculations using data from Rama and Artecona (2000). See the appendix for details.

Table 4

ILO Conventions Ratified, Adjustment and Growth

Independent variables	Dependent variable: annual growth rate of GDP (1970-86)		
	Fixed effects	Random effects	GMM
Years long before the program (D1)	0.000	-0.008	-0.009***
	(0.000)	(-0.810)	(-5.736)
Years right before the program (D2)	-0.011	-0.020	-0.015***
	(-0.686)	(-1.319)	(-3.732)
Years right after the program (D3)	0.018	0.014	0.012***
	(1.318)	(1.061)	(4.125)
Years long after the program (D4)	0.020*	0.015	0.013***
	(1.708)	(1.307)	(6.012)
D1 x ILO conventions ratified	0.007	0.007	0.020***
	(0.374)	(0.405)	(5.017)
D2 x ILO conventions ratified	-0.025	-0.024	-0.020***
	(-0.960)	(-1.047)	(-3.496)
D3 x ILO conventions ratified	-0.013	-0.012	-0.010***
	(-0.519)	(-0.539)	(-3.025)
D4 x ILO conventions ratified	-0.007	-0.004	0.002
	(-0.329)	(-0.225)	(0.554)
ILO conventions ratified		-0.023***	
		(-3.353)	
Industrial GDP growth	0.738***	0.672***	0.701***
	(9.778)	(9.179)	(38.811)
GDP growth rate in previous year	0.220***	0.262***	0.160***
	(13.273)	(16.261)	(26.318)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes
Adjusted R^2	0.196	0.161	
Sargan test (p value)			0.458
1st order serial correlation (p value)			0.000
2nd order serial correlation (p value)			0.015
Number of observations	3408	3408	2622
Number of countries	112	112	106

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the third to sixth lags of the endogenous variable as instruments.

Table 5

Aggregate Rigidity Indicator, Adjustment and Growth

Independent variables	Dependent variable: annual growth rate of GDP (1970-86)		
	Fixed effects	Random effects	GMM
Years long before the program (D1)	-0.017	-0.019*	-0.007
	(-1.541)	(-1.872)	(-0.684)
Years right before the program (D2)	0.006	0.007	0.006
	(0.417)	(0.503)	(0.450)
Years right after the program (D3)	0.047***	0.045***	0.046***
	(3.142)	(3.098)	(2.701)
Years long after the program (D4)	0.025**	0.020*	0.038***
	(2.164)	(1.849)	(4.145)
D1 x Aggregate rigidity indicator	0.042	0.038	0.032**
	(1.436)	(1.473)	(2.053)
D2 x Aggregate rigidity indicator	-0.094**	-0.103***	-0.108***
	(-2.492)	(-2.947)	(-6.369)
D3 x Aggregate rigidity indicator	-0.097***	-0.095***	-0.076***
	(-2.607)	(-2.770)	(-2.689)
D4 x Aggregate rigidity indicator	-0.042	-0.032	-0.040*
	(-1.474)	(-1.253)	(-1.734)
Aggregate rigidity indicator		-0.055***	
		(-4.349)	
Industrial GDP growth	0.709***	0.675***	0.824***
	(10.964)	(10.674)	(11.074)
GDP growth rate in previous year	0.150***	0.194***	0.197***
	(8.412)	(10.890)	(15.595)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes
Adjusted R^2	0.222	0.171	
Sargan test (p value)			1.000
1st order serial correlation (p value)			0.000
2nd order serial correlation (p value)			0.296
Number of observations	2914	2914	2144
Number of countries	92	92	88

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the second to ninth lags of the endogenous variable as instruments.

Table 6

Minimum Wages, Adjustment and Growth

Independent variables	Dependent variable: annual growth rate of GDP (1970-86)					
	Minimum wage indicator = MW1			Minimum wage indicator = MW2		
	Fixed effects	Random effects	GMM	Fixed effects	Random effects	GMM
Years long before the program (D1)	-0.007	-0.009	-0.034	-0.003	-0.008	-0.029
	(-0.575)	(-0.815)	(-1.109)	(-0.232)	(-0.644)	(-0.829)
Years right before the program (D2)	-0.019	-0.014	-0.004	-0.005	-0.004	0.014
	(-1.150)	(-0.902)	(-0.131)	(-0.272)	(-0.240)	(0.499)
Years right after the program (D3)	0.055***	0.051***	0.042	0.041**	0.036**	0.033
	(3.424)	(3.319)	(1.183)	(2.261)	(2.056)	(0.865)
Years long after the program (D4)	0.033**	0.028**	0.024	0.042***	0.035***	0.037*
	(2.599)	(2.339)	(1.284)	(3.037)	(2.654)	(1.945)
D1 x Minimum wage indicator	0.018	0.016	0.022	0.016	0.020	0.020**
	(0.971)	(0.925)	(1.266)	(0.980)	(1.199)	(2.324)
D2 x Minimum wage indicator	0.056**	0.048**	0.057***	0.035	0.039*	0.040***
	(2.259)	(2.084)	(3.495)	(1.491)	(1.691)	(2.173)
D3 x Minimum wage indicator	0.026	0.021	0.040***	0.010	0.012	0.005
	(1.072)	(0.932)	(3.126)	(0.410)	(0.508)	(0.323)
D4 x Minimum wage indicator	-0.016	-0.015	-0.007	-0.017	-0.013	0.010
	(-0.863)	(-0.889)	(-0.510)	(-0.916)	(-0.722)	(0.655)
Minimum wage indicator		0.002			-0.015	
		(0.278)			(-1.321)	
Industrial GDP growth	0.742***	0.709***	0.666***	0.754***	0.719***	0.625***
	(11.349)	(11.008)	(3.044)	(9.706)	(9.382)	(2.573)
GDP growth rate in previous year	0.169***	0.210***	0.213***	0.148***	0.187***	0.190***
	(8.156)	(10.398)	(6.196)	(6.758)	(8.746)	(5.682)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes	Yes	Yes	Yes
Complementary rigidity indicator	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.298	0.242		0.252	0.194	
Sargan test (p value)			1.000			1.000
1st order serial correlation (p value)			0.000			0.000
2nd order serial correlation (p value)			0.339			0.163
Number of observations	2165	2165	1593	1994	1994	1471
Number of countries	66	66	64	60	60	59

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the second to tenth lags of the endogenous variable as instruments.

Table 7

Mandated Benefits, Adjustment and Growth

Independent variables	Dependent variable: annual growth rate of GDP (1970-86)					
	Benefits indicator = BF1			Benefits indicator = BF2		
	Fixed effects	Random effects	GMM	Fixed effects	Random effects	GMM
Years long before the program (D1)	-0.013	-0.019*	-0.013	-0.010	-0.016	-0.011
	(-1.003)	(-1.776)	(-0.992)	(-0.746)	(-1.585)	(-0.810)
Years right before the program (D2)	0.004	0.001	-0.006	0.019	0.016	0.011
	(0.228)	(0.092)	(-0.386)	(1.047)	(1.045)	(0.821)
Years right after the program (D3)	0.050***	0.046***	0.040*	0.035**	0.030**	0.042**
	(2.795)	(3.059)	(1.902)	(2.004)	(2.054)	(2.379)
Years long after the program (D4)	0.031**	0.025**	0.031**	0.034**	0.026**	0.038***
	(2.234)	(2.144)	(2.305)	(2.497)	(2.427)	(3.701)
D1 x Benefits indicator	0.019	0.022	0.014	0.010	0.015	-0.010
	(0.891)	(1.334)	(1.516)	(0.379)	(0.762)	(-0.755)
D2 x Benefits indicator	0.003	0.009	0.005	-0.007	-0.002	0.007
	(0.120)	(0.378)	(0.365)	(-0.205)	(-0.069)	(0.385)
D3 x Benefits indicator	-0.020	-0.019	-0.011	0.004	0.010	-0.005
	(-0.723)	(-0.806)	(-1.032)	(-0.124)	(0.380)	(-0.373)
D4 x Benefits indicator	0.014	0.013	0.006	-0.028	-0.024	-0.045***
	(0.680)	(0.766)	(0.521)	(-1.101)	(-1.177)	(-3.930)
Benefits indicator		-0.009			-0.022*	
		(-1.013)			(-1.952)	
Industrial GDP growth	0.760***	0.670***	0.769***	0.798***	0.690***	0.768***
	(10.248)	(10.140)	(7.752)	(11.165)	(11.083)	(8.171)
GDP growth rate in previous year	0.199***	0.186***	0.195***	0.209***	0.198***	0.198***
	(11.208)	(10.332)	(10.464)	(12.079)	(10.889)	(10.898)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes	Yes	Yes	Yes
Complementary rigidity indicator	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.201	0.168		0.198	0.173	
Sargan test (p value)			1.000			1.000
1st order serial correlation (p value)			0.000			0.000
2nd order serial correlation (p value)			0.391			0.253
Number of observations	3072	3072	2014	3166	3166	2061
Number of countries	100	100	83	101	101	83

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the second to tenth lags of the endogenous variable as instruments.

Table 8

Unionization, Adjustment and Growth

Independent variables	Dependent variable: annual growth rate of GDP (1970-86)					
	Unionization indicator = TU1			Unionization indicator = TU2		
	Fixed effects	Random effects	GMM	Fixed effects	Random effects	GMM
Years long before the program (D1)	-0.010	-0.019*	-0.012	-0.019	-0.024**	-0.017
	(-0.756)	(-1.757)	(-0.945)	(-1.431)	(-2.397)	(-1.242)
Years right before the program (D2)	0.012	0.003	-0.001	0.007	0.004	-0.004
	(0.640)	(0.205)	(-0.084)	(0.375)	(0.301)	(-0.243)
Years right after the program (D3)	0.035*	0.027*	0.046**	0.048***	0.047***	0.054***
	(1.952)	(1.763)	(2.263)	(2.622)	(3.234)	(3.080)
Years long after the program (D4)	0.029**	0.021*	0.033***	0.024*	0.019*	0.035***
	(2.135)	(1.896)	(3.416)	(1.675)	(1.741)	(3.086)
D1 x Unionization indicator	-0.017	-0.020	-0.017*	-0.017*	-0.016**	-0.015***
	(-0.609)	(-1.078)	(-1.654)	(-1.686)	(-2.124)	(-3.137)
D2 x Unionization indicator	-0.030	-0.042*	-0.057***	-0.023*	-0.023**	-0.022***
	(-0.896)	(-1.744)	(-2.835)	(-1.680)	(-2.186)	(-3.011)
D3 x Unionization indicator	-0.047	-0.051*	-0.084***	-0.008	-0.006	-0.007
	(-1.359)	(-1.913)	(-5.398)	(-0.608)	(-0.550)	(-1.311)
D4 x Unionization indicator	-0.054*	-0.050**	-0.076***	-0.012	-0.010	-0.008
	(-1.880)	(-2.282)	(-6.173)	(-1.179)	(-1.272)	(-1.486)
Unionization indicator		-0.014			-0.010**	
		(-1.442)			(-2.357)	
Industrial GDP growth	0.762***	0.684***	0.822***	0.734***	0.678***	0.830***
	(10.648)	(10.690)	(9.169)	(10.123)	(10.738)	(8.678)
GDP growth rate in previous year	0.209***	0.178***	0.195***	0.231***	0.184***	0.193***
	(11.884)	(10.112)	(12.518)	(13.759)	(10.558)	(13.191)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes	Yes	Yes	Yes
Complementary rigidity indicator	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.190	0.163		0.205	0.175	
Sargan test (p value)			1.000			1.000
1st order serial correlation (p value)			0.000			0.000
2nd order serial correlation (p value)			0.291			0.288
Number of observations	3243	3243	2083	3548	3548	2144
Number of countries	103	103	85	118	118	88

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the second to tenth lags of the endogenous variable as instruments.

Table 9

Government Employment, Adjustment and Growth

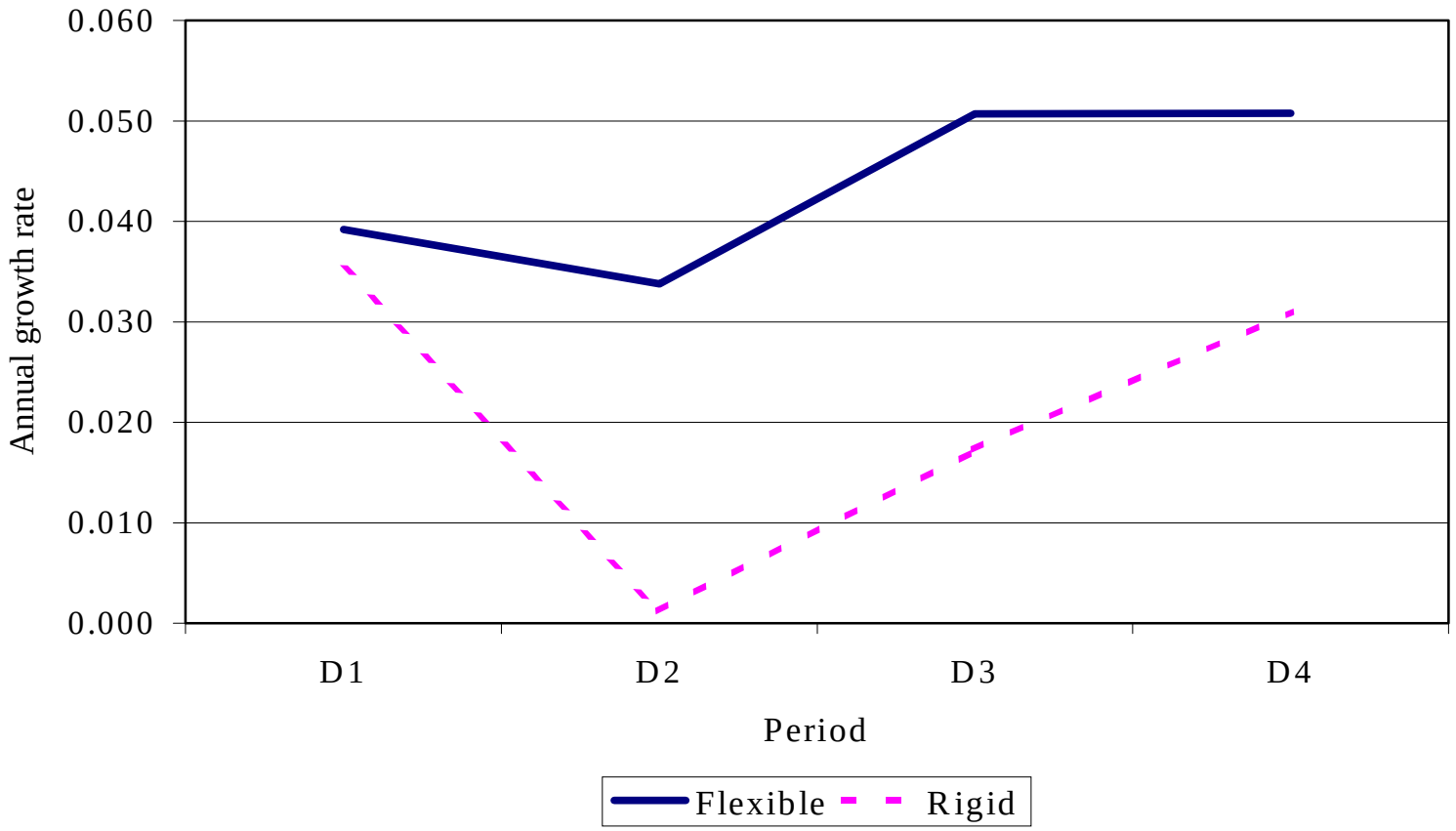
Independent variables	Dependent variable: annual growth rate of GDP (1970-86)					
	Government indicator = GT1			Government indicator = GT2		
	Fixed effects	Random effects	GMM	Fixed effects	Random effects	GMM
Years long before the program (D1)	-0.013	-0.013	-0.024	-0.021*	-0.022**	-0.031**
	(-1.047)	(-1.206)	(-1.380)	(-1.776)	(-2.079)	(-2.125)
Years right before the program (D2)	-0.005	-0.002	-0.010	0.008	0.010	0.003
	(-0.249)	(-0.141)	(-0.432)	(0.458)	(0.653)	(0.223)
Years right after the program (D3)	0.039**	0.039**	0.029	0.036**	0.038**	0.043*
	(2.214)	(2.545)	(1.176)	(2.222)	(2.624)	(1.941)
Years long after the program (D4)	0.025*	0.024**	0.018	0.024*	0.023**	0.016
	(1.871)	(2.055)	(1.191)	(1.864)	(2.048)	(1.268)
D1 x Government indicator	0.025	0.027	0.011	0.033**	0.028**	0.026***
	(1.087)	(1.433)	(0.956)	(2.109)	(2.160)	(3.556)
D2 x Government indicator	-0.066**	-0.069***	-0.093***	-0.020	-0.026	-0.031***
	(-2.282)	(-2.790)	(-5.769)	(-0.988)	(-1.475)	(-3.593)
D3 x Government indicator	-0.069**	-0.069***	-0.089***	-0.016	-0.025	-0.013
	(-2.356)	(-2.800)	(-6.455)	(-0.780)	(-1.437)	(-0.849)
D4 x Government indicator	-0.003	0.003	-0.015	0.014	0.009	0.006
	(-0.123)	(0.133)	(-1.271)	(0.908)	(0.675)	(0.719)
Government indicator		-0.003			0.003	
		(-0.307)			(0.449)	

Industrial GDP growth	0.646***	0.670***	0.693***	0.596***	0.615***	0.626***
	(8.658)	(9.648)	(4.761)	(8.077)	(9.166)	(5.764)
GDP growth rate in previous year	0.212***	0.194***	0.194***	0.225***	0.210***	0.210***
	(11.049)	(10.248)	(9.860)	(11.898)	(11.231)	(9.861)
Industrial GDP growth x D1 to D4	Yes	Yes	Yes	Yes	Yes	Yes
Complementary rigidity indicator	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.232	0.177		0.233	0.180	
Sargan test (p value)			1.000			1.000
1st order serial correlation (p value)			0.000			0.000
2nd order serial correlation (p value)			0.395			0.351
Number of observations	2538	2538	1814	2584	2584	1852
Number of countries	83	83	75	83	83	76

Note: Figures in parentheses are "t" statistics. Significant coefficients at the 10, 5 and 1 percent significance levels are indicated by one, two and three asterisks respectively. The GMM estimates use the second to tenth lags of the endogenous variable as instruments.

Figure 1

Growth Rates Before and After Adjustment



Note: Constructed based on regression coefficients reported for the random effects method in Table 5, using the labor rigidity index for the 25th and 75th percentiles for the flexible and the rigid country respectively.

Appendix

Selected Country Data

Country	Year of first program (until 1996)	Aggregate rigidity indicator	Labor market rigidity ranking
ALGERIA	1990	0.45	84
ARGENTINA	1987	0.38	62
ARMENIA	1995	n.a.	n.a.
AUSTRALIA	No program	0.43	78
AUSTRIA	No program	0.45	83
BAHAMAS	No program	0.23	24
BAHRAIN	No program	0.27	36
BANGLADESH	1980	0.33	55
BELARUS	No program	0.64	92
BELGIUM	No program	0.54	88
BENIN	1989	n.a.	n.a.
BOLIVIA	1980	0.29	45
BOTSWANA	No program	0.21	18
BRAZIL	1986	0.28	42
BULGARIA	1992	0.51	87
BURKINA FASO	1991	0.40	68
BURUNDI	1986	n.a.	n.a.
CAMBODIA	1996	n.a.	n.a.
CAMEROON	1989	n.a.	n.a.
CANADA	No program	0.26	32
CENTRAL AFRICA	1987	n.a.	n.a.
CHAD	1989	n.a.	n.a.
CHILE	1986	0.15	9
CHINA	No program	0.10	3
COLOMBIA	1985	0.30	47
COMOROS	1991	n.a.	n.a.
CONGO	1986	n.a.	n.a.
COSTA RICA	1983	0.41	69
COTE D'IVOIRE	1982	0.27	34
CYPRUS	No program	0.36	60
CZECH REPUBLIC	1991	n.a.	n.a.
DENMARK	No program	0.51	86
DOMINICAN REPUBLIC	No program	0.42	75
ECUADOR	1986	0.32	53
EGYPT	1991	0.39	63

(Continued)

Appendix (Continued)

Country	Year of first program (until 1996)	Aggregate rigidity indicator	Labor market rigidity ranking
EL SALVADOR	1991	0.17	12
EQUATORIAL GUINEA	1986	n.a.	n.a.
ESTONIA	1993	n.a.	n.a.
ETHIOPIA	1993	0.23	26
FINLAND	No program	0.41	71
FRANCE	No program	0.61	91
GABON	1988	n.a.	n.a.
GAMBIA, THE	1987	n.a.	n.a.
GERMANY	No program	0.30	50
GHANA	1983	0.23	25
GREECE	No program	0.32	51
GUATEMALA	1993	0.30	48
GUINEA-BISSAU	1988	n.a.	n.a.
GUYANA	1981	n.a.	n.a.
HONDURAS	1989	0.32	54
HONG KONG	No program	0.07	1
HUNGARY	1986	0.57	90
INDIA	1993	0.22	22
INDONESIA	1988	0.13	7
IRELAND	No program	0.36	61
ISRAEL	No program	0.39	66
ITALY	No program	0.41	73
JAMAICA	1981	0.28	39
JAPAN	No program	0.26	30
JORDAN	1990	0.11	4
KENYA	1980	0.15	10
KOREA, REPUBLIC OF	1984	0.17	13
KUWAIT	No program	0.30	49
KYRGYZ REPUBLIC	1993	0.57	89
LAO PDR	1989	n.a.	n.a.
LATVIA	1993	n.a.	n.a.
LITHUANIA	1993	n.a.	n.a.
LUXEMBOURG	No program	0.27	33
MADAGASCAR	1985	0.28	38
MALAWI	1981	n.a.	n.a.
MALAYSIA	No program	0.18	14
MALI	1988	0.28	41
MAURITANIA	1986	0.27	35

(Continued)

Appendix (Continued)

Country	Year of first program (until 1996)	Aggregate rigidity indicator	Labor market rigidity ranking
MAURITIUS	1981	0.34	58
MEXICO	No program	0.33	56
MOLDOVA	1995	n.a.	n.a.
MONGOLIA	1994	n.a.	n.a.
MOROCCO	1984	0.24	28
MOZAMBIQUE	1988	n.a.	n.a.
NEPAL	1987	n.a.	n.a.
NETHERLANDS	No program	0.44	80
NEW ZEALAND	No program	0.42	74
NICARAGUA	1992	0.25	29
NIGER	1986	n.a.	n.a.
NIGERIA	1984	0.21	17
NORWAY	No program	0.41	72
PAKISTAN	1982	0.28	43
PANAMA	1984	0.45	81
PAPUA NEW GUINEA	1990	n.a.	n.a.
PARAGUAY	No program	0.41	70
PERU	1992	0.28	44
PHILIPPINES	1981	0.33	57
POLAND	1991	0.45	82
PORTUGAL	No program	0.29	46
ROMANIA	1992	n.a.	n.a.
RUSSIA	1997	0.43	76
RWANDA	1991	n.a.	n.a.
SAO TOME AND PRINCIPE	1987	n.a.	n.a.
SENEGAL	1981	0.32	52
SIERRA LEONE	1984	n.a.	n.a.
SINGAPORE	No program	0.22	21
SLOVAK REPUBLIC	1994	n.a.	n.a.
SLOVENIA	1994	n.a.	n.a.
SOMALIA	1986	n.a.	n.a.
SOUTH AFRICA	No program	0.12	5
SPAIN	No program	0.35	59
SRI LANKA	1990	0.26	31
SUDAN	1980	n.a.	n.a.
SWEDEN	No program	0.69	93
SWITZERLAND	No program	0.27	37
SYRIAN ARAB REPUBLIC	No program	0.39	64

(Continued)

Appendix (Continued)

Country	Year of first program (until 1996)	Aggregate rigidity indicator	Labor market rigidity ranking
TAIWAN, CHINA	No program	0.21	20
TANZANIA	No program	0.13	8
THAILAND	1982	0.15	11
TOGO	1983	n.a.	n.a.
TRINIDAD AND TOBAGO	1990	0.39	65
TUNISIA	1987	0.39	67
TURKEY	1981	0.21	16
UGANDA	1982	0.09	2
UKRAINE	1995	n.a.	n.a.
UNITED KINGDOM	No program	0.43	77
UNITED STATES	No program	0.22	23
URUGUAY	1985	0.47	85
VENEZUELA	1989	0.23	27
VIET NAM	1995	0.21	19
YEMEN, REPUBLIC OF	No program	0.28	40
YUGOSLAVIA, FORMER	No program	0.44	79
ZAMBIA	1984	0.19	15
ZIMBABWE	1983	0.12	6

Source: World Bank and authors' calculations using data from Rama and Artecona (2000). The table only reports countries that have had a program between 1980 and 1996, have enough labor market data to estimate the labor rigidity index or both. The labor rigidity index is an average over period 1970-1999. The labor rigidity ranking increases with the labor rigidity index.