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The dynamics of the regulation of labor in developing and developed countries since 1960

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The Dynamics of the Regulation of Labor in Developing and Developed Countries since 1960

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Jeffrey B. Nugent

September 2012

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
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The Dynamics of the Regulation of Labor in Developing and Developed Countries since 1960

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ABSTRACT

The Dynamics of the Regulation of Labor in Developing and Developed Countries since 1960*

This paper examines both the determinants and the effects of changes in the rigidity of labor market legislation across countries over time. Recent research identifies the origin of the legal system as being a major determinant of the cross-country variation in the rigidity of employment protection legislation. However, the supporting evidence is largely confined to levels of regulation and is almost exclusively based on international cross-section data for the post-1995 period. This paper introduces a new index capturing the rigidity of employment protection legislation (LAMRIG) for an unbalanced panel of more than 140 countries over time starting in 1960. Although the importance of legal origins in explaining the *level* of rigidity of labor regulations across countries is replicated using LAMRIG, their explanatory power is much weakened for *changes* over time (1960-2004.) More important as determinants of such changes are the level of development and other reforms such as trade liberalization. With respect to the effects of changes in the rigidity of labor regulations on growth and inequality, which have been very controversial in the literature, results with LAMRIG support Freeman's conjecture that changes in rigidity do not systematically affect economic growth but do lower income inequality.

JEL Classification: J41, J65, J33, K31, O21

Keywords: employment protection legislation, labor market institutions, reforms

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I. Introduction

Structural reforms in the labor market almost inevitably involve changes in employment protection legislation (hereafter EPL). Such changes have important consequences in terms of economic growth and income inequality. Given that few other structural reforms affect so many economic agents (workers, firms, unions, government, and consumers) at the same time and in such a comprehensive manner, it is hardly surprising that labor market reforms are implemented more slowly and less frequently than other reforms.

The vast economics literature on EPL has three main features. It mostly (a) focuses on richer countries, (b) uses data covering the post-1995 period, and (c) studies levels of EPL, not changes. The rationale for these features is that data covering both a large number of developed and developing countries and going back in time to well before 1995 are still lacking. Consequently, there are very few studies of labor market reforms, that is, of changes in EPL over time as opposed to levels of EPL at one point in time. The objective of this paper is to introduce a new EPL index covering more than 140 countries in 5-year averages since 1960. The new EPL index is called LAMRIG, short for an index of labor market legislation rigidity.

There is heated controversy over the effects of labor market reforms. The conventional view is that such reforms (for example, by lowering dismissal costs) increase social welfare and improve economic performance (MacLeod, 2011). Yet Freeman (2010), among others, highlights the difficulties in identifying the economic growth implications of changes in labor market institutions and points out that such reforms may instead increase income inequality. In addition, Acharya et al. (2010) argue that innovation and growth may be fostered by stringent labor laws, especially in innovation-intensive sectors because investments in worker training and employee loyalty may be greater in situations where labor is more protected. Hence, it is also plausible that higher levels of worker protection can be beneficial in terms of economic growth.

Since labor market reforms are not necessarily exogenous, it should be clear that evaluations of their effects can benefit from a deeper understanding of the factors determining changes in EPL. The origin of a country's legal system is a widely accepted explanation for labor market rigidity.[1] If employment laws were in fact invariant over time, it would be easy to see how legal origins (which themselves are also quite naturally invariant with respect to time) and labor regulations could be closely related. However, if these laws can be shown to change over time and other factors can be identified as contributing to these changes, then endogenizing employment protection can genuinely contribute to the analysis of its effects.

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 labor market legislation rigidity based on the provisions of the labor laws for about 85 countries around the year 1997. They also construct two related indexes covering collective relations laws and social security laws. They examine the relevance of various proxies for efficiency, political and legal origin theories in explaining the variations in the EPL index across countries and conclude that the legal origins explanation dominates the other explanations. On average, countries that have labor regulation embedded in 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 the main difference between the English common law and French or other civil law systems is that the latter are associated with more rigid, more detailed, more complicated, all-encompassing labor laws which are more difficult to change (i.e., less flexible). As a result, the English common law countries have simpler and more flexible labor laws which facilitate the abilities of firms and workers to adjust to shocks.

[1] For theoretical underpinnings see Beck, Demirguc-Kunt and Levine (2003) and La Porta, Lopez-de-Silanes, and Shleifer (2008).

In recent years, various alternative indicators of labor market rigidity (or flexibility) have been proposed.[2] These indexes have been based on various kinds of measures: (1) measures based on market outcomes, such as the extent of labor turnover, the number of strikes, labor force participation rates, unemployment rates, (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 (BDLLS, 2004). Each approach has, of course, advantages and disadvantages.

This paper attempts to extend the individual rights and law-based component of the BDLLS approach in several ways, chiefly, by improving the country coverage and extending it both backwards from the late 1990s (wherever possible to the early 1950s) as well as forward to 2000-2004. These extensions allow the study of the dynamics of labor market reforms across a fairly large number of both developing and developed countries. We construct a single relatively comprehensive measure of labor market rigidity based on comparisons of labor laws across countries and over time. Our index (LAMRIG) is an employment laws rigidity index designed to be as consistent as possible with the cross country comparisons of the seminal BDLLS (2004) paper and with the studies that have attempted to update it (World Bank's *Doing Business* project). Our LAMRIG index is a purely *de jure* index measure of the rigidity of employment laws. Our extension increases the number of countries to 145 for at least one time period and to approximately 130 countries for the panel dimension (5-year averages from 1960-64 to 2000-04.)

Constructing such an index for so many countries over such a long period provide an

[2] Employment protection legislation can also be thought of as one important labor market institution, among for example active labor market policies, unemployment benefits and unions.

opportunity to examine the both the determinants and effects of changes in employment law rigidity in the somewhat longer run. Our main findings using this new index are as follows. We find that employment protection legislation is prevalent across the world, that its levels do change over time, and that legal origins turns out not to be the most important explanation for these changes. With the analysis of the determinants of the rigidity of labor market regulations restricted to the cross-section for 1995-1999 (the period coinciding with that in BDLLS, 2004), we can replicate these results, that is, we show the greater importance of legal origins than that of per capita GDP and/or political factors. Second, when we extend the analysis to the panel and to changes over time (treating labor market reforms as changes in the employment protection index), our results diverge from those of BDLLS (for instance, in a system GMM model, the influence of legal origins disappears.) Third, to models of labor market reform that reflect the legal, efficiency and political theories, we also add various other factors suggested by the extant political economy of reform literature. These include economic crises, structural factors and other structural reforms. Along with the reduced role of legal origins, we find evidence suggesting that countries with lower per capita GDP tends to show lower levels of LAMRIG. We also find that economic crisis in the form of higher unemployment rates tends to reduce LAMRIG (meaning lowering the rigidity of such regulations.) More importantly, we find that, while trade liberalization in the preceding period tends to deter labor market reform, financial liberalization has the opposite effect. Last but not least, we show that our index confirms a result that was widely conjectured previously (Freeman, 2010), namely that labor market reform is associated with less income inequality but has a weak direct relation to economic growth.

The paper is organized as follows. Section II describes in detail how LAMRIG is constructed. Section III illustrates the use of LAMRIG by describing its changes over time for a few selected countries. Section IV discusses data and methodology to assess LAMRIG more

systematically, while Section V is devoted to various econometric exercises in this regard. Section VI concludes the paper with our suggestions for future research.

II. Rationale and Construction of LAMRIG

In order to study labor market reforms, either their determinants or effects, one needs time series data. Yet, the vast majority of existing indicators (1) refer basically to developed economies, (2) use data covering the post-1995 period, and (3) tend to focus exclusively on the levels of employment protection (even when it is possible to analyses changes over admittedly short, 5 to 10 years, periods of time.) Before discussing how we constructed a new index that addresses these three limitations, it is important to briefly review the existing alternatives.

A well-known alternative index is that by Forteza and Rama (2006), and Rama and Artecona (2000), which is based on the International Labor Office (ILO) conventions signed by each country. The index has good coverage (more than one hundred countries and over time.) But, since this index bases much on each country's having approved of various ILO conventions on non-discrimination in employment that 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 almost no variation over time since once any or all such conventions have been signed they are unlikely to change. Another possibility is an index akin to that put together by Kucera (2002) concerning the rules governing unions and collective bargaining. This is based on sources such as the International Confederation of Free Trade Unions, the US State Department's Country Reports on Human Rights Practices, and the ILO Reports of the Committee on Freedom of Association.[3]

[3] Kucera used some 37 different indicators from these sources, weighted them by their assumed relative importance and then aggregated them into an overall index for the period 1993-7. Greenhill et al (2009) distinguished between those indicators pertaining to the laws and those pertaining to practice and extended the two sets of indexes backward to 1986 and forward to 2002 for 90 developing countries. They used bilateral trade patterns to show that the level of their freedom to organize indexes (especially the laws-oriented one) can be linked to the extent to which

The individual indicators are then weighted by their assumed relative importance and then aggregated into an index representing the average of such scores for. Another important source for measures of the degree of regulation of labor markets is the Fraser Institute. Since 1975, they score countries on a number of sub-indicators of economic freedom but in 2001 began to include six additional sub-components relevant to measuring the freedom of labor markets. While at first this was limited to 58 countries, the country coverage has grown somewhat over time. Finally, Aleksynska and Schindler (2011) put forward a panel data base of labor market regulations based on employment protection legislation, unemployment insurance systems and minimum wage regulations for 91 developed and developing countries, yearly but only from 1980 onwards.

As has been noted in various surveys, for example in Bertola (2009), Djankov and Ramalho (2009), and Freeman (2010), the availability of indexes of employment protection legislation for countries over time outside of the OECD and Latin America is much more limited. To our knowledge, there are only a few indexes that have reasonable cross-country and over time coverage going back from the present to the late 1960s or beyond. Aside from the Forteza and Rama index of ILO Conventions, almost all of these, e.g., Blanchard and Wolfers (2001), OECD (2004), Allard (2005a) do so exclusively for OECD or developed countries.[4] For example, the Blanchard and Wolfers (2001) study constructs a series for 26 OECD countries going back from the 1995-99 period to the 1960s in five year intervals.[5] The index constructed by Allard (2005a) is consistent over time, is available on an annual basis and with longer time coverage, for 21

developing countries export to developed countries with higher labor standards

[4] Note that these studies built upon a series of important earlier attempts such Lazear (1990), Grubb and Wells (1993), Addison and Grosso (1996), and Nickell (1997.)

[5] Nickell et al (2003) have annualized the Blanchard and Wolfers series. More recently, the European Commission has constructed a somewhat similar set of indexes called the Labor Market Reform Database (LABREF) with more detail on certain policy-related aspects of labor legislation, but only for each year since 2000 and for EU members. These labor market reform indexes include pension, labor taxation and other aspects. Both Arpaia et al. (2007) and Bassanini and Venn (2007) describe these indexes and study their impacts. Arpaia (2007) focuses on the effects of the indexes on labor market participation (of all workers but especially of older ones) while Bassanini and Venn (2007) examine the effects of the indexes on labor productivity.

OECD countries.[6] It is in principle comparable to those of OECD (2004) and to a large extent BDLLS (2004) and subsequently Doing Business, but excludes two subcomponents (delay in the notification and compensation for unfair dismissal), for which information could rarely be found in the legislation.[7] Another multi-country source of note with time coverage extending before the mid-1990s is Heckman and Pages (2000, 2004.) It covers most countries of the Latin America and Caribbean (LAC) region, going back from the late 1990s to the late 1980s. For the most part, these indexes are available at intervals a decade apart, not annually. Even for OECD and LAC data, comparability is made more difficult by the fact that, although similar in spirit, e.g., the Heckman and Pages (2000 and 2004) Job Security Index (JS) and the Allard (EPL) index are built up from sources, methods and index aggregation procedures that are by no means identical. The Heckman and Pages JS is defined as the discounted value of dismissing a worker at an expected date in the future based on the likelihood and costs of dismissal implied by the labor laws and regulations (but excluding the costs of court actions).[8] This corresponds (imperfectly) to the Firing Cost dimension of the BDLLS Employment Laws Index. Both the scoring of the individual components and their weighting into the various sub-indexes and further into the overall indexes has been controversial since virtually any method is subjective.[9]

Unfortunately, none of these indexes reflects by any means all of the labor market institutions (such as wage flexibility, team production, job rotation, social dialogue, pension plans of different types, and workers use of the courts) that one might think could exercise influence on

[6] Allard (2005a) made use of 16 of the original 18 aspects of EPL used in OECD (2004) but obtained the data, not from questionnaires cross-checked with the individual countries as in the OECD study, but rather from direct examination of the laws themselves based on ILO's NATLEX supplemented with OECD sources.

[7] Acharya et al. (2010) use the Deakin et al. (2007) index, which, although substantially more comprehensive, is only available for the U.S., U.K., France, Germany and India.

[8] It assumes a common discount rate of 8 percent, a turnover rate of 12 percent and the country and period-specific cost (inclusive of those related to seniority) of dismissing a worker for either justified or unjustified reasons.

[9] Indeed, as shown by Addison and Teixeira (2003), the various variants of the aggregate indices that have arisen are not always highly correlated and their application to issues like unemployment rates has sometimes resulted in opposite findings. These and other authors also point out that what is relevant in constructing these indices may also vary from industry to industry.

economic outcomes of various sorts (Freeman 2010).[10] Yet, each of them captures a number of important dimensions of labor regulations and thus may be regarded as a measure of the restrictiveness of labor laws and regulations for firms in their use of labor.

The remainder of this section describes the construction of our index of labor market legislation rigidity (LAMRIG.) The data construction exercise was made possible in large part by the on-line availability of comprehensive databases of labor laws, especially NATLEX.[11] LAMRIG is based on two main pillars and its construction follows five steps. One of the two main pillars is the Botero et al (2004) index of employment protection legislation,[12] which is available for 85 countries in year 1997.[13]

The second main pillar is NATLEX, the ILO depository of labor laws, which covers more than 150 countries since the late 1940s. Notice that NATLEX separates legislation in more than 20 law categories and for this exercise we focus on those categories that more closely relate to the four dimensions of the BDLLS index of employment protection legislation. These are (a) cost of increasing hours worked, (b) cost of firing workers, (c) dismissal procedures and (d) alternative employment contracts (part time or fixed term versus regular full-time)). For LAMRIG, we focus on the following categories from NATLEX (main sub-categories in parenthesis): Conditions of work ("Hours of work, weekly rest and paid leave"), Employment security, termination of employment, Conditions of employment ("Labour contracts", "Wages" and "Personnel

[10] Allard (2005b) creates (for the same 21 OECD countries in her 2005a EPL) indexes of unemployment benefits based in part on tax treatment and subsidies and the duration and the conditions for qualification.

[11] NATLEX is freely available at http://natlex.ilo.org/ It is maintained by the International Labor Organization (ILO)'s International Labor Standards Department and has extensive and detailed records of most labor laws of more than 150 countries since the late 1940s. The World Law Guide (LEXADIN at www.lexadin.nl) was also used, but we found it to be less comprehensive and well-organized than NATLEX. LEXADIN is organized by country (and within each country there are relevant entries under "Labor law".)

[12] 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.

[13] Another reason for choosing the broader ELR index of BDLLS (2004) as the lynch-pin for our construction of LAMRIG is that these authors have shown it to have important consequences for labor market outcomes, perhaps stronger ones than have been obtained by other authors (La Porta et al., 2008).

management") and General provisions ("Labour codes, general labour and employment acts"). The four dimensions of BDLLS employment laws index capture (a) cost of increasing hours worked, (b) cost of firing workers, (c) dismissal procedures and (d) alternative employment contracts (part- versus fixed-time legal working conditions). The categories we use from NATLEX are (main sub-categories in parenthesis): Conditions of work ("Hours of work, weekly rest and paid leave"), Employment security, termination of employment, Conditions of employment ("Labour contracts", "Wages" and "Personnel management") and General provisions ("Labour codes, general labour and employment acts").

Based on these two pillars, the construction of LAMRIG follows 5 steps.

The first step involves compiling the legal information on as many of the relevant provisions as possible from NATLEX for around 1997 and establishing how it maps with the BDLLS Employment Laws Index for their original 85 countries in the year 1997. Step 2 involves using NATLEX and the mapping produced in Step 1 to extend the BDLLS Employment Laws Index to about 60 additional countries in 1997.

Step 3 involves using all the information that could be found on the laws identified NATLEX for years before 1997 and up to 2005 following the mapping produced in Step 1 and its extension to about 140 countries in 1997, to create the first version of our index of employment protection for a panel of more than 140 countries since 1960 in five-year averages. Using the NATLEX data, the over-time variations in these indexes are then applied to the country-specific 1995-9 values in the BDLLS (2004) to construct over time variations in the country-specific ELR indexes. A similar procedure is applied to the more fragmentary evidence of over-time changes in the relevant components of labor laws for the remaining countries in the samples afforded by the BDLLS (2004) and subsequent *Doing Business* Surveys. In cases where there was no new Employment Law between dates covered, such as in Haiti between 1984 and 1995-99, the

resulting index values were assumed to remain constant between those dates.

Steps 4 and 5 refer to checks and balances exercises. Step 4 checks whether LAMRIG is harmonious with Heckman and Pages (for LAC since the late 1980s), Blanchard-Wolfers and Allard (for OECD since 1960), Deakin et al. (2007) and the World Bank *Doing Business* indicator of labor market rigidity beginning in 2003.[14] Step 5 involves checking LAMRIG against various individual country studies. Since in some cases one cannot be certain from the Labor Laws stored in NATLEX and LEXADIN for earlier years whether these were in fact the original laws or those incorporating subsequent amendments, in Step 5 we make use of individual country studies that provide quantitative or even qualitative assessments of employment protection legislation and changes therein over time. Quite naturally, by its very nature step 5 is considerably less systematic and comparable across countries, but perhaps better in some cases as far as changes over time are concerned.

While others may wish to keep the various sub-indexes separate for use in different kinds of application, for the present purposes we keep the focus on a single broad indicator of the restrictiveness of employment laws. To some extent this is necessary because information relevant to one or more subcomponents was either very fragmentary or excessively subjective but we also do so because we think that the more comprehensive overall index may be more important in detecting effects or determinants just as BDLLS (2004) had done.

The end result is a set of scores on our LAMRIG index for well over 100 countries measured as 5-year averages ranging from 1950-54 through 2000-04 wherever possible. The values of the LAMRIG index range from 0 to 3.5, with higher values reflecting more rigid

[14] 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.

employment protection laws.[15] For some years there are as many as 145 countries with LAMRIG scores. As has been pointed out by quite a few analysts (e.g., Eichhorst et al. 2007, Freeman 2010), whether higher scores are looked as desirable or undesirable is subjective. 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 good, helping to increase the legitimacy of working outside the home for individual workers and thereby creating larger and better organized labor markets. Others (Agell, 1999, Boeri et al., 2000, Nicoletti et al., 2000) view the "goodness" or "badness" of such indexes to be more complex, depending on the identity and magnitude of other market imperfections, regulations and so on.[16] We are agnostic on this issue, but given considerable evidence suggesting that higher scores are associated with higher informality or unemployment rates and lower labor force participation rates, we use the term "reform" to refer to a reduction in these indexes.

III. Country Examples

Reasons for the comparative dearth of changes in labor laws were given in our introduction. Yet, although there are some countries that have experienced little change in their LAMRIG scores over the entire period, in each region there are also countries whose scores have changed considerably from one 5-year period to another, resulting in some interesting differences over time as well as across countries and also across regional or other groupings. To illustrate some of these patterns, this section compares LAMRIG scores over time in several countries.

In their study BDLLS (2004) did something similar in illustrating the relevance of a

[15] The minimum values of LAMRIG are for Australia in the 1950s and 1960s, while its maximum values are for Spain in the 1980s and 1990s.

[16] Some of this literature refers to distinctions which virtually none of the indexes is able to deal with, such as potentially important differences in coverage (say across different types of workers, industries or regions) or the extent of their implementation and enforcement.

country's legal tradition in explaining employment law (EPL) rigidity by comparing the values of their EPL index for New Zealand and Portugal. By pointing out that the two countries were similar in a number of respects including income per capita (at least 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 their hypothesis that these differences in legal systems are associated with important differences in the rigidity of labor laws. In particular, they argued that French civil law (and Socialist law) was associated with greater rigidity in labor laws than English common law. As shown in Figure 1a, according to the corresponding values of these two countries on our index of labor law rigidity (LAMRIG), the gap between the two countries in the 1995-9 period is even larger, 2.43 for Portugal but slightly less than 0.5 for New Zealand. Notice, however, that although this gap has been quite large ever since the mid-1970s, in the early 1960s the two countries had almost identical index values.[17] Clearly, if 1960-4 scores had been used, this comparison would not have served the purpose of showing that the civil law tradition gives rise to greater restrictiveness in labor legislation than does the common law tradition. Moreover, with such sizeable changes in relative rankings over time, it becomes less clear why the legal tradition should matter so much since the legal tradition virtually never changes.[18]

In order to illustrate some other interesting differences in the index over time in countries from outside the OECD, in Figure 1b we show the patterns over time in the LAMRIG indexes for three large developing countries, India, China, and Brazil. Note that these countries represent

[17] 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.)

[18] As noted in section 2 above, the OECD is the only relatively large grouping of countries for which one can find indexes of the rigidity of labor legislation over time going back to the 1960s (e.g., Blanchard and Wolfers, 2000, and Allard, 2005.) For this reason, we have made extensive use of these sources (especially Allard) in constructing LAMRIG for this group of countries. Indeed the gap between Portugal and New Zealand is not exclusive to LAMRIG but obtains also in these other sources.

three different legal traditions: English, Socialist and French, respectively. All three of these countries have had LAMRIG scores that were relatively high for developing countries 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.[19] Common law India's started at about 1.5 in the early 1960's (below the level of China but quite high compared to common law New Zealand) and hardly changed at all.[20] The failure of India's relatively high index to decline despite the substantial liberalization of trade and product markets that has taken place since the early 1990s may come as a surprise to some.[21] Finally, French civil law Brazil's LAMRIG score started high (like China's) but in fact rose beginning in the late 1980s with the promulgation of a new constitution in 1988 despite having taken many other reforms before declining slightly during the reformist second Cardoso term and subsequently with the ascendance of the labor party after 2000.[22]

Finally, Figure 1c shows the behavior over time of the LAMRIG scores for a few selected developing countries from various regions of the world: Botswana and Zambia from Sub-Saharan Africa, Iran and Jordan from the Middle East and the Philippines from Asia. There are quite substantial changes in the rigidity of employment protection legislation over time in this group of

[19] 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 restrictiveness the 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 now being encouraged.

[20] 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. .

[21] 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. Both indexes suggest that the great Indian reforms since 1991 bypassed the labour market, focusing instead on trade liberalization, privatization, tax reform and macroeconomic stabilization. The political power of the Indian trade unions would seem to help explain this.

[22] 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), Barros and Corseuil (2004).

countries. Iran and Philippines saw their LAMRIG scores rise quite sharply over time.[23] Jordan's LAMRIG was steady at a relatively high value of 2.7, before falling substantially in 1995-9 and then rising again slightly in 2000-4. Botswana's LAMRIG scores started rather low at 0.9 in 1970-4, rose gradually to 1.3 in the 1990s before falling to 1.05. Zambia's LAMRIG scores fluctuate a bit more but remain fairly low over the whole period.[24]

In summary, the behavior of the LAMRIG score over time and across countries does seem to confirm the commonly held view that these regulations differ fairly considerably across countries but in many cases change very slowly over time. However, the LAMRIG scores also show that there are cases where the rigidity of the regulations changed sufficiently over time so as to reverse earlier rankings, like those of New Zealand relative to Portugal and China relative to Brazil and India. While the differences in LAMRIG scores across countries frequently reflect the common law, low, French Civil law and Socialist, high, dichotomy suggested by BDLLS (2004), with India at the high end of the common law countries and Botswana at the low end of civil law countries (though more properly classified as German civil law), the pattern is certainly not uniform and, as noted, there are cases of movements in opposite directions over time. Finally, and arguably more importantly, the descriptive analysis above raises important questions about the strength and nature of the relationship between origins of the national legal systems (and other time-invariant reasons) and employment protection legislation. In the next section we systematically evaluate this relationship.

[23] 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.)

[24] Some early studies identifying the effects of employment laws were Fallon and Lucas (1991, 1993). They identified law changes in both India and Zimbabwe that had the effect of tightening labor regulations and claimed that in both cases the result was lower formal sector employment of industrial labor.

IV. Assessing LAMRIG: Data and Methodology

In this section we discuss the methodology we choose to assess the applicability of the empirical specification used in BDLLS (2004). The purpose is to explain the variability across the larger number of countries in our considerably extended LAMRIG index. We then go on to investigate its applicability to explaining variations of LAMRIG over time as well. In this latter application we draw from a broader list of explanatory variables, including some based on political economy considerations such as crises and structural reforms.

Before engaging in any of these extensions, we first need to determine whether or not we can replicate the BDLLS (2004) results in a cross-sectional setting. Based on the specification in Table IV of BDLLS 20004, 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 our 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 in their sample for the year 1997. They find that legal origins are a much more important determinant of labor market reform than per capita GDP. They argue that this result favors the legal theories of institutional changes (and, by the same token, belittles the two other theories they identify, the efficiency and political theories.[25])

We then subject this baseline model to various extensions. These extend it to applying the model to explain changes in the LAMRIG indexes over time, to dividing the sample into OECD

[25] They associate per capita GDP with the efficiency theories, and factors such as democracy, autocracy, and proportional representation with the political theories.

and non-OECD countries[26], and into the pre- and post-1980 time periods.[27]

The second step is to utilize estimation strategies that are able to fully exploit the panel feature of the data. While the use of a fixed-effects estimator would be a natural starting point, since the most important variables, legal origins, are time-invariant in BDLLS (2004, our starting point is the following random-effects model:

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

where again $LAMRIG_{it}$ is our index of Labor Market Legislation Rigidity for country *i at period t.* The subscript *t* refers to a 5-year period, where the measure is the average over the whole period. Nine five year periods are included, beginning with 1960-1964 and concluding with 2000-4. Standard errors are clustered at the country level. Using the random-effects estimator, we once again split the sample into two groups, first, into OECD and non-OECD countries, and second into pre- and post-1980.

While the above specifications refer to the levels of LAMRIG, reform is better thought of as changes in these levels. This naturally leads to a third step in the estimation strategy, namely, to estimate changes in levels of LAMRIG. Since it is likely that the level of the index (because of reform momentum or 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 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 our index for country *i* between period *t* and period *t-1*, with periods defined as before. This model will be estimated at first using the random-effects with

[26] The rationale for this is that richer countries may face quite different political and institutional constraints in modifying their labor laws than poorer countries.
[27] This split is motivated by the fact that 1980 marked the beginning of a period of considerably greater economic reform in countries around the world than in preceding years.

standard errors clustered at the country level and later using the Blundell-Bond System GMM estimator appropriate for models like this where the lagged dependent variable appears on the right hand side of the equation.

Finally, we re-estimate this dynamic model by adding variables covering four different groups of factors (in $X_{i, t-1}$) namely, political factors, economic shocks, structural factors and other reforms, all lagged one period. This is not only to minimize endogeneity concerns but also to avoid the problem that could arise because of the somewhat lengthy time period covered by a single observation, wherein a change in LAMRIG occurring early in the period could be affected by a change in any of the explanatory variables occurring later in the same period

Aside from the LAMRIG index as described 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 provided in BDLLS (2004). For the structural variables included in the model, namely, 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 economic crises we include several different measures, namely, the largest single year GDP fall in percentage points that occurred in each five-year period (Max fall GDP), the number of years of negative GDP growth (between zero and five) for each 5-year period), the current account balance (CAB)[28], the number of years in a debt crisis within each five year period (Debt Crisis), and a dummy variable for periods in which annual inflation was above 50%.

Regarding political factors, we focus on the following indicators. The first group comprises count variables for both the assassination of important political leaders and general strikes during each five year period. Both of these variables originate from Banks (2005). The second group

[28] CAB is an inverse measure of crisis.

comprises the democracy measure (from the POLITY IV data set) and also the Political Constraints Index (POLCON) provided by Henisz (2000). The Polity IV democracy variable is used to control for relative levels of democratic freedoms (coded on a 1 to 10 scale, with 10 indicating the highest level of democracy). With stronger democracy, the median voter is expected to exercise more influence. Yet, because the median voter is more likely to be a worker than an employer, the influence of democracy on labor market liberalization may be ambiguous. POLCON measures the number of veto points in a political system, the expectation being that the more potential vetoes which need to be circumvented, the less likely it is that labor market reforms will be adopted. The third and last group contains a measure of the intensity of civil war and of the intensity of international armed conflicts. Data for constructing these measures is from the *Correlates of War* project at the University of Michigan.

We also investigate the role of other structural reforms – in particular, financial and trade liberalizations - in affecting the probability and magnitude of labor market reform.[29] We proxy financial reform by two measures: the share of credit to the private sector in GDP, and an index of financial development that reflects not the overall size of the financial system but its efficiency levels. In the case of trade liberalization, we use four different measures. One is the length in years of uninterrupted trade liberalization,[30] 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), which represents an extension of the Sachs and Warner (1995) measure of trade openness.[31] Given the powerful critiques by Rodrik and

[29] 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).
[30] From Appendix 2-B of Wacziarg and Welch (2008).
[31] 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

Rodriguez (2001) of the trade openness index of Sachs and Warner (1995), we incorporate these views in this modified measure of trade reform, especially with respect to the way the export marketing boards (XMB) component of "open" was calculated and the threshold of tariff rates distinguishing an "open" from a "closed" economy.[32] The fourth measure is the black market premium (BMP) in the exchange rate.

V. Determinants of LAMRIG and Its Implications for Growth and Inequality

Next we turn to an assessment of the ability of these alternative models to explain variation in LAMRIG both across countries and over time. Given that the lynch-pin for our construction of LAMRIG was the BDLLS (2004) data set for 85 countries circa 1997, we begin our assessment in Table 1 by trying to replicate the findings in their Table IV (2004, p. 1663). That table relates their ELR index to the log of per capita GNP, and dummy variables for Socialist, French, German and Scandinavian legal origins (English Common Law being the omitted legal origin type). Their results for a sample of 85 countries in 1997 are reported in column (1) of Table 1. As can be seen, the explanatory power of the model was high and although the income per capita measure was insignificant, the four legal origin dummy variables had highly significant positive effects on ELR. This supported their main claim that legal theories provide a much better explanation for the observed variation in employment protection legislation across countries than efficiency theories.

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marketing agency or board for major exports, and (5) a socialist economic system (as defined by Kornai 1992).

[32] 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".[32] 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.

In column (2) of Table 1 we repeat their analysis to explain variations in LAMRIG for the same year (actually for a cross-section of countries in the 1995-1999 period) but using a larger sample of 142 developed and developing countries. Notice now that the effect of income per capita is negative and significant (providing more support for the efficiency theory) but the effects of all four legal origin dummy variables have even stronger positive and highly significant effects on LAMRIG (again supporting the legal origins theory).[33]

However our more fundamental extension of the BDLLS dataset is the extension over time going back to the early 1950s with a pooled panel data now consisting of more than 850 observations. Given that in the 1950s, 1960s and even 1970s, the rigidity of employment protection legislation was rising, before stabilizing and declining in some cases in recent years, in columns (3) and (4) we break the sample into pre and post-1980 observations. While these are very similar for the French and German legal origins, there are some notable differences in other respects. Using the between-effects panel estimator, the negative coefficient of the Log Per Capita GDP is again statistically significant in both periods but quite a bit larger in the pre-1980 sample. On the other hand, the impact of the Scandinavian dummy is larger (and statistically significant) in the post 1980 sample.[34]

Columns (5) and (6) show results obtained by splitting the sample not by time period but by income level, i.e., into OECD and non-OECD subsamples. Notice that in our case, in contrast to BDLLS, the non-OECD sample is considerably larger than the OECD sample. While once again the various Civil Law dummies are shown to have significant positive influences in both samples

[33] This result may not seem entirely surprising when one considers that our LAMRIG index is available for 142 countries (compared to BDLLS's original 85 countries) with most of the difference accounted for by lower income countries. Yet, we should not underestimate the implications of this because the results with these poorer countries included challenge the supremacy of the legal origins explanation (considering the many other institutional phenomena to which it has been applied).

[34] 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.

(when there is sufficient variation of these variables in the sample to allow coefficients to be estimated), the French Legal Origin dummy has a weaker effect in the non-OECD countries than in the OECD sample emphasized by BDLLS. The most striking difference between the samples, however, is the difference in the effect of per capita GDP, large and positive in the case of the OECD sample, 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 but less rigid among the richer countries outside of the OECD.

Given the aforementioned absence of change over time in the legal tradition upon which each country's legal system is based, if fixed effects were used to account for unmeasured, non-changing influences, the parameters for legal origin dummies could not be estimated. We proceed in the rest of our empirical analysis to estimate not the *levels* of LAMRIG but rather the *changes* in LAMRIG. We start estimating the relationships in the LAMRIG panel with random effects and standard errors clustered at the country level with equation (3) above.

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. Because the dummy variables used to capture legal origins vanish when we use the fixed-effects estimator, instead we report results using the random-effects estimator.[35] Once again, we find considerable variation across samples in the effects of per capita GDP, positive and significant in the pre-1980 sample and negative and significant once again 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 Legal Origin dummy (for which there is little

[35] 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.

variation in our sample), the coefficients of the Civil Law Origin variables are no longer positive and statistically significant. In fact, they are small but negative and significant in the non-OECD sample (a finding that is opposite to that of BDLLS). In general, therefore, when it comes to changes over time in employment laws, these results challenge the notion that legal origins provide a more powerful explanation than efficiency (per capita GDP).

Next we turn to an evaluation of the third type of theory about the determination of labor market regulations considered by BDLLS, namely, political theories. The intuition behind these theories is that if workers have more political power, they would be able to succeed in getting more protective employment laws passed. Workers can further their political power not only through traditional organizations (like trade unions and their 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 even with extreme manifestations in terms of political instability (e.g., civil and international wars.) We again investigate the explanatory power of these political theories using the random-effects estimator as in Table 2. Since the results failed to provide support for any of these six different political measures but left all other results largely unaffected, we do not report these results here. However, since the random effects panel estimator fails to deal with the bias and possible inconsistency arising from the correlation between the error term and the lagged dependent variable, we repeat estimation of the model with the different political measures but using the more appropriate Blundell-Bond System GMM estimator. [36] Table 3 reports the results from the latter.

Table 3 provides a comparative evaluation of all three theories. For changes in employment laws at least, in contrast to BDLLS, the results in Table 3 suggest little support for either the political or legal origins explanations. The results for each of the different political

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

measures are presented in the six columns of the table, 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 labor market reforms. Note that in this case none of the legal origin dummies have significant effects on the change in LAMRIG. The negative and significant effects of per capita GDP (in logs), however, are retained in all but one set of estimates. In these estimates, moreover, there is also a positive effect of lagged LAMRIG (indicating the importance of labor market reforms inertia) in all specifications. This latter finding is consistent with the trends shown in Figure 1.

Given that neither political factors nor legal origins seem to account for the cross-country and over time variation in LAMRIG, it would seem appropriate to consider other potential explanations. The political economy literature suggests various interesting candidates (Drazen 2000, Persson and Tabellini 2000). Tables 4, 5 and 6 examine other factors that have been highlighted therein, namely: structural features of the economy, economic crises and other structural reforms, respectively.

Table 4 reports System GMM estimates where the additional variable of interest is one or another of the following structural variables: 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 Income Gini is the structural indicator, the effect of the lagged dependent variable is always positive and

significant and in most cases, the effect of GDP per capita is negative and significant.[37] As before the legal origin dummies are seldom statistically significant. Table 4 shows, however, that none of the individual structural indicators has a significant effect on the changes in LAMRIG. Notice that due to missing observations on these additional variables, the sample sizes are smaller in this table, especially in columns (1) and (5).

In Table 5 we present estimates similar to those of Table 4 for changes in LAMRIG but in this case with five different measures of economic crises. Column (1) presents the results when crisis is proxied by a debt crisis dummy. Columns (2) –(5) report the results for when the crises pertain to inflation rates (above 30% per annum), fall in GDP , the number of years of falling GDP within the five year period, and high unemployment, respectively. The effects of Log Per Capita GDP are negative and significant in all columns and the only economic crisis variable that is found to play a role is, maybe unsurprisingly, unemployment. When unemployment is high it tends to lower LAMRIG, i.e., implying loosening of the labor regulations. This is an important result for at least two reasons. The first is that it provides some support for the commonly held view that crises beget reforms but it also introduces some potentially interesting refinements in this view: certain types of crises or only specific features of economic crises are conducive to economic reforms (Campos, Hsiao and Nugent, 2010). Secondly, the strong association between labor market reform and lagged unemployment rates raises important questions to the vast literature examining the impact of labor market institutions on labor market outcomes. The latter studies often assume not only that labor market institutions do not change over time, but also that causality flows in one way only, from institutions to outcomes (unemployment, of course, being one of the main labor market outcomes of interest). Other than unemployment, none of the other

[37] Because of missing data for this variable, sample size is greatly reduced.

economic crisis variables turns out to have a significant effect on the change in LAMRIG.[38]

Finally, in Table 6, to our basic specification we add alternative measures of other types or reforms, in each case lagged to try to minimize endogeneity concerns. In columns (1) – (3) we present the results for three alternative measures of trade reforms. Column (4) presents estimates when the added variable is the black market premium (BMP), an inverse measure of trade reform. Columns (5) and (6) present results for two alternative measures of financial market reform/development, namely, the share of credit to the private sector in GDP and Financial Reform Index, respectively. Again most previous results apply: we find positive effects for the lagged change in LAMRIG, negative effects of per capita GDP and no significant effects from the legal origin dummies. The effects of the various lagged reform measures are interesting. Trade openness as measured by the first two measures in columns (1) and (2) reveal positive and significant effects on LAMRIG changes. In the same spirit, an increase in the BMP premium has the effect of reducing LAMRIG. Taken together, these results suggest that trade liberalization slows down labor market reform.[39] By contrast, neither of the two financial reform measures has a significant effect on changes in LAMRIG.

We investigated additional potential reasons. Cultural factors provide another explanation for the cross-country variation in labor market institutions. Mobility involves substantially higher costs in societies in which family ties are stronger. This leads to individuals with stronger family ties to support more rigid labor markets or stringent labor market regulations. Alesina et al. (2010) present broadly supporting empirical evidence (controlling for legal origins) using World Value Surveys data for about 60 countries in two points in time. Using LAMRIG we are able to

[38] 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.

[39] On the relationship between trade liberalization and labor market reforms see Agnell (1999), Artuc et al. (2010), Cosar (2010), Helpman and Itskhoki (2010) , Kambourov (2009) and Goldberg and Pavcnik (2007).

replicate this result, yet only based on less than 100 observations. Another important issue is the role of foreign pressure in implementing labor market reform. Our results show that the share of foreign aid in GDP does not seem to be an important factor. However, recent research has focused on U.S. preferential trade agreements and the role that official petitions play in this process (Frundt, 1998). We have collected this information and evaluated how it relates to LAMRIG. We find little evidence that the existence of a preferential trade agreement with the U.S. or official complaints against violations of international labor conventions are significantly related to LAMRIG or to changes in LAMRIG (these results are available upon request.)

Finally, we explore the potential implications of this measurement exercise (LAMRIG) in terms of economic growth and income inequality. One influential view in the literature has been that employment protection legislation has strong effects on income inequality yet their effects in terms of economic growth are essentially ambiguous. Freeman notes that "the evidence shows that labor institutions reduce the dispersion of earnings and income inequality, which alters incentives, but finds equivocal effects on other aggregate outcomes, such as employment and unemployment" (Freeman, 2008, p.). One could easily include economic growth among those aggregate outcomes, as Freeman indeed does in a later paper: "cross-country regressions yield inconclusive results on the impact of labor regulations on growth" (Freeman 2010, p.) The intuition for the expected inverse relationship between employment protection legislation and income inequality is straightforward. Such legislation protects employment (and the income from employment) for the majority of the population (employees) against a minority (employers); consequently one of the ultimate objectives of that legislation is to keep income inequality in check. However, the relationship between employment protection and growth is ambiguous. On the one hand, if employment protection legislation hinders worker mobility and hence supports and prolongs inefficient worker-firm matches, then they may well hurt economic growth. On the

other hand, the effect will be the opposite if employment protection legislation is, for instance, associated with innovation (Agell, 1999; Acharya et al.2010.)

It should now be clear that previous employment protection indexes can provide at best partial support for these hypotheses. Partial to the extent that existing indexes are rarely available for the period before the mid-1990s and, when available, they are often restricted to OECD and Latin American countries. LAMRIG therefore provides an opportunity to throw some first and preliminary light into these issues. It allows us to investigate whether or not there is deeper and wider (or maybe more robust) support for these two interesting hypotheses.

The first three columns of Table 7 display 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 the relationship between employment protection and inequality obtains with LAMRIG which is something that, due to data gaps in the available labor market indexes, could be said only to a much lesser extent and with much less certainty previously. Indeed, this result seems stronger than that obtained by Calderón et al (2005). They find no effects from what they call *de jure* employment protection (an index based on acceptance of ILO conventions) on income inequality and find weak effects from what they call *de facto* employment protection. In our case, as shown in Table 7, we find quite strong confirmation that the rigidity of employment protection legislation (LAMRIG) is inversely related to income inequality. Column 1 supports this view, accounting for the level of development, while column 2 supports this view when allowing for non-linearity in the effects of the level of development. In column 3 we also add other controls, the share of government expenditures in GDP (as suggested by Calderón et al., 2005), and an index of ethnic fractionalization (for the beginning of the overall period, in year 1961). While the latter seems strongly and positively related to income inequality, the addition of these controls does little to

weaken the negative relationship between LAMRIG and income inequality.

Columns 4 to 6 display the results of adding LAMRIG to relatively standard growth regressions. Note again the caveat that the main goal of our paper is to put forward an index of the rigidity of employment protection legislation that is comprehensive in its time and country coverage. Hence the results in Table 7 are admittedly less comprehensive and systematic than those reported above but are presented here so as to suggest the potential usefulness of LAMRIG in the analysis of economic growth and, hopefully, to motivate further research. The simple relationship (in column 4) does suggest 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 the addition of standard growth determinants (investment, human capital and regional dummies) seems to change the sign of this relationship (from positive to negative) as well as turning the coefficient on LAMRIG into statistically insignificant. It seems therefore safer to conclude, along with Freeman (2008, 2010) but now based on the experience of a substantially larger number of countries and time periods that the relationship between employment protection and income inequality seems to be negative, while the relation with economic growth seems to be inconclusive.

VI. Conclusions and Suggestions for Future Research

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 countries and over time. We would like 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, once the more comprehensive specifications of Tables 4-6 are employed Yet, with the data available at present, because most such specifications would greatly reduce the number of

observations, these extensions may not be promising until data becomes available.

We believe these findings to be of considerable potential importance to policy-makers and to provide useful new evidence for the nascent academic literature on the determinants of labor market reforms. With respect to policy, the emphasis on legal origins clearly leaves little room for maneuver. Irrespective of the method of transplantation of the legal, the current legal system of a country inevitably depends largely on colonial experience or geographic factors which are non-changing over the period of study (La Porta et al. 2008). If labor laws do in fact change over time, as our LAMRIG indices show for most countries and quite substantially for some, then it is rather obvious that non-changing factors like legal origins cannot be as important as demonstrated by BDLLS. By showing that changes in labor market laws are positively related to past changes, negatively to income, and unemployment rates and positively to prior trade reforms it is clear that policy makers may have more room for maneuver. In particular, we find that trade liberalization in the previous 5-year interval is systematically and negatively related to the changes in employment protection legislation in the current period (conditional on per capita GDP and legal origins). This finding is consistent with the view that workers react 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 these findings in designing, implementing and sequencing of comprehensive packages of structural reforms.

Our findings on the inverse relationship between trade liberalization and labor market reform also provide new evidence and support for a burgeoning yet recent academic literature. There is little disagreement among economists that trade liberalization generates large efficiency gains by relocating domestic resources along comparative advantage lines. There is also little disagreement that trade liberalization generates winners as well as losers, and this is reflected in a large body of evidence on its relationship with poverty (Winters et al 2004) and inequality

(Goldberg and Pavcnik 2007). Yet, recently attention has been directed to another possible and previously overlooked mechanism, the ability (from flexibility) 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)). Such papers provide different ways of thinking about the relationship between trade liberalization and labor market reform but all have in common the notion that this is better characterized as an inverse relationship. These authors highlight that workers employed in import-competing sectors will try to resist trade liberalization since it is they who would have "the most to lose." One aspect that has not figured prominently in these analyses, however, is that 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, our results provide support for this explanation. We suggest that this may explain why trade liberalization tends to set back labor market liberalization.

With respect to future research, in addition to the additional robustness checks and improvements in some of the measures of variables identified above, it is our intent to:

(a) Further improve on 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,

(b) Further improve on the underlying components of LAMRIG possibly by following the lead of Deakin et al. (2007) and more extensive use of the ILO data, and country specialists,

(c) Possibly to follow the lead of Deakin et al. (2007), Muravyev (2010) and the various other researchers focusing primarily on OECD and transition countries to annualize the data on LAMRIG as well as the related variables used to explain changes therein over time,

(d) To extend the use of LAMRIG to examine its effects on labor market outcomes and other phenomena as BDLLS and many others have with somewhat smaller data sets.

References

Acharya, V., Baghai, R. & Subramanian, K.(2010). Labor laws and innovation. Cambridge, MA: NBER Working Paper 16484.

Addison, J . & Grosso, J. (1996). Job security provisions and employment: Revised estimates. *Industrial Relations,* 35 (4), 585-603.

Addison, J. & Teixeira, P. (2003). The economics of employment protection. *Journal of Labor Research,* 24 (1), 85-129.

Agell, J. (1999). On the benefits from rigid labour markets: Norms, market failures, and social insurance. *Economic Journal* 109: 143-164.

Allard, G. (2005a). Measuring job security over time: In search of a historical indicator for EPL (Employment protection legislation). Madrid: Instituto de Empresa, Working Paper 05-17.

Allard, G. (2005b). Measuring the changing generosity of unemployment benefits: Beyond existing indicators. Madrid: Instituto de Empresa, Working Paper 05-18.

Aleksynska, M. & Schindler, M. (2011). Labor market regulations in low-, middle- and high-income countries: A new panel database. Washington DC: IMF WP No. 11/154.

Alesina, A. & Drazen, A.(1991). Why are stabilizations delayed? *American Economic Review,* 81 (5), 1170-88.

Alesina, A., Algan, Y., Cahuc, P. & Giuliano, P. (2010). Family values and the regulation of labor. Cambridge, MA: NBER Working Paper No. 15747.

Amadeo, E., Barros, R., Camargo J. & Mendonca, R. (1995). "Brazil", in G. Marquez, ed., *Reforming the Labor Market in a Liberalized Economy*. Washington, DC: Inter-American Development Bank, 35-78.

Arpaia, A., Braila, P. & Pierini. F. (2007). Tracking labor market reforms in the EU using the LABREF database. Bonn: presented at the IZA-fRDB Workshop: Measurement of Labor Market Institutions.

Artuc, E., Chaudhuri, S. & McLaren, J (2010). "Trade shocks and labor adjustment: A structural empirical approach." *American Economic Review,* 100 (3), 1008–1045.

Banks, A. (2005), "Cross-National Time-Series Data Archive," electronic database.

Barros, R. & and Corseuil, C. (2004). "The impact of regulations on Brazilian labor market performance", in Heckman, James J., and Carmen Pages, eds. *Law and employment: Lessons from Latin America and the Caribbean.* New York: University of Chicago Press, 273-350.

Bassanini, A. & Venn, D. (2007). Assessing the impact of labour market policies on productivity: A difference-in-difference approach. Bonn: presented at the IZA - Fondazione Rodolfo Debenedetti Workshop: Measurement of Labor Market Institutions.

Beck, T., Demirguc-Kunt, A. & Levine, R. (2003). "Law and finance: Why does legal origin matter?" *Journal of Comparative Economics* 31(4):653-675.

Bertola, G.(1999). "Microeconomic perspectives on aggregate labor markets", in *Handbook of Labor Economics*, v 3, O. Ashenfelter and D. Card, eds, Elsevier Science, 2985-3027.

Bertola, G. (2009) *Labor market regulation: Motives, measures, effects*, Conditions of Work and Employment Series No.21, Geneva: International Labor Office, 2009.

Birmingham, D. (2003). *A Concise History of Portugal*, Cambridge: Cambridge University Press.

Blanchard, O. & Wolfers, J. (2000). "The role of shocks and institutions in the rise of European unemployment: The aggregate evidence," *Economic Journal*, 110, 1-33.

Boeri, T., Nicoletti G. & Scarpetta, S. (2000). "Regulations and labor market performance," London: CEPR Discussion Paper 2420.

Botero, J., S. Djankov, R. La Porta, F. Lopez-de-Silanes & A. Shleifer (2004). "The regulation of labor," *Quarterly Journal of Economics* 119: 1339-1382.

Brooks, R. & Tao, R. (2003). "China's labor market performance and challenges," Washington, DC: IMF Working Paper 03/210.

Campos, N., Hsiao, C. & J. Nugent (2010) "Crises, what crises? New evidence on the relative roles of political and economic crises in begetting reforms," *Journal of Development Studies* 46 (10): 1670-1691.

Calderón, C., Chong, A. & R. Valdés (2005). "Labor market regulations and income inequality: Evidence for a panel of countries," in J. Restrepo, A. Tokman & N. Loayza (eds), *Labor Markets and Institutions*, Santiago: Central Bank of Chile.

Cosar, A. (2010). "Adjusting to trade liberalization: Reallocation and labor market policies," Chicago: University of Chicago, mimeo.

Deakin, S., P. Lele & Siems, M. (2007). "The evolution of labor law: Calibrating and comparing regulatory regimes," *International Labour Review* 146 (1), 133-162.

Di Tella, R. & MacCulloch, R. (1999). "The consequences of labor market flexibility: Panel evidence based on survey data" *European Economic Review* 49 (5), 1225-1259.

Djankov, S., R. La Porta, F. Lopez-de-Silanes & A. Shleifer (2004), "The regulation of labor," Cambridge MA: NBER Working Paper 9756.

Djankov, S. & Ramalho, R. (2009). “Employment laws in developing countries,” *Journal of Comparative Economics* 37(1), 3-13.

Drazen, A. (2000). *Political economy in macroeconomics*, Princeton: Princeton University Press.

Drazen, A. & Grilli, V. (1993) “The benefit of crises for economic reforms,” *American Economic Review*, 83 (3), 598-607.

Eichhorst, W., M. Feil & Braun, C. (2007). “What have we learned? Assessing labor market institutions and indicators.” Bonn: presented at the IZA - Fondazione Rodolfo Debenedetti Workshop: Measurement of Labor Market Institutions.

Fallon, P. & Lucas, R. (1991). “The impact of changes in job security regulations in India and Zimbabwe.” *World Bank Economic Review* 5 (3), 395-413.

Fallon, Peter R. & Robert E.B. Lucas (1993). Job security regulations and the dynamic demand for industrial labor in India and Zimbabwe” *Journal of Development Economics* 40, 214-235.

Fajnzylber, P & W Maloney (2005), “Labor demand and trade reform in Latin America,” *Journal of International Economics* 66 (3): 423-446.

Forteza, A. & Rama M. (2006). “Labor market “rigidity” and the success of economic reforms across More than 100 Countries,” *Journal of Policy Reform* 9 (1) 75-106.

Freeman, R. (2008). “Labor market institutions around the world.” London, LSE CEP Discussion Paper No 844.

Freeman, R. (2010), “Labor regulations, unions, and social protection in developing countries: Market distortion or efficient institutions,” in D. Rodrik & M . Rosenzweig (eds) *Handbook of Development Economics Volume 5* (Elsevier): 4657-4702.

Frundt, H. (1998). *Trade conditions and labor rights*, Gainesville: University Press of Florida

Goldberg, P. & N. Pavcnik (2007). “Distributional effects of globalization in developing countries,” *Journal of Economic Literature*, XLV (2): 39–82

Greenhill, B., L. Mosley & A. Prakash (2009). “Trade-based diffusion of labor rights: A panel study, 1986-2002” *American Political Science Review* 103 (4), 669-690.

Grubb, D. & W. Wells (1993). “Employment regulation and patterns of work in EC Countries”, Paris: OECD Economic Studies 21.

Haddad, G. (2009). “The impacts of globalization on earnings inequality: The case of Iran,” Tehran: Sharif University, mimeo.

Heckman, J. & Pages, C. (2000). “The cost of job security regulation: Evidence from Latin American labor markets.” Cambridge, MA: NBER Working Paper 7773.

Heckman, J. & Pages, C., eds. (2004). *Law and employment: Lessons from Latin America and the Caribbean*. New York: University of Chicago Press.

Helpman, E. & O. Itskhoki (2010). "Labor market rigidities, trade and unemployment," *Review of Economic Studies*, 77(3):1100–1137.

Henisz, W. (2000). "The institutional environment for multinational investment", *Journal of Law Economics and Organization*, 16 (2), 334-364.

Kucera, D. (2002). "Core labour standards and foreign direct investment" *International Labour Review* 141 (1-2), 31-69.

Ladjevardi, H. (1985). *Labor unions and autocracy in Iran*. Syracuse: Syracuse University Press.

La Porta, R., Lopez-de-Silanes, F. & Shleifer, A. (2008). "The economic consequences of legal origins", *Journal of Economic Literature* 46 (2), 285-332.

MacLeod, B. (2011), "Great expectations: Law, employment contracts, and labor market performance," in O. Ashenfelter & D. Card (eds) *Handbook of labour economics: Vol. 4*, Elsevier. pp 1591-1696.

Montenegro, C. & Pages, C. (2004). "Who benefits from labor market regulations? Chile 1960-1998" in Heckman & Pages, ed. *Law and employment : Lessons from Latin America and the Caribbean*. New York: University of Chicago Press, 2004, 401- 434.

Motavaseli, M. & M. Ghasemi 2006. "Evaluation of the employment protection indices in Iran", *Taghighat-E-Eghtesadi* 71 Winter, 67-102.

Muravyev, A. (2010). "Evolution of employment protection legislation in the USSR, CIS and Baltic States, 1985-2009." Bonn: IZA Working Paper 5365.

NATLEX (2012). International Labour Organization, www.natlex.ilo.org

Nicoletti, G. R.C.G. Haffner, S. Nickell, S. Scarpetta & G. Zoega (2000). "European integration, liberalization and labor market reform" in G. Bertola, T. Boeri & G. Nicoletta, eds. *Welfare and Employment in a United Europe*. Cambridge: MIT Press.

Nickell, S. (1997). "Unemployment and labor market rigidities: Europe versus North America" *Journal of Economic Perspectives* 11, 55-74.

Nickell, S., L. Nunziata, W. Ochel & G. Quintini (2003). "The Beveridge curve, unemployment and wages in the OECD from the 1960s to the 1990s" in P. Aghion, R. Frydman, J. Stiglitz & M. Woodford, eds. *Knowledge, Information and Expectations in Modern Macroeconomics: In Honor of Edmund S. Phelps*. Princeton: Princeton University Press.

OECD (2004). *OECD Employment Outlook 2004*. Paris: OECD.

Pagano, M. & P. Volpin (2008), “Labor and finance”, London Business School, mimeo

Persson, T. & G. Tabellini (2000). *Political economics: Explaining economic policy*, MIT Press.

Polity IV (2006). “Political regime characteristics and transitions, 1800-2002”, available at http://www.cidcm.umd.edu/inscr/polity/.

Pripstein, M. (2004.) “Globalization and labor protection in oil-poor Arab countries racing to the bottom?”in Ibrahim Saif, ed., *The Jordanian Economy in a Changing Environment.* Amman: University of Jordan, Center for Strategic Studies, 115-151.

Rama, M. &R. Artecona (2000), “A database of labor market indicators across countries” Washington, D.C.: World Bank, mimeo.

Reutersward, A. (2005). “Labor protection in China: Challenges facing labor offices and social insurance.” Paris: OECD, Social Employment and Migration Working Paper No 30.

Rodrik, D. & F. Rodríguez (2001) Trade policy and economic growth: A skeptics guide to the cross-national evidence, in B. Bernanke and K. Rogoff (eds), *NBER Macroeconomics Annual 2000*, 15(1), pp. 261-325.

Saif, I. & El-Rayyes, T. (2010). “Labour markets performance and migration flows in Jordan”, in European Commission, *Labor markets performance and migration flows in Arab Mediterranean countries: Determinants and effects*, Vol. 3, 119-155.

Sicat, G. (2004). “Reforming the Philippine labor market,” *The Philippine Review of Economics*. Volume XLI, No 2, pp. 1-36.

Villegas, E. (1968). *The political economy of Philippine labor laws*. Quezon City: Foundation for Nationalist Studies.

Wacziarg, R. & Welch, K. (2008). “Trade liberalization and growth: New evidence.” *World Bank Economic Review*, 22 (2): 187-231.

Winters, A., N. McCulloch & A. McKay (2004). “Trade liberalization and poverty: The evidence so far.” *Journal of Economic Literature*, 42(1): 72–115.

World Bank (1991). *Brazil: The Brazilian labor market in the 1980s.* Washington, D.C. World Bank Report no. 9693

World Bank (2004). *Doing business in 2004: Understanding regulation.* Washington, D.C.: Oxford University Press.

World Bank (2006). *Doing business 2007: How to reform.* Washington, D.C.: Oxford University Press.

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

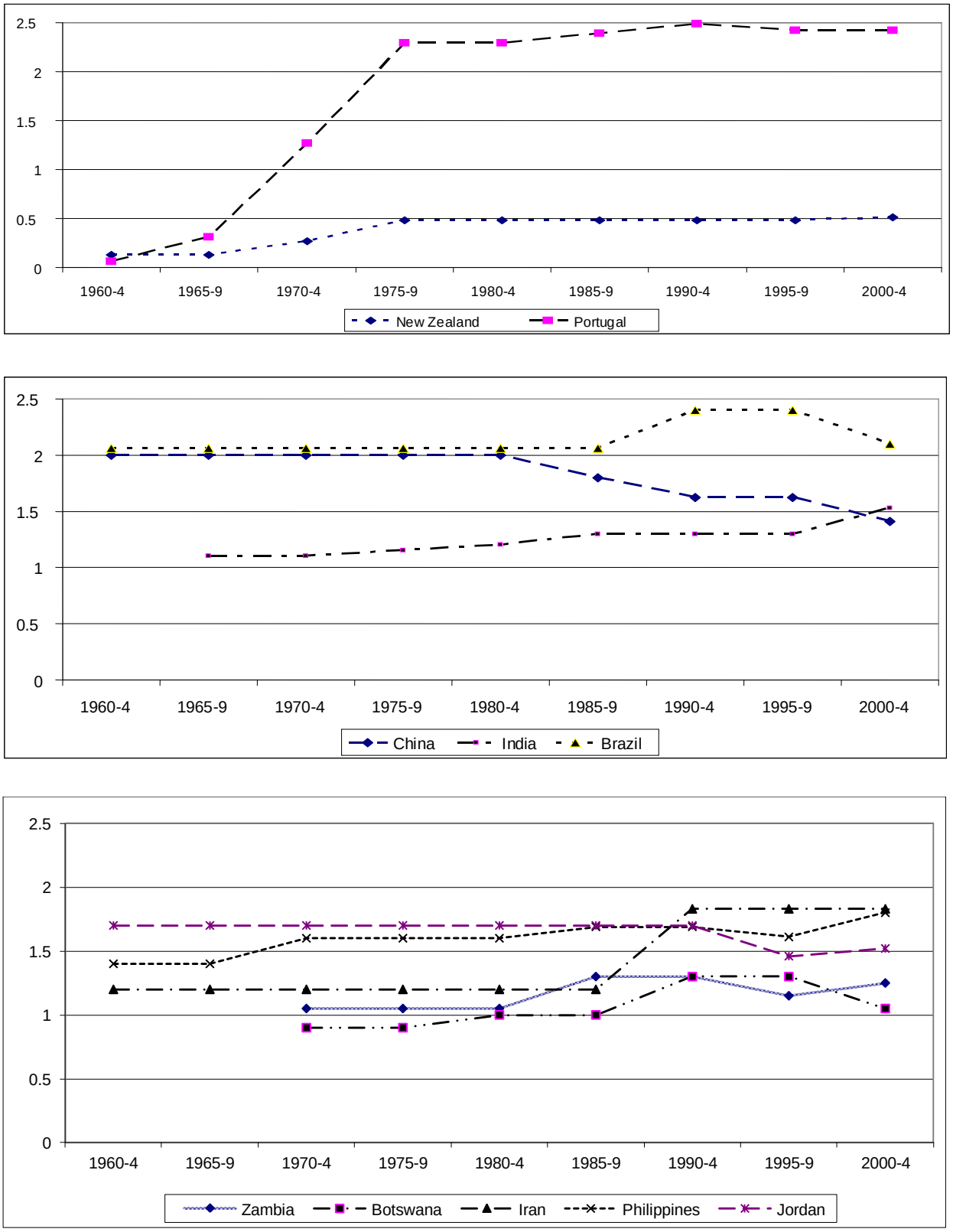

Table 1
Regulation of Labor and Legal Origins

	[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%.

Appendix table
Basic statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Lamrig	1130	1.471636	.5858954	0	3.500000
Change in Lamrig	988	.0320053	.157444	-.816098	1.218311
Log per capita GDP	1143	7.432279	1.273142	4.586063	10.5654
Legal origins dummies:					
English	1722	.2967091	.4569285	0	1
French	1722	.4570267	.4982946	0	1
Socialist	1722	.0824623	.2751476	0	1
German	1722	.1039489	.3052829	0	1
Scandinavian	1722	.0319396	.1758904	0	1
Political factors:					
Democracy(Polity)	1326	3.449409	4.123986	0	10
POLCON	1105	.2656337	.3211394	0	.8927382
Strikes	1311	.1471269	.3803482	0	4.25
Assassinations	1311	.1973303	.6110681	0	7.4
Civil war	999	.7087921	1.647277	0	15.8
International war	759	.2714097	.7267143	0	3.6
Structural factors:					
Agr share GDP	810	.4671567	.2866302	1.08	96.96718
Gini income ineq	348	39.89631	10.06283	19.74	62.9
Aid to GDP	1071	4.682741	7.832373	-.05975	54.90643
Govt share GDP	1477	18.36703	10.65375	1.382669	70.71793
Nat resources	1560	15.02325	27.81068	0	100
Economic crises:					
Max GDP Fall	1574	.364676	.7170062	0	4
Years GDP fall	1574	1.797008	5.131572	0	63.94
Inflation crisis	1106	.0669078	.2499752	0	1
Debt crisis	956	.2050209	.5032001	0	3
Unemployment	662	7.935039	6.163291	.08	43.5
Trade and financial reforms:					
Wacziarg openness	1445	.2823529	.4397809	0	1
CNHsiao openness	1236	.4080502	.4768507	0	1
PWT open	1132	65.00167	49.622	4.31e-09	344.8631
BMP	1099	217.7605	3179.031	-90.51984	91054
Credit priv sect	608	4288.758	61499.38	.014281	1027946
Financial dev	1082	.7622988	.3001664	0	1