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On the Rigidity of Labor Regulations Across Countries and Over Time: The Roles of Structural Reforms, Growth and Inequality*

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Abstract: While the effects of employment protection legislation have been extensively investigated, the same cannot be said of its determinants with lack of panel data as the main reason. This paper introduces a new data set which enables an analysis of the dynamics of labor laws rigidity since 1960 across countries. Results show that labor law rigidity is better explained by structural reforms (especially trade and financial liberalization) and by the level of economic development than by the more conventional "legal origins." They also suggest that, while the effects of rigidity of labor regulations on growth are ambiguous, those on income inequality tend to be negative.

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1. Introduction

Labor market reforms are controversial. The conventional view is that such reforms (for example, lowering workers dismissal costs) increase social welfare and improve economic performance (MacLeod, 2011). However, Freeman (2010), among many others, highlights the difficulties in identifying the welfare implications of changes in labor market laws and points out that such reforms may increase income inequality.

Since it is difficult to think of labor market reforms as purely exogenous, assessments of their effects would surely benefit from a deeper understanding of its determinants. The origin of a country's legal system remains the most widely accepted explanation for labor market rigidity (La Porta et al. 2008, and Beck et al. 2013). The seminal paper in the empirical literature on the rigidity of employment protection legislation is Botero, Djankov, La Porta, Lopez de Silanes and Shleifer (2004, hereafter BDLLS.) They constructed an index of the rigidity of employment protection legislation (EPL) based on the provisions of the labor laws of 85 countries around the year 1997. They identify three candidate theories (efficiency, legal origins, and political theories) for explaining the variation in EPL across countries. They find stronger support for the legal origins explanation, showing that, on average, countries using the English Common Law system have less restrictive labor laws and regulations than those based on French or other Civil Law systems. The intuition is that (French) Civil Law is associated with more rigid, detailed, complicated, all-encompassing labor laws which are imposed in a more top-down manner and are more difficult to change than those in English Common Law countries which are simpler and more flexible, thereby helping firms and workers to adjust to shocks.

In recent years, various measures of labor market rigidity (flexibility) have been proposed.[1]

[1] Institutions other than employment protection legislation that may also affect the labor market include active labor market policies, unemployment benefits and unions.

Among these are : (1) indicators based on labor market outcomes or events, such as the frequency of strikes or the rates of labor turnover, labor force participation and unemployment, (2) measures of job satisfaction, the competiveness of, or the extent of discrimination in, labor markets based on subjective opinion surveys of employers, workers or other parties, (3) tax wedges (distortions measured in terms of the gap between what workers receive and employers pay) and (4) codified characterizations of various features of the labor laws and other labor market regulations. Each approach has, of course, advantages and disadvantages but one drawback shared by most is that the time series dimensions of these EPL indexes are very limited and hence can shed little light on the extent to which such indices change over time. If EPL indexes were invariant over time, it would be easy to either affirm or deny the applicability of "legal origins" to the explanation of variations in the rigidity of labor regulations across countries. If the labor laws do change over time, and if these changes are captured by changing EPL indexes, however, this would not necessarily deny the validity of a legal origins explanation since it has also been argued that the English common law is more susceptible to bottom-up initiated changes in external (including market) conditions and freer from interest groups pressures due to its association with greater judicial independence. If nothing else, longer time series in the EPL indexes would allow the evaluation of a larger variety of explanations for changing labor regulations.

This paper attempts to extend existing analyses in several ways: (1) by extending the country coverage of the BDLLS approach to more developing countries; (2) by extending the time coverage backwards from the late 1990s (wherever possible to the early 1960s) and forward to 2000-2004; and (3) by undertaking a broadened dynamic analysis of both its determinants and effects based on this much expanded index of Labor Market Rigidity across countries and over time (which we call LAMRIG). Like the EPL index of BDLLS (2004), LAMRIG is a *de jure*

index because it reflects the rigidity of employment laws. It is designed to be as consistent as possible with the seminal BDLLS (2004) paper. While BBDLS covers 85 countries in approximately 1997, LAMRIG covers more than 120 countries in 5-year averages from 1960-64 to 2000-04.[2].

The main results are as follows. (1) In our much larger sample of countries with LAMRIG we confirm the finding of BDLLS that the levels of rigidity of employment protection legislation varies in a pattern consistent with the legal origins thesis. (2) The levels of rigidity reflected in LAMRIG change over time in such a way as, on the one hand, to reflect the aforementioned dynamic interpretation of the legal origins thesis but, on the other, to show that legal origins do not seem to be the most important explanation for these changes. (3) When we extend the analysis to a panel over time, the results diverge from those of BDLLS in demonstrating the applicability of political economy factors such as the role of economic crises (such as higher unemployment), structural factors and of other structural reforms (such as a preceding trade reform but not as much financial reform). (4) In the light of increasing concern for rising inequality throughout much of the world (e.g., Piketty 2014), we show results supporting the well-known conjecture (Freeman, 2010) that labor market rigidity reduces income inequality, but has no negative effect on economic growth.

The paper is organized as follows. The next section motivates and describes the construction of this new index of labor market regulation rigidity (LAMRIG.) Section 3 presents the methodological approach for examining the determinants of labor law rigidity. Section 4 presents the main econometric results, first on the determinants of LAMRIG and changes therein and then on the effects of LAMRIG on growth and inequality. The last section concludes with

[2] Extending coverage to developing countries is important because reforms in these countries "are larger in magnitude than any reforms in developed countries and their study can produce new insights on the benefits of labor regulation" (Djankov and Ramalho, 2009, p. 3).

suggestions for future research.

2. Constructing an index of the rigidity of labor laws across countries and over time

The vast majority of existing indicators of the rigidity of labor market legislation (1) are limited primarily to high-income or OECD economies, (2) use data covering the post-1995 period, and (3) tend to focus exclusively on *levels* of employment protection. Before discussing the construction of a new index that addresses each of these three limitations, we briefly review the existing alternative measures.

As noted in various surveys, e.g., Bertola (2009), Djankov and Ramalho (2009), Freeman (2010) and Betcherman (2014), the availability of EPL indexes over time for countries outside of the OECD and Latin America is very limited. To our knowledge, there are only a few indexes that have reasonable cross-country and over time coverage going back to the late 1960s or beyond. Aside from the Forteza and Rama index of ILO Conventions[3], almost all such indexes, e.g., Blanchard and Wolfers (2001), OECD (2004), Allard (2005a), do so exclusively for OECD or developed countries.[4] Another source with time coverage extending before the mid-1990s is the Job Security (JS) Index of Heckman and Pages (2000, 2004.) It covers most Latin American and Caribbean countries from the late 1980s to the late 1990s, at intervals a decade apart.

[3] Forteza and Rama (2006) and Rama and Artecona (2000) put forward an index of the rigidity of labor market institutions for over 100 countries based on the various conventions of the International Labor Office (ILO) signed by each country. These regulations may affect who is hired but not the extent to which firms can adjust their work force over time. It also has the disadvantage of having practically no variation over time since once a convention has been signed it is extremely unlikely to reverse that decision. Another index is that of Kucera (2002) concerning the rules governing unions and collective bargaining. This is based on sources such as the International Confederation of Free Trade Unions and the US State Department's Country Reports on Human Rights Practices. Another important source of such measures is the Fraser Institute which has been scoring a growing number of countries on a number of sub-indicators of economic freedom which since 2001 also include six sub-components reflecting "freedom of labor markets."

[4] These built upon a series of earlier studies such Lazear (1990), Grubb and Wells (1993), Addison and Grosso (1996), and Nickell (1997.) For other and more recent labor rigidity-related indexes for OECD countries see Nickell at al (2003), the Labor Market Reform data base (LABREF) of the European Commission, Bassaini et al (2009) , and Apaia et al (2007), Deakin et al (2007), Autor et al. (2009), Acharya et al. (2013), and Griffiths and Macartney (2014).

Although similar in spirit, the Heckman and Pages (JS) and Allard (EPL) indexes are built up from sources, methods and index aggregation procedures that are by no means identical. [5] Aleksynska and Schindler (2011) put forward a panel data base of annual observations on labor market regulations based on employment protection legislation, unemployment insurance systems and minimum wage regulations for 91 developed and developing countries, but mostly from only the 1990s onwards.

Clearly, no single index can reflect all relevant labor market institutions (such as wage flexibility, team production, social dialogue, pension plans, and workers use of the courts) that one might think could exercise influence on various economic outcomes (Freeman 2010). Although each of the indexes above captures important dimensions of the restrictiveness of labor laws and regulations for firms, as shown by Addison and Teixeira (2003), the various aggregate indices that have arisen are not always highly correlated and their application to issues like unemployment rates has sometimes resulted in opposite findings.

In what follows, we describe the construction of LAMRIG, our index of labor market legislation rigidity. Its construction makes use of the method of constructing aforementioned rigidity index of EPL of BDLLS for 85 countries in the late 1990s [6] and applies it to the labor laws found both in the ILO's depository of labor laws known as NATLEX and elsewhere. NATLEX contains the majority of labor laws of more than 150 countries since the late 1940s [7] and separates them into various categories. In the construction of LAMRIG, we use those from

[5] The JS index of Heckman and Pages is defined as the discounted value of dismissing a worker at an expected future date based on the likelihood and costs of dismissal implied by the labor laws and regulations (excluding the costs of court actions). As such, it is related to the Firing costs component of the BDLLS Employment Laws Index.

[6] The original version of the Employment Laws Index published in BDLLS Employment Laws Index was presented in Djankov et al (2003). It has been presented on different scales in different versions of their work. One major reason for its use is the comprehensiveness of both its country coverage and its coverage of different aspects of the labor laws (La Porta et al., 2008).

[7] NATLEX is freely available at http://natlex.ilo.org. The World Law Guide (LEXADIN at www.lexadin.nl) was also used. Whenever neither NATLEX nor LEXADIN contained a seemingly relevant law or at least sufficient information to compare it with that of another year for the same country, we resorted to separate searches for the laws of individual countries (see on-line appendix for these outcomes.)

the following categories (and sub-categories in parenthesis): (a) Conditions of work ("Hours of work, weekly rest and paid leave"), (b) Employment security, termination of employment, (c) Conditions of employment ("Labor contracts", "Wages" and "Personnel management") and (d) General provisions ("Labor codes, general labor and employment acts"). Although we drew on information from each of these four dimensions, we construct only a single aggregate index of restrictiveness of labor legislation. This is because we found that inevitable errors in coding arising from missing or ambiguous information at the component level could contribute to large measurement errors at the component level but only to much smaller ones at the aggregate level and also that changes in the individual components at any point in time tended to offset each other, making the aggregate more reflective of changes than those of individual components In the construction of the aggregate indexes we use the following step-by-step procedure.

In step (1) we compiled all the legal information on the four dimensions above from the laws obtained from NATLEX for around year 1997 and then map these into the EPL Index for the BBDLS' original 85 countries for 1997. This generates a map that links the laws in NATLEX to the scores given to them per country and as a group by BBDLS (2004). In Step (2) we use NATLEX to extend the BDLLS Employment Laws Index, again for about 1997, to an additional 60 countries. In Step (3) we use the information in NATLEX, LEXADIN and country-specific sources for years before 1997 and then again after 1997 until 2005 following the mapping produced in Steps (1) and (2).Only when we became convinced from multiple sources that there was no new labor law between years did we leave the indexes the same for different periods (as for example in Haiti between 1984 and 1995-99).

We subjected the individual country indexes over time to various cross-validations. For instance, we check whether or not the relevant portions of LAMRIG diverge from the indexes for corresponding components of Heckman and Pages (for LAC since the late 1980s), Blanchard-

Wolfers and Allard (for OECD since 1960), Deakin et al. (2007), the World Bank *Doing Business* indicator of labor market rigidity beginning in 2003, and other individual country studies.[8] In some cases, this led us to rethink our own assessments, but in general, we found considerable similarity in these despite the fact that, because of differences between the indexes, the correlations between them were usually well below 1. The end result is an unbalanced panel of scores on the LAMRIG index for well over 100 countries measured as 5-year averages from 1950-54 through 2000-04 wherever possible. As with BBDLS, the scores on LAMRIG range from 0 to 3.5, with higher values reflecting more rigid employment protection laws.[9] For some five-year periods LAMRIG covers as many as 145 countries.

As has been pointed out (e.g., Eichhorst et al. 2007, Freeman 2010, Acharya et al., 2013), whether higher scores are viewed as desirable or undesirable remains unsettled. For example, employers' associations and individual employers typically view them as harmful to investment, employment, and productivity. But, those supporting labor interests often see them as positive, helping to increase the legitimacy of working outside the home for individual workers and thereby creating larger and better organized labor markets. Still others (Agell, 1999, Boeri et al., 2000, Nicoletti et al., 2000) view the "goodness" of such indexes to be more complex, depending on the identity and magnitude of other market imperfections, regulations and so on. While we agree with the latter view, we follow convention in defining "reform" as reductions in LAMRIG over time.

To illustrate LAMRIG's contents Figure 1 shows the time paths of LAMRIG scores from the early 1960s to 2005 in five year averages for 10 different countries. We start in Figure 1a with

[8] In particular for the countries not included in the 85 country sample of Djankov et al. (2003) and BDLSS (2004) the subsequent Rigidity of Employment (ROE) Indexes (based on mostly the same individual indicators) in the World Bank's *Doing Business Surveys* for subsequent years 2003 and 2007 were used to cross-check.
[9] The minimum values of LAMRIG are for Australia in the 1960s, and its maximum values are for Spain in the 1980s and 1990s.

the Portugal and New Zealand comparison extensively discussed in BDLLS (2004). Specifically, BDLLS (2004) pointed out that New Zealand and Portugal were similar in a number of respects including income per capita (in the late 1990s) but differed in their legal traditions, i.e., New Zealand's legal system being based on English Common Law and Portugal's based on French Civil Law. BDLLS used this comparison to illustrate the aforementioned legal origins hypothesis that French Civil Law (and Socialist law) was associated with greater rigidity (of labor laws) than the English Common Law tradition. While in the 1995-9 period on which BDLLS concentrated the gap between the two countries is large, with 2.43 for Portugal but slightly less than 0.5 for New Zealand, in the early 1960s the gap between the two countries was negligible.[10] Clearly, if 1960-4 scores had been used, this comparison would not have been a good one for illustrating the power of the legal origins theory. Although as indicated above one could also argue that the English common law system might offer some benefits in terms of less rigidity over time, it would seem dubious that this difference would not have been realized in all the years prior to the 1960s and then why the gap grew so rapidly after that even though there was no change in the type of legal system between the 1960s and late 1990s.

Because this comparison between New Zealand and Portugal is such a well-known aspect of the legal origins literature, we should recognize that it has been revisited several times with various authors providing different measures of labor law rigidity in these two countries (usually within a broader set of OECD countries.) Anderson et al (2012) is one measure that deserves attention because they employ the BBDLS method (as we do here) to construct such measures for New Zealand (but not Portugal) between 1960 and 2010. This is also an effort worth of note because these indexes generated by Law School researchers (as opposed to economists or

[10] The dramatic increase in LAMRIG for Portugal in the late 1960s and 1970s coincides with the transition from a repressive dictatorship under Salazar (which was closely linked to a group of large conglomerate firms) to a more pro-labor dictatorship under Caetano and then in its 1974 revolution to a socialist government (Birmingham, 2003.)

political scientists.) Their index actually shows that the level of law rigidity in New Zealand reaches a minimum in the second half of the 1990s and thus implying that the gap between New Zealand and Portugal would have reached a maximum at that particular period which of course would be very favorable to the legal origins view. Anderson et al (2012) show that this is driven by the proposal, approval and implementation of the 1991 Employment Contract Act by the conservative National Party during its immediate post-election "honeymoon" period. In order to illustrate differences in the index over time in countries outside the OECD, Figure 1b shows LAMRIG scores for three large developing countries, India, China, and Brazil and Figure 1c those for five other smaller countries but in each case with the different countries representing different legal traditions. In Figure 1b represent English, Socialist and French legal origins, respectively. All three have had LAMRIG scores that were relatively high throughout the period. Socialist law China's LAMRIG started high with a score of 2.0 in the early 1960s but declined to 1.42 by 2000-4.[11] The rapid growth of China with declining LAMRIG scores after 1980 might be considered evidence in favor of the conventional view (e.g., Fallon and Lucas 1991, 1993) that rigid labor regulations distort the incentives in the labor market and hence are detrimental for growth. Common law India's LAMRIG score started at about 1.5 in the early 1960's (quite high compared to Common law New Zealand's) and hardly changed since.[12] The failure of India's

[11] Actually, the high score of China in the early years was not explicitly due to a its labor law since it really didn't have one until 1994 but rather to the restrictive rules governing state enterprises, the Industrial Enterprise Act of 1986 and the Regulation of Private Enterprise Act of 1988. With the 1994 Labor Act, the use of fixed term contract was allowed to a much greater extent and other incentives in labor use were provided to private enterprises which were then being encouraged.

[12] The comprehensive Deakin et al (2007) index is available for five countries since the 1970s. The conclusions for India using their index are similar to the ones using LAMRIG. The political power of India's trade unions would seem to help explain this. Deakin has also noted that the high value of India's index compared to many developing countries would be something of a surprise if one thinks its common law background was the sole or primary determinant. State-specific changes to the federal-level Industrial Disputes Act of 1947 are relevant because in India's federal system states are also granted the power to regulate industry, labor, health and other matters. A problem with the state level data is that some states were liberalizing while others were tightening regulations, making it difficult to aggregate them into all-India changes. We did so crudely based on the number of states moving in either direction, the magnitudes of these changes and the sizes of the respective states. .

relatively high index to decline might seem surprising to some and also to cast some doubt on the dynamic version of the legal origins theory.[13] (Finally, French civil law Brazil's LAMRIG started high (like China's) but rose in the late 1980s with the 1988 constitution before declining during the reformist Cardoso government and even more so with the ascendance of the Workers Party,[14] suggesting that left or right government orientation may not be such a fundamental determinant of these changes as some believe.

Finally, Figure 1c shows LAMRIG in five more developing countries from various regions and legal systems: Botswana and Zambia with English common law from Sub-Saharan Africa, Iran and Jordan from the Middle East and the Philippines from Asia (with French civil law). There are some quite substantial differences in the changes in the rigidity of employment protection legislation over time in these countries. Iran and Philippines saw LAMRIG scores rise quite sharply over time.[15] Jordan's LAMRIG was steady at a relatively high value of 2.7, before falling substantially in 1995-9 and then rising again in 2000-4. Botswana's LAMRIG started low in the 1970s, rose to 1.3 in the 1990s before falling to 1.05. Zambia's LAMRIG scores fluctuates a bit but remain fairly low over the whole period.

In summary, the behavior of LAMRIG over time and across countries indicates that such regulations differ considerably and change across countries and, more importantly, over time. Indeed, there are cases in which the rigidity of the regulations changed sufficiently over time so as to completely reverse earlier rankings, like those of New Zealand relative to Portugal or that of

[13] Its failure to decline, however, is certainly no surprise to those who have examined India's labor regulations over time (Fallon and Lucas 1991,1993; Saha 2006 and Saha et al 2013)

[14] Indeed, the loosening of labor regulations under Brazil's Labor party government came as a considerable surprise to many. For discussions of the Brazilian labor laws and their determinants and effects see Amadeo et al (1995), World Bank (1991), and Barros and Corseuil (2004).

[15] In both cases, these transitions seem to have been related to significant political transitions from extremely authoritative regimes supportive of large industrial conglomerates under Reza Pahlavi (the Shah), and Ferdinand Marcos, respectively, to regimes of different types but ones more receptive to labor organizations and sympathetic to workers. For Iran see Ladjevardi (1985) and Motavaseli and Ghasemi (2006). Similarly, for Jordan see Saif and El-Rayyes (2010) and for the Philippines see Villegas (1968) and Sicat (2004.)

China relative to Brazil and India. While LAMRIG differences across countries often reflect the low scores for Common Law countries and high ones for French Civil Law and Socialist countries as suggested by BDLLS (2004), this pattern is certainly not universal nor invariant over time. Especially because of the dynamic version of the legal origins thesis, and the possibility that other political and economic factors could also have important influences on labor regulations, further research with more complete data sets on the determinants and effects of employment protection legislation is clearly warranted.

3. Data and methodology

This section briefly describes the methodology we use to assess the reliability of our index of the rigidity of labor regulations as well as the required additional data. A natural starting point is to determine whether or not we can replicate the BDLLS (2004) results in their cross-sectional setting. To that end, based on the specification in Table IV of BDLLS (2004, p. 1366), the first model we estimate takes the form:

$$LAMRIG_i = \alpha_i + \beta_1 GDP_i + \beta_2 LO_i + \varepsilon_i \qquad (1)$$

where $LAMRIG_i$ is the index of Labor Market Legislation Rigidity for country i, GDP_i is the log of per capita GDP at the beginning of each 5-year period, and LO_i is a set of dummy variables for each legal origin dummy (French, German, and Scandinavian civil law, Socialist and English common law) for country i. BDLLS estimate this model by OLS with robust standard errors and data for the 85 countries for year 1997. They find that legal origins are a much more important determinant of labor market reform than per capita GDP (a proxy for efficiency), implying that the legal theories of institutional change are more important than efficiency and political theories (proxied by governance measures).

Next, we extend this baseline model to explain changes in LAMRIG over time. We also report estimates for OECD and non-OECD countries because richer countries may face different political and institutional constraints in modifying their labor laws than poorer countries. We also report results for splitting the sample into pre- and post-1980 time periods.[16]

Finally, we move to an estimation strategy better able to exploit the panel feature of the data. Since the key explanatory variables (legal origins) in BDLLS (2004) are time-invariant, to preserve them the starting point is the random-effects model:

$$LAMRIG_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 LO_i + \varepsilon_{it} \qquad (2)$$

where again $LAMRIG_{it}$ is the index of Labor Market Legislation Rigidity for country *i* measured as the average over a given 5-year period *t*. Nine five year periods are included, from 1960-1964 to 2000-4. Standard errors are clustered at the country level. We also report the panel data results for the split samples (OECD and non-OECD countries, and pre- and post-1980.)

While the above specifications refer to the levels of LAMRIG, reform is better thought of as changes in these levels. Since it is likely that the level of the index (because of reform inertia) may affect the likelihood and magnitude of reform in the next period, we first add a one-period (i.e. 5 year) lag of the dependent variable to the transformed baseline BDLLS model:

$$\Delta LAMRIG_{it} = \alpha + \beta_1 \Delta LAMRIG_{i,t-1} + \beta_2 GDP_{it} + \beta_3 LO_i + \beta_4 X_{i,t-1} + \varepsilon_{it} \qquad (3)$$

where $\Delta LAMRIG_{it}$ is the change in the index for country *i* between period *t* and period *t-1*, with periods defined as before. This model is estimated at first using random-effects with standard errors clustered at the country level and later using the Blundell-Bond System GMM estimator.

Finally, BDLLS (2004) compare the plausibility of legal origins, efficiency and political regime theories in explaining the cross-country (not over time) variation of EPL. Yet there may

[16] This split is motivated by the fact that 1980 marked the beginning of a period of considerably greater economic reform and globalization in countries around the world than in preceding years.

be other candidate explanations. In this paper we also assess some other possible explanations such as the roles of economic shocks, structural factors, political institutions and structural reforms. Econometrically, we re-estimate the dynamic model above by adding such factors into the vector of variables $X_{i, t-1}$, all lagged one period (which may help reduce endogeneity concerns.)

While the sources of data for the construction of the LAMRIG index has been identified above, the data for the other two variables in the baseline model, GDP per capita and legal origins, are taken from the Penn World Tables and the legal origins classification is the one provided in BDLLS (2004). For the other variables included in the model, such as the share of government expenditures in GDP, the ratio of foreign aid to GDP, the share of natural resource exports in total exports and the share of agriculture in GDP, we make use of data from World Development Indicators.

For examining the potential effect of economic crises, we include several measures, e.g., the largest single year of GDP fall that occurred in each five-year period (in percentage points, *Max fall GDP*), the number of years of negative GDP growth for each 5-year period, the number of years in a debt crisis within each five year period (*Debt Crisis*), current account balance (*CAB*)[17], and a dummy variable for periods with annual inflation above 50%. Likewise, to capture the effects of political crises, we make use of count variables for the assassination of important political leaders and general strikes during each five year period (data from Banks, 2005), and governance measures Democracy and POLCON. The Democracy measure is taken from the POLITY IV data set and POLCON (the Political Constraints Index) is from Henisz (2000). The Democracy variable is used to control for relative levels of democratic freedoms (coded on a 1 to 10 scale, with 10 high). POLCON measures the number of veto points in a political system, the expectation being that the larger the number

[17] CAB is an inverse measure of crisis.

of potential vetoes to be circumvented, the less likely it is that labor market reforms will be adopted. We also investigate the role of various conflict measures including the intensities of civil war and of international armed conflicts, both constructed from data from the *Correlates of War* project at the University of Michigan.

Finally, we study the role of other structural reforms – in particular, financial and trade liberalization - in affecting the probability and magnitude of labor market reform (changes in LAMRIG).[18] We proxy financial reform by three measures: the share of credit to the private sector in GDP, an index of the efficiency of the financial system, and the exchange rate premium in the black market (BMP). In the case of trade liberalization, we report three measures. One is the length in years of uninterrupted trade liberalization,[19] another is a measure of trade openness from PWT (*openk*, exports plus imports as a share of GDP). A third is the trade liberalization index developed by Campos, Nugent and Hsiao (2010), for extending the Sachs and Warner (1995) measure of trade openness.[20] Given critiques by Rodrik and Rodriguez (2001) of the trade openness index of Sachs and Warner (1995), we revise the ways in which both the export marketing boards (XMB) component of "open" and the threshold of tariff rates distinguishing an "open" from "closed" were calculated in the Sachs-Warner measure.[21]

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[18] On the relationship between trade liberalization and labor market reform see Fajnzylber and Maloney (2005), and references therein. For financial reform and labor market reform, see Pagano and Volpin (2008).
[19] From Appendix 2-B of Wacziarg and Welch (2008).
[20] This was already corrected and extended from 1970-1989 to 1990-99 by Wacziarg and Welch (2008). More specifically, these authors defined a country as closed (i.e., open =0) if it had any one of the following: (1) an average tariff rate of 40 per cent or more, (2) non-tariff barriers covering 40 per cent or more of trade, (3) a black market exchange rate that is depreciated by 20 percent or more relative to the official exchange rate, (4) a state marketing agency or board for major exports, and (5) a socialist economic system (as defined by Kornai 1992).
[21] Rodriguez (2006) pointed out that not all export marketing boards are distortive in the sense of discriminating against producers for export markets. For this reason, in our construction of the XMB component of open we take advantage of more recent information on XMBs (from World Bank and other sources) that distinguish between those marketing boards that in practice discriminate against producers for export and those which do not, as well as some of their other suggestions. With respect to the tariff rate threshold we follow Warcziarg and Welch (2008) in using a lower tariff rate threshold (20% instead of the 40% in the original S-W) to distinguish "open" from "closed".[21] Since most countries in the world had fallen below the 40% threshold by the mid- 1990s, this change has the effect of giving more weight to tariff barriers in the classification, something which had led Rodrik and Rodriguez (2001) to argue that the tariff component was actually playing virtually no role in the Sachs-Warner open measure.

4. Econometric results

While we have already revealed how LAMRIG was constructed and how it behaves across countries and over time, in this section we ask: What determines its dynamics? Which theories can better explain its changes over time and across countries? In addition to being interesting questions in themselves, answering them can also help evaluating the quality and capabilities of our index LAMRIG. In attempting to answer these questions, we make use of the same econometric model used in BDLLS (2004), but use it to explain the variation in LAMRIG across both the larger number of countries (than in BDLLS) and over time while drawing on a broader set of political economy theories, with emphasis on the effects of crises and structural reforms.

We begin our assessment in Table 1 by trying to replicate their findings (originally in their Table IV, BDLLS, 2004, p. 1663) based on the data from LAMRIG for the same sample of 85 countries for the single period around 1997. For ease of comparison the original BDLLS results for that sample are reported in column (1) of Table 1 As can be seen, the explanatory power of the model is high, the effect of income per capita is insignificant, the four legal origin dummy variables have statistically significant effects on their EPL index thereby supporting the claim that legal theories provide a strong explanation for the observed variation in employment protection legislation across countries.

In column (2) of Table 1 we apply the same specification but now to LAMRIG instead of their EPL index, for essentially the same year (actually the average for the 1995-1999 period), but with the larger sample of 142 developed and developing countries LAMRIG allows. The first thing to notice is that the effect of income per capita is now negative and significant (providing some support for what BDLLS called “the efficiency theory”) but the effects of all four legal origin dummy variables are even more significant than they were in BDLLS (2004), thereby

again supporting the legal origins theory).[22] Next, we apply the same specification to LAMRIG data but in this case applying it to its full time coverage from the early 1960s. Given that in the 1960s and even 1970s, the rigidity of employment protection legislation was in general rising, before stabilizing and declining in more recent years as globalization was intensifying, in columns (3) and (4) we report estimates based on LAMRIG but for pre- and post-1980 observations, respectively. While results for French and German legal origin dummies are similar to those of BDLLS, there are some differences in the effects of other variables. Using the between-effects panel estimator, the negative coefficient of the Log Per Capita GDP is again statistically significant in both periods but larger in the pre-1980 sample whereas the positive effect of the Scandinavian dummy is larger (and statistically significant) in the post 1980 sample.[23] In general, however, the results seem very much in line with BDLLS and reinforce our confidence that LAMRIG is actually an adequate measure of the rigidity of labor regulations not only across countries but also over time.

Columns (5) and (6) show results obtained by splitting the sample into OECD and non-OECD subsamples. Notice that with LAMRIG, the non-OECD sample is considerably larger than the OECD sample. Again the various Civil Law dummies show significant positive influences on LAMRIG in both samples, but with the French Legal Origin dummy having a weaker effect in the non-OECD countries than in the OECD sample. The most striking difference between the samples, however, is the difference in the effect of per capita GDP, large and positive for the OECD, but negative and significant in the non-OECD sample. These results suggest that employment protection legislation tends to be more rigid among the richer countries in the OECD

[22] This result may not seem entirely surprising when one considers that our LAMRIG index is available for 142 countries (compared to the 85 countries of BDLLS) with most of the difference accounted for by lower income countries.

[23] We have also run these specifications for each 5-year period. We find that it is only for the 1960-64 and 1965-69 cross-sections that the coefficients on the legal origins are not statistically significant.

but less rigid among poorer countries.

Next, we turn to the relative ability of the legal origins and other theories to explain the changes in LAMRIG over time and across countries as is relevant to identifying the determinants of labor market reforms. Table 2 reports the results obtained for changes in LAMRIG, first, for the full sample (an unbalanced panel of 855 observations) and then, for the same subsamples as in Table 1. We start estimating the determinants of changes in LAMRIG using the random-effects estimator and standard errors clustered at the country level, as in equation (3) above.[24] Once again, we find considerable variation in terms of the effects of per capita GDP: positive and significant in the pre-1980 sample, and negative and significant in the non-OECD and now also in the OECD samples. For the full and post-1980 samples, the coefficient of per capita GDP is not statistically significant. With the exception of the Scandinavian law dummy, the coefficients of the Civil Law Origin variables are no longer positive and statistically significant. In fact, they are even negative and significant (but small) in both the post-1980 and non-OECD samples.[25] In general, therefore, when it comes to changes over time in employment laws (one aspect of labor market reform), these results cast doubt on the greater ability of the dynamic version of the legal origins theory to explain changes in LAMRIG than the efficiency theory (proxied, as in BBDLS, by per capita GDP).[26]

Next, we assess the third category of theories of low labor market regulations considered by

[24] We report estimates from the Blundell-Bond System GMM estimator with Windmeijer-corrected standard errors. The results from Arellano–Bond test for serial correlation in the first-differenced errors and from the Sargan test of overidentifying conditions are reported at the bottom of each table. As can be seen, by and large, they strongly support the validity of the underlying moment conditions.

[25] We also tested for non-linearities in the effects of per capita GDP but did not find any supporting evidence.

[26] We have also estimated a variant of Table 2 in which each of the five legal origin dummies is interacted with the time trend. Since the results in the corresponding columns of this table are even more inconsistent across the different columns of the table and fewer are ever statistically significant, in the interest of space these results are not presented here but are available on request. These results are even more inconsistent with hypotheses of BDLLS in that (1) the efficiency measure is rather consistently the strongest variable, and (2) the positive effect of the interaction of the time trend with the English common law dummy showing that the labor laws of English common law countries become more rigid over time.

BDLLS are determined, namely, political theory. If workers have more political power, they would succeed in getting more protective employment laws passed. Workers can further their political power, not only through traditional organizations (like trade unions and legal use of strikes), but also through other political institutions, such as democratization, constraints on executive power, and in the context of less developed countries, with more extreme political instability manifestations (e.g., civil wars.).

Since in this context especially, there could well be reversed causality and other sources of endogeneity in the variables on the right hand side of equation (3), in Table 3 we report results obtained from use of the Blundell-Bond System GMM estimator for comparative evaluation of the three main theories considered by BDLLS. The results for each of the different political measures are presented in the six columns of Table 3: those for Democracy in column (1), the political constraints index (POLCON) in column (2), assassinations in column (3), strikes in column (4) , and international and civil wars in columns (5) and (6), respectively. Democracy has a negative but insignificant effect on the change in LAMRIG as does POLCON (the latter reflecting checks and balances). By the same token, neither strikes, nor assassinations, nor even civil and international wars have significant effects on changes in LAMRIG (i.e., on labor market reforms.) Moreover, in this case none of the legal origin dummies affects changes in LAMRIG. The negative and significant effects of per capita GDP remain in all but one of the specifications. In general, therefore, neither the legal origins or political theories seems to be successful in explaining observed changes in employment laws. Given this failure, it seems appropriate to consider other potential explanations. The political economy literature suggests various candidates (Drazen 2000, Persson and Tabellini 2000) such as structural features, economic crises and other structural reforms). The results for each of these are presented in Tables 4, 5 and 6, respectively.

Table 4, therefore, reports System GMM estimates where the additional variables of interest are one or another of the following structural measures: the Gini coefficient for income inequality, the government share in GDP, the share of foreign aid in GDP, natural resource exports as a share of total exports, and the share of agriculture in GDP. Except in column (1), where the Gini is the structural indicator, the effect of the lagged dependent variable is positive and significant and in most cases, the effect of GDP per capita is negative and statistically significant.[27] Again the legal origin dummies are seldom statistically significant. Most importantly, however, the table reveals that none of the individual structural indicators has a significant effect on changes in LAMRIG. Because of missing observations, sample sizes are smaller in columns (1) and (5).

Accordingly, Table 5 presents estimates of similar specifications for changes in LAMRIG as in Table 4, but in this case for different measures of economic crises. Column (1) presents the results when crisis is captured by a debt crisis dummy. Columns (2) –(5) report the results for inflation rates (above 30% per annum), the maximum fall in GDP over the period, the number of years of falling GDP within the five year period, and the unemployment rate, respectively. [28] The effects of Per Capita GDP are negative and significant in all columns but only one of the economic crisis measures seems important, unsurprisingly the (one-period lagged) unemployment rate. High unemployment leads to the loosening of labor regulations. This is interesting for at least two reasons. First, it provides some support for the commonly held view that crises beget reforms, but at the same time it shows that this is limited to only a very specific type of crisis (Campos et al., 2010). Second, the association between labor market reform and lagged unemployment rates raises interesting questions about the actual direction of causality.

[27] Because of missing data for this variable, sample size is greatly reduced.
[28] We have also estimated these specifications separately for each of the legal origin sub-samples. The conclusions above about the limited impact of economic crises remain.

Finally, Table 6 focuses on the effects on changes in LAMRIG of various policy or institutional reforms, in particular financial and trade reforms, again entering in lags to minimize endogeneity concerns. In columns (1) – (3) we present the results for the effects of three alternative measures of trade reforms. Column (4) presents estimates for the effects of black market premium (BMP) which should be considered an inverse measure of reform, while columns (5) and (6) present results for two alternative measures of financial market development, namely, the share of credit to the private sector in GDP and a Financial Reform Index, respectively.

Overall, we find positive effects for the lagged change in LAMRIG, negative effects of per capita GDP and, again, insignificant effects from legal origin. The effects of the various lagged reform measures are interesting. When trade openness is measured by the first two measures, the results reveal positive and significant effects on LAMRIG changes, whereas when the inverse measure BMP is used, an increase in BMP has the effect of reducing LAMRIG. On the other hand, neither the financial reform indicators nor the less policy-related but very common measure of trade liberalization, *openk* from the Penn World Tables, has significant effects on the change in LAMRIG. The findings on the inverse relationship between trade liberalization and labor market reform support the large body of evidence on their relationship with poverty (Winters et al 2004) and inequality (Goldberg and Pavcnik 2007). Attention has now focused on the ability of domestic markets to adjust to changes in the economic environment, such as within-country labor and capital mobility (Artuc et al. (2010), Cosar (2010), Helpman and Itskhoki (2010) and Kambourov (2009)). Workers employed in import-competing sectors will resist trade liberalization since it is they who would have "the most to lose." Yet because jobs in the import-competing sectors are generally in the formal sector (or to put it differently, informal sector jobs are mostly in non-tradables.) Since employment protection legislation by definition only applies

to formal sector workers who are largely in import competing sectors, the results above provide further support for this explanation.

We have also investigated a number of additional factors lying behind these findings, such as cultural factors and external influences such as through foreign aid or labor union pressures. Since labor market mobility might be expected to impose greater costs in societies in which family ties are stronger, a finding supported by Alesina et al. (2010) based on data from the World Value Surveys for about 60 countries at two points in time, we have replicated this result using LAMRIG for the same two points in time. With respect to the role of foreign pressure in implementing labor market reform, we have generated results showing that neither the share of foreign aid in GDP nor complaints against violations of international labor conventions have had significant effects on LAMRIG. In the interest of space, these results are not presented here but are available upon request.

Before concluding, we deem it relevant to at least briefly re-examine with this LAMRIG data set two findings : namely, (1) from Freeman (2008) that more rigid labor regulations "reduce the dispersion of earnings and income inequality," and (2) from Freeman (2010) that "the effects on other aggregate outcomes, such as employment and unemployment are inconclusive" (Freeman, 2010.) The intuition for the expected inverse relationship between employment protection legislation and income inequality is that EPL protects employment (and the income from employment) for the majority of the population (employees) against a minority (employers) so as to keep overall income inequality in check. Yet, the relationship between employment protection and growth can be ambiguous because, while on the one hand employment protection legislation hinders worker mobility and hence supports and prolongs inefficient worker-firm matches that hurt economic growth, on the other hand, the effect can be the opposite if employment protection legislation promotes innovation (Agell, 1999; Acharya et al.2010.)

The use of LAMRIG provides an at least somewhat improved opportunity for investigating these two interesting hypotheses.

The first three columns of Table 7 display simple regressions with the Gini coefficient for income inequality as the dependent variable, while columns 4 to 6 have the growth rate of per capita GDP as dependent variable. Columns 1 to 3 show that Freeman's finding of a negative relationship between employment protection and inequality obtains when the larger set of labor regulation rigidity indexes of LAMRIG is used with each of three alternative specifications. Indeed, this result seems stronger than that obtained by Calderón et al (2005) who find no effects on inequality from their *de jure* employment protection index (based on ILO conventions ratifications) and only weak effects from their *de facto* employment protection.. Column 1 supports this view, when only one other control is included, namely, the level of development. Column 2 does the same while adding a squared term to allow for non-linearity in the effect of the level of development. In column 3 we also add other controls, the share of government expenditures in GDP (as in Calderón et al., 2005), and an index of ethnic fractionalization for 1961 (the beginning of the period under investigation). While the latter measure seems positively related to income inequality, the addition of these controls does little to weaken the observed negative relationship between LAMRIG and income inequality.

Columns 4 to 6 display the results of adding LAMRIG to a standard growth regression. The simplest specification (column 4) suggests an inverse relation between LAMRIG and growth rates, implying that more rigid employment protection legislation is associated with lower rates of per capita GDP growth. However, the results in columns 5 and 6 show that, when standard growth determinants (such as investment and human capital) and regional dummies are added to the model, the estimate of this effect changes from negative and significant to positive but not significant. Hence, our results with the larger set of labor regulation indexes afforded by

LAMRIG support Freeman (2008, 2010) in asserting that the relationship between employment protection and income inequality seems to be negative but that with economic growth is inconclusive. It should be clear, however, that this last exercise is by no means the main objective of the present paper and given the formidable methodological issues involved in estimating such a relationship, such as endogeneity, measurement error, and self-selection, the results should be treated with caution, but nevertheless pointing to the potential usefulness of further research along these lines.

5. Conclusions and suggestions for future research

Despite recognition that employment protection legislation can contribute in one or more important ways to labor market rigidity and thereby to both its causes and effects, data limitations have so far hampered our ability to deepen our understanding of its causes, dynamics and implications, especially for developing countries. The objective of this paper is to address this state of affairs by putting forward a new index of the rigidity of labor market regulations over time and across a large number of countries (called LAMRIG). With the use of LAMRIG we find that the extent of employment protection legislation varies considerably not only across countries but also over time. For variations across countries the legal origins theory of BDLLS seem to apply quite well, perhaps even more strongly than had been thought previously. Yet with respect to variations over time, even though there is a variant of the legal origins that could well explain changes over time, in general our results suggest that legal origins turn out *not* to be an important determinant of these changes. This is true once we use system GMM estimation methods to deal with potential endogeneity and other well-known methodological problems. When we go beyond legal origins analysis to examine the effects of a number of other political economy influences, we identify a number of important findings that are also rather robust across different

specifications. Important among these seem to be the effect of increases in GDP per capita and differences therein between OECD and non-OECD countries, preceding trade reforms, and one specific aspect of economic crisis (high unemployment rates) Along with a smaller role of legal origins, our baseline results suggest that countries with lower per capita GDP tend to have lower levels of LAMRIG (meaning the greater flexibility of labor laws) and that while trade liberalization in the preceding period tends to increase the rigidity of labor laws, financial liberalization has the opposite effect. Last, we show that LAMRIG can help confirm the Freeman conjecture (Freeman, 2010), namely that labor market reform increases income inequality, but has an ambiguous effect on economic growth.

The results presented here are clearly only the beginning of a fuller analysis of the determinants of levels of and changes in employment protection legislation across large number of countries and over time. We think it would be useful to further examine the robustness of the results, e.g., in view of the differences in some of the effects between pre- and post- 1980 samples and between OECD and non-OECD samples.

We believe these findings can be of potential importance to policy-makers as they provide useful new evidence in terms of the determinants of labor market reforms. The emphasis on time-invariant legal origins leaves little room for policy. Yet results based on LAMRIG suggest instead that changes in labor market laws are positively related to past changes and prior trade reforms, and negatively to income, unemployment rates and financial liberalization. For instance, we find that trade liberalization in the previous 5-year interval is systematically and positively related to increases in employment protection legislation in the current period (conditional on per capita GDP and legal origins). This is consistent with workers reacting to the process of opening up of the economy by voting or lobbying for job protection. This would suggest that policy-makers will do well to consider such possibilities in designing, implementing and choosing the

implementation sequence of comprehensive packages of structural reforms.

We believe future research would benefit from the construction of indexes with similar time and country coverage as LAMRIG by digging deeper into the ever-improving availability of information on labor laws over time and across countries for years after 2004 when our study terminates. We also believe that it would be beneficial to extend the use of LAMRIG to reexamine its effects on other labor market outcomes that have been investigated previously but with shorter data sets. Finally, annualizing and updating LAMRIG following the leads of Deakin et al. (2007), Muravyev (2010) and the various other researchers focusing primarily on OECD and transition countries, will certainly be valuable in that it will allow researchers to better understand the recent dynamics of the employment protection legislation before, during and after the Great Recession that started in 2007.

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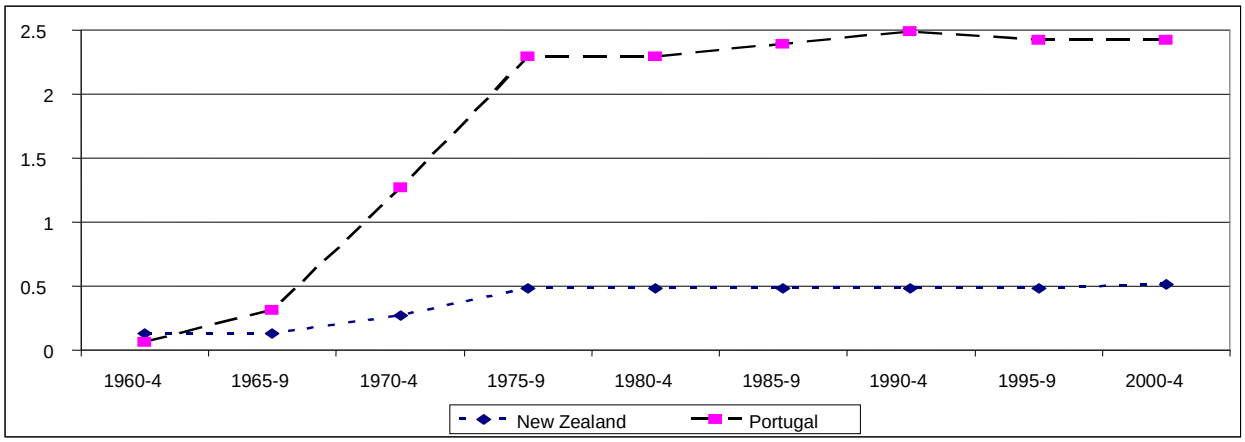
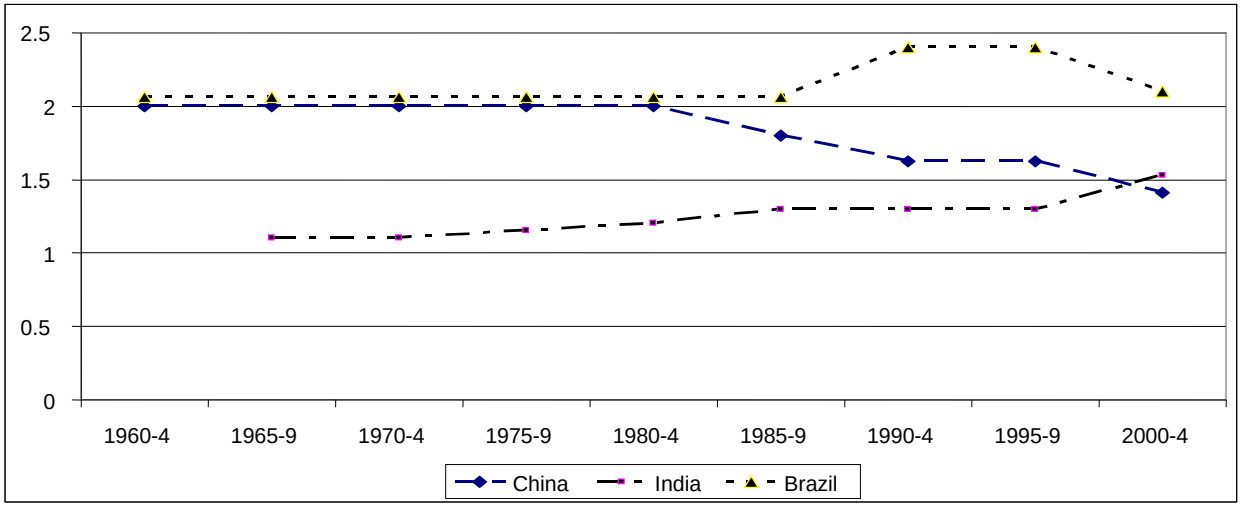
Figure 1. Rigidity of Employment Protection Legislation across Countries Since 1960





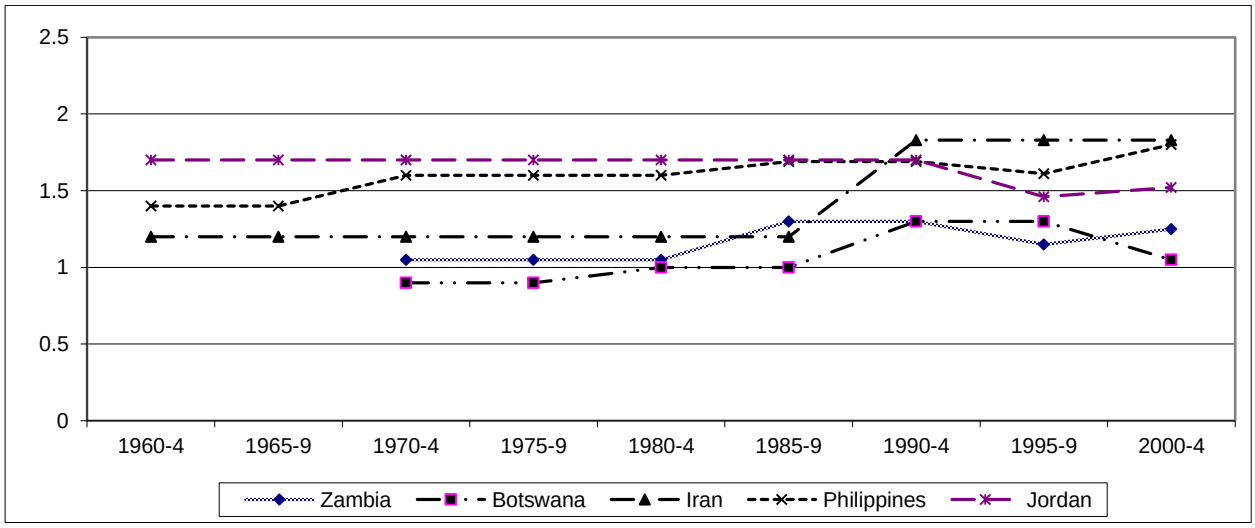


Table 1
Regulation of Labor and Legal Origins

	[1] BDLLS (2004)	*[2] LAMRIG*	*[3] Pre 1980*	*[4] Post 1980*	*[5] OECD*	*[6] Non-OECD*
Log Per Capita GDP	-0.001	-0.0775***	-0.227***	-0.0890**	0.321	-0.0805*
	[0.0116]	[0.0295]	[0.0621]	[0.0352]	[0.382]	[0.0413]
Legal origin dummies:						
Socialist	0.2943***	0.721***		0.775***		0.764***
	[0.0453]	[0.116]		[0.130]		[0.131]
French	0.2474***	0.462***	0.610***	0.509***	1.098***	0.393***
	[0.0381]	[0.0696]	[0.113]	[0.0781]	[0.288]	[0.0802]
German	0.1553**	0.516***	0.590***	0.623***	0.666	0.621***
	[0.0702]	[0.116]	[0.217]	[0.122]	[0.397]	[0.134]
Scandinavian	0.3865***	0.935***	0.554**	1.142***	1.101***	
	[0.0462]	[0.110]	[0.257]	[0.197]	[0.325]	
Constant	0.3072***	1.886***	2.525***	1.909***	-2.289	1.849***
	[0.1038]	[0.247]	[0.436]	[0.289]	[3.300]	[0.310]
Observations	85	142	371	484	222	633
R-squared	0.44	0.348	0.307	0.360	0.513	0.289

Notes: Results in column 1 are for comparison purposes: they are OLS estimates taken from Botero et al., Table IV (2004, p. 1366). They have their "employment laws index" as dependent variable. Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. The dependent variable in columns 2-6 is our Index of Labor Market Legislation Rigidity (LAMRIG). Columns 3 and 4 report results (panel between estimator) for the sample split in before and after 1980, respectively. Columns 5 and 6 report results (panel between estimator) for the sample split in OECD and non-OECD countries, respectively. Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages.) Robust standard errors in brackets, *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 2
Changes in the Regulation of Labor and Legal Origins

	[1] Pooled OLS	*[2] Pre 1980*	*[3] Post 1980*	*[4] OECD*	*[5] Non-OECD*
Log Per Capita GDP	-0.00223	0.0383***	0.00351	-0.0521***	-0.00873**
	[0.00515]	[0.0120]	[0.00643]	[0.0162]	[0.00364]
Legal origin dummies:					
Socialist	-0.0150		-0.0106		0.00418
	[0.0359]		[0.0355]		[0.0357]
French	-0.00347	0.0185	-0.0186*	0.0488	-0.00982*
	[0.0106]	[0.0196]	[0.0112]	[0.0301]	[0.00570]
German	-0.0351	0.00384	-0.0771*	0.0392	-0.0664**
	[0.0331]	[0.0328]	[0.0393]	[0.0269]	[0.0303]
Scandinavian	0.0986***	0.179***	-0.0890*	0.0678**	
	[0.0362]	[0.0494]	[0.0478]	[0.0343]	
Constant	0.0515	-0.223***	-0.00187	0.519***	0.0848***
	[0.0388]	[0.0833]	[0.0497]	[0.139]	[0.0272]
Observations	855	371	484	222	633
Number of countries	142	100	142	23	119

Notes: The dependent variable in columns 1-5 is the change in the Index of Labor Market Legislation Rigidity (LAMRIG). Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. Because these legal origins variables are time-invariant, we use the random-effects panel estimator with standard errors clustered at country level (except in Column 1 where we report the pooled OLS estimates for comparison). Columns 2 and 3 report results for the sample split in before and after 1980, respectively. Columns 5 and 6 report results for the sample split in OECD and non-OECD countries, respectively. Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 3
Changes in the Regulation of Labor, Legal Origins and Political Factors

	[1]	*[2]*	*[3]*	*[4]*	*[5]*	*[6]*
Lag ΔLAMRIG	0.264***	0.314***	0.285***	0.277***	0.205***	0.265***
	[0.0636]	[0.0582]	[0.0632]	[0.0648]	[0.0794]	[0.0542]
Log Per Capita GDP	-0.0347**	-0.0504**	-0.041***	-0.032**	-0.0192	-0.0427***
	[0.0147]	[0.0202]	[0.0141]	[0.0140]	[0.0137]	[0.0156]
Legal origin dummies:						
Socialist	0.845	0.862	1.424	1.273	2.622	8.291
	[2.860]	[2.471]	[2.820]	[3.285]	[12.43]	[17.21]
French	-0.163	0.106	-0.275	-0.214	0.135	-0.759
	[0.654]	[0.597]	[0.658]	[0.752]	[0.370]	[1.162]
German	0.560	0.627	0.387	0.458	0.230	-0.216
	[0.556]	[0.474]	[0.484]	[0.552]	[1.268]	[0.941]
Scandinavian	0.336	0.491	0.236	0.297		0.0565
	[0.401]	[0.442]	[0.484]	[0.464]		[0.767]
Democracy	-0.00108					
	[0.00572]					
Political constraints		-0.0576				
(POLCON)		[0.0959]				
Assassinations			0.0367			
			[0.0248]			
Strikes				-0.0113		
				[0.0118]		
International conflict					0.00506	
(war)					[0.00995]	
Civil war (intensity)						0.00521
						[0.00494]
Constant	0.296	0.273	0.398	0.300	0.0388	0.703
	[0.278]	[0.366]	[0.401]	[0.327]	[0.204]	[0.648]
Observations	711	708	721	721	421	589
Number of countries	134	137	137	137	85	103
AR(2) (p-value)	0.6012	0.7865	0.6458	0.5827	0.7421	0.6251
Sargan (p-value)	0.6194	0.0350	0.5889	0.1407	0.9986	0.6187

Notes: The dependent variable in columns 1-5 is the change in the Index of Labor Market Legislation Rigidity (LAMRIG). Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. We report Blundell-Bond System GMM estimates (with Windmeijer-corrected standard errors in brackets.) Democracy and the extent of political constraint variables capture formal political institutions, strikes and assassinations reflect ad hoc (violent) attempts at conflict resolution, while civil war and international war capture violent political conflict and instability Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 4
Changes in the Regulation of Labor, Legal Origins and Structural Factors

	[1]	*[2]*	*[3]*	*[4]*	*[5]*
Lagged ΔLAMRIG	-0.00836	0.284***	0.304***	0.285***	0.315***
	[0.0981]	[0.0646]	[0.0758]	[0.0587]	[0.0983]
Log Per Capita GDP	-0.0780	-0.0333***	-0.0440***	-0.0358***	-0.0127
	[0.0856]	[0.0119]	[0.0124]	[0.0115]	[0.0326]
Legal origin dummies:					
Socialist		0.975	0.137	0.850	-0.623
		[0.923]	[0.832]	[1.094]	[17.07]
French		-0.108	0.495	-0.215	-0.923
		[0.523]	[0.473]	[0.387]	[1.512]
German	-0.0199	0.475	1.366	0.369	-0.150
	[0.584]	[0.604]	[0.948]	[0.551]	[1.485]
Scandinavian	0.0676	0.425	0.543*	0.342	-0.378
	[0.462]	[0.391]	[0.303]	[0.324]	[1.143]
Income Gini	-0.00258				
	[0.00687]				
Govt Share in GDP		0.000613			
		[0.000977]			
Foreign Aid to GDP			8.11e-05		
			[0.00167]		
Natural Res Exports (%)				0.000672	
				[0.000787]	
Agric Share in GDP					0.136
					[0.333]
Constant	0.758	0.241	-0.0184	0.339	0.603
	[0.672]	[0.359]	[0.323]	[0.253]	[1.036]
Observations	202	726	663	723	472
Number of countries	107	135	136	139	105
AR(2) (p-value)	n.a.	0.6401	0.6285	0.6779	0.4071
Sargan (p-value)	n.a.	0.3969	0.4016	0.5427	0.4602

Notes: The dependent variable in columns 1-5 is the change in the Index of Labor Market Legislation Rigidity (LAMRIG). Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. We report Blundell-Bond System GMM estimates (with Windmeijer-corrected standard errors in brackets.) The table shows the results from including various important structural factors, such as the Gini coefficient of income inequality, the ratio of foreign aid receipts to GDP, the percentage of natural resources in total exports, and the share of agriculture in GDP. Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 5
Changes in the Regulation of Labor, Legal Origins and Economic Crises

	[1]	*[2]*	*[3]*	*[4]*	*[5]*
Lagged ΔLAMRIG	0.275***	0.291***	0.267***	0.259***	0.315***
	[0.0709]	[0.0629]	[0.0595]	[0.0604]	[0.0717]
Log Per Capita GDP	-0.0461**	-0.0446***	-0.0335***	-0.0328***	-0.0404**
	[0.0186]	[0.0165]	[0.0113]	[0.0114]	[0.0173]
Legal origin dummies:					
Socialist	0.229	1.129	1.142	1.245	0.416
	[1.288]	[2.887]	[2.694]	[2.704]	[1.086]
French	-0.0660	-0.164	-0.190	-0.210	0.605
	[0.607]	[0.579]	[0.636]	[0.663]	[0.414]
German	0.607	0.530	0.570	0.575	0.953*
	[0.616]	[0.451]	[0.545]	[0.558]	[0.577]
Scandinavian	0.230	0.324	0.302	0.288	0.689*
	[0.396]	[0.407]	[0.416]	[0.434]	[0.413]
Debt Crises	-0.00115				
	[0.00645]				
High Inflation (>30% p.a.)		-0.0247			
		[0.0211]			
Max Fall of GDP			0.000498		
			[0.00106]		
Years of Negative GDP Growth				-0.00930	
				[0.00956]	
Unemployment ILO					-0.0143***
					[0.00516]
Constant	0.362	0.374	0.293	0.304	0.0266
	[0.360]	[0.286]	[0.333]	[0.336]	[0.302]
Observations	635	700	742	742	526
Number of groups (countries)	138	138	139	139	124
AR(2) (p-value)	0.8672	0.6169	0.6090	0.5904	0.9671
Sargan (p-value)	0.6531	0.2730	0.4720	0.4351	0.3678

Notes: The dependent variable in columns 1-5 is the change in the Index of Labor Market Legislation Rigidity (LAMRIG). Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. We report Blundell-Bond System GMM estimates (with Windmeijer-corrected standard errors in brackets.) The table investigates the crises beget reform hypothesis by showing results from including various aspects of economics crises, such as a dummy for debt crises, output contractions, and high inflation and unemployment. Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 6
Changes in the Regulation of Labor, Legal Origins and Trade and Financial Reforms

	[1]	*[2]*	*[3]*	*[4]*	*[5]*	*[6]*
Lagged ΔLAMRIG	0.268***	0.254***	0.259***	0.337***	0.164*	0.337***
	[0.0632]	[0.0646]	[0.0648]	[0.0755]	[0.0963]	[0.0744]
Log Per Capita GDP	-0.0600***	-0.0545***	-0.0403***	-0.0620***	-0.089***	-0.0595***
	[0.0175]	[0.0176]	[0.0110]	[0.0167]	[0.0281]	[0.0201]
Legal origin dummies:						
Socialist	2.426	0.736	0.799	1.608		0.198
	[3.723]	[1.365]	[1.718]	[3.370]		[2.092]
French	-0.174	-0.405	-0.376	-0.00358	-0.548	0.910
	[0.635]	[0.649]	[0.596]	[0.766]	[1.570]	[1.719]
German	0.444	0.157	0.0345	0.594	0.212	1.625
	[0.529]	[0.714]	[0.851]	[0.687]	[1.293]	[2.214]
Scandinavian	0.214	0.197	0.278	0.230	0.0726	0.682
	[0.402]	[0.420]	[0.428]	[0.654]	[0.879]	[0.688]
Wacziarg Openness	0.110**					
	[0.0479]					
Trade Liberalization		0.0836**				
		[0.0419]				
PWT openk			-0.000125			
			[0.000488]			
BMP				-1.4e-06***		
				[5.27e-07]		
Credit Private Sector					1.89e-08	
(share of GDP)					[4.80e-08]	
Financial liberalization						-0.0192
						[0.0819]
Constant	0.434	0.573	0.522	0.459	0.997	-0.166
	[0.330]	[0.409]	[0.365]	[0.500]	[0.841]	[1.127]
Observations	710	705	703	622	406	658
Number of countries	125	134	130	118	94	131
AR(2) (p-value)	0.7472	0.6835	0.5593	0.6728	0.5496	0.9210
Sargan (p-value)	0.3478	0.2174	0.5101	0.1398	0.0675	0.0345

Notes: The dependent variable in columns 1-5 is the change in the Index of Labor Market Legislation Rigidity (LAMRIG). Log per capita GDP is from the Penn World Tables 6.2 and the legal origins dummies are from Botero et al (2004), with English Civil Law as the omitted category. We report Blundell-Bond System GMM estimates (with Windmeijer-corrected standard errors in brackets.) The table investigates the role of other structural reforms such as trade and financial liberalization. Results are reported for an unbalanced panel of 145 countries between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.

Table 7
The Regulation of Labor, Income Inequality and Economic Growth

	Income inequality (Gini coefficient)			*Per capita GDP growth rates*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Lag gini	0.693***	0.734***	0.557***			
	[0.0652]	[0.0647]	[0.0783]			
Log per capita GDP	0.106	-6.289	-6.955			
	[0.461]	[4.992]	[4.813]			
Log per capita GDP Squared		0.421	0.370			
		[0.294]	[0.287]			
LAMRIG	-2.353**	-2.966**	-3.195***	-0.413**	0.204	0.165
	[1.079]	[1.279]	[1.195]	[0.183]	[0.172]	[0.160]
Log Human Capital		0.445	4.310*		0.398	-0.0270
		[2.208]	[2.359]		[0.388]	[0.369]
Government share of GDP			0.0311		-0.0158	-0.0135
			[0.0373]		[0.0117]	[0.0116]
Ethnic fractionalization			36.91***		-1.263**	-0.887*
			[11.42]		[0.536]	[0.533]
Initial per capita GDP				-0.390***	-1.010***	-0.872***
				[0.111]	[0.190]	[0.178]
Investment					0.0862***	0.0659***
					[0.0212]	[0.0184]
Africa dummy						-1.410***
						[0.523]
Latin America dummy						-0.588*
						[0.357]
Asia dummy						1.469***
						[0.393]
Constant	15.31***	51.57***	31.85*	4.474***	7.142***	7.179***
	[5.494]	[16.54]	[18.30]	[0.854]	[1.205]	[1.161]
Observations	560	560	458	791	641	641
Number of countries	123	123	85	134	92	92

Notes: The dependent variable in columns 1-3 is the Gini coefficient for income inequality (source is the UNU/WIDER database), while the dependent variable in columns 4 to 6 is the growth rate of per capita GDP (source is PWT 6.2). LAMRIG is our Index of Labor Market Legislation Rigidity. Log per capita GDP is from the Penn World Tables 6.2. Results are reported for an unbalanced panel between 1960 and 2005 (non-overlapping 5-year averages), *** denotes statistically significant at 1%, ** at 5% and * at 10%.