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I. Introduction

Labor market liberalization is one of the most important structural reforms and yet also one of the least well-understood and most contested ones. Many believe that liberalization of labor regulations is likely to allow employers to hire more workers, adjust their employment levels more easily and thereby adjust more quickly to shocks in product markets and become more competitive in international markets (Saint-Paul, 2000; MacLeod, 2011) . On the other hand, others point out that this may lower the incentive of firms to train their workers, lower cooperation among workers and managers and, as a result, lower firm productivity and competitiveness and human capital growth among workers (e.g., Nickell and Layard, 1999).

Because of the complex interdependencies and non-linearities among the relevant considerations, it is extremely difficult to derive clear cut conclusions from theoretical models. Empirical analysis is therefore a much more promising approach to obtain at least rough conclusions on the net direction of some of the effects and differences across various specific labor market outcomes. Yet, especially in the context of long-term development and changes over time, the lack of quantitative measures of labor regulations that are comparable across parts of a given economy, across countries and over time, has been an important obstacle to the analysis of such effects.

The purpose of this paper is to take advantage of a newly created panel data set containing a *de jure* index measure of the overall rigidity of labor regulations, LAMRIG, capturing the difficulties in hiring, firing, and hours of work in order to examine the effects of this rigidity index on four outcome variables, economic growth rates, income inequality (two effects discussed by Freeman 2000), as well as labor force participation rates and unemployment rates. The latter two are also disaggregated by gender and age group.

Our main findings are the following. (1) LAMRIG seems to have the effect of reducing income inequality without any adverse effect on growth, a finding which is supportive of the well-known conjecture of Freeman (2008, 2010). (2) There are some indications that the rigidity of labor regulations in year t increases unemployment of males and possibly also of females some five years later. (3) Perhaps the most distinctive findings are the effects of the rigidity of labor regulations on labor force participation rates. Greater rigidity in these regulations has the effect of raising labor force participation of females as a whole, but not that of males. While there is some variation in the results across different specifications and estimation techniques, in general the effects are much more positive for females and for adult workers.

These results speak to the long held belief that labor protection regulations can make work outside the household much more legitimate, safe and acceptable to females. To the best of our knowledge, the results presented in this paper are broader in scope and based on an index which is constructed in a consistent way across a larger number of countries and much longer time period than in previous studies.

This paper is organized as follows. Section II motivates and describes the construction of the new index of labor market legislation rigidity (LAMRIG) that is described in greater detail in Campos and Nugent (2015) and in which some factors lying behind the determination of changes in LAMRIG are identified. Section III discusses our main econometric findings on the effects of LAMRIG on the aforementioned labor market and other outcomes and Section IV presents our conclusions, including implications for policy and further research.

II. Labor Market Reform Indexes and Their Determinants

A. Previous Efforts

As noted in various surveys, for instance Bertola (2009), Djankov and Ramalho (2009), Freeman

(2010) and Betcherman (2014), the availability of indexes of employment protection legislation indexes over time for countries outside of the OECD is rather limited and the bulk of the available evidence refers to the post- 1990 years. Given the multiplicity of the different types of regulations included in any given labor law and set of regulations, coming up with a single index of labor law rigidity or even a specific set of such indicators is bound to be controversial. Historically, most of the existing indexes have been created by agencies with quite different views about what kind of labor regulations would be most desirable or relevant to the explanation of various economic outcomes.

One such approach is to measure the quality or strength of such differences across countries and over time by way of the country's compliance with ILO Conventions concerning non-discrimination, rights of labor for representation, protections of various sorts as in Forteza and Rama (2006) and Rama and Artecona (2000). A disadvantage of such measures is that they provide practically no variation over time since once a convention has been signed and since it is unlikely that the decision is reversed. Another index is that of Kucera (2002) concerning the rules governing unions and collective bargaining. This measure is based on sources such as the International Confederation of Free Trade Unions and the US State Department's Country Reports on Human Rights Practices. Kucera's data have been substantially extended by Murillo (2001), Murillo and Schrank (2005), Greenhill et al. (2009) and Kerrissey (2015). Some of these studies have used these measures to identify the determinants of variation across countries and over time in these labor rights indicators or to identify violations thereof. Several of these indicators seem to be primarily trade- related, and strongly influenced by trade unions in other countries.

Other index constructors have tried to capture the essential de jure ingredients of labor

laws and regulations such as those of Blanchard and Wolfers (2001), OECD (2004), Allard (2005a), Botero et al (2004) putting heavy emphasis on rules with respect to hiring and firing. Yet many of these have until recently been restricted to developed or OECD countries.¹ A notable exception is the Job Security (JS) Index of Heckman and Pages (2000, 2004), defined as the present discounted value of the cost to the firm of dismissing a worker. That index covers most Latin American and Caribbean countries from the late 1980s to the late 1990s, at intervals a decade apart. More recently, Aleksynska and Schindler (2011) put forward an annual panel data base on labor market regulations based on employment protection legislation, unemployment insurance systems and minimum wage regulations for 91 developed and developing countries, but again mostly from the 1990s onwards. Botero et al (2004), OECD (2004) and World Bank (2014) have continued along this path in measuring labor market rigidity (or alternatively flexibility) in ever larger samples of countries. Yet, most of them are very limited in their time coverage. For example, Botero et al (2004) construct their index for 85 countries but for only one year (about 1997-9) and the World Bank's Doing Business Indicators begins only in 2005. Each approach has, of course, advantages and disadvantages, but one common drawback is that their extremely limited time series dimension, thereby impairing the ability to investigate the determinants and effects of such changes over time. Only if the labor rigidity indexes were invariant over time would this not be a limitation. Even when they have coverage for several different years, since in many countries the labor laws change only occasionally, this may make it difficult to identify empirically either the determinants or the effects of these changes in laws over time.

¹ These build upon earlier studies such as Lazear (1990), Grubb and Wells (1993), and Nickell (1997.) For further labor rigidity indexes focusing on developed countries see the work on the LABREF data base at the European Commission, Bassaini et al (2009), and Apaia et al (2007), Deakin et al (2007), Autor et al. (2009), Acharya et al. (2013), and Griffiths and Macartney (2014).

This is what motivated us to create LAMRIG, an index of labor law rigidity that covers as many as 145 countries, including those at all levels of development and regions of the world, and covering as many as 50 years.

B. The Construction and Character of LAMRIG

In what follows, we briefly identify the character of LAMRIG. For further details on its construction see Campos and Nugent (2015). We make use of the same components Difficulty in Hiring, Difficulty in Firing and Rigidity of Hours that was used in Botero et al 2004 which was based on the labor regulations of 85 countries for approximately 1997-9. We identified and then inspected the relevant labor laws from the NATLEX database created and maintained by ILO's International Labor Standards Department and the United States Department of Labor. We tried to replicate their coding for each of their 85 countries and then went on to do the same for an additional 50 countries in the late 1990s which we also found either in NATLEX or an alternative source. NATLEX is by far the most comprehensive depository of national labor, social security and related human rights laws. It is freely accessible on-line (at <http://natlex.ilo.org>) and contains over 80,000 laws from 196 countries since 1946.

Most of the relevant laws and regulations were identified by inspecting four specific categories for each country within NATLEX, specifically: (a) Conditions of work (“Hours of work, weekly rest and paid leave”), (b) Employment security, termination of employment, (c) Conditions of employment (“Labor contracts”, “Wages” and “Personnel management”) and (d) General provisions (“Labor codes, general labor and employment acts”). Although we drew on information from each of these four sources, we produce for each country and time period only a single aggregate index of rigidity of overall employment protection legislation.

After extending the Botero et al (2004) index for approximately 1995-9 to as many

countries as we could (145), we then extended these forward to 2000-2004 and with greater difficulty backward in time as far as we could (1945-1949). When we could not find any new labor law between two different five year periods, we left the value of the index unchanged.

We subjected the individual indexes to various cross-validations. For instance, we checked whether the overlapping portions of LAMRIG diverge seriously from the indexes of Heckman and Pages (for LAC since the late 1980s), Blanchard-Wolfers and Allard (for OECD since 1960), Deakin et al. (2007) and Anderson et al. (2012) (for smaller subsets of countries), the World Bank's *Doing Business* indicator of labor market rigidity beginning in 2003, and other individual country studies.²

The end result is an unbalanced panel of scores on the LAMRIG index for over 140 countries measured as 5-year averages from 1950-54 through 2000-04 wherever possible.³ Each country's index, as with Botero et al (2004) ranges from 0 to 3.5, with higher values indicating more rigid (less flexible) labor market laws and regulations.⁴

It must be stressed that LAMRIG is strictly a *de jure* index, the actual effects of the labor laws also being affected by enforcement, social norms, and the administrative capabilities of the countries in administering the laws. Recently some indexes of enforcement (e.g., that of Kanbur and Rinconi (2015) concerning the number of labor inspectors per worker), have also come into existence. Some analysts might want to use both kinds of indexes at the same time. However, since these measures are also available only for recent years, the time coverage is limited.

² The World Law Guide (LEXADIN at www.lexadin.nl) was also consulted. Whenever neither NATLEX nor LEXADIN contained a seemingly relevant law or at least sufficient information to compare it with that of another year for the same country, we resorted to separate searches for the laws of individual countries (these details are available in the on-line appendix.)

³ We choose 5-year averages for two main reasons. One is that we are interested in deeper or longer-term determinants and implications of changes in the rigidity of labor laws. Secondly, this time window corresponds more closely to the process enactment of these legal changes as these often take many years in their implementation.

⁴ The minimum values of LAMRIG are for Australia in the 1960s, and its maximum values are for Spain in the 1980s and 1990s.

Moreover, since enforcement and administrative capabilities are often closely related with GDP per capita or other measures of development, such measures can be used as at least crude proxies for enforcement and with greater coverage over time.

Figure 1 below illustrates the changes over time in LAMRIG for a handful of countries, some of which reveal quite different degrees and directions of change over time.

C. Examining the Determinants of Changes in LAMRIG

In Campos and Nugent (2015), we present not only more details about the index and its construction but also use it to reinvestigate the determinants of LAMRIG, especially including the legal origins, GDP per capita and political leaning of governments employed by Botero et al (2004) with their international cross-section measure of employment law protection for approximately 1997-99. We added a series of other possible determinants the rigidity of labor regulations and applied the same kind of model that Botero et al (2004) had used but in this case using the unbalanced panel data provided by LAMRIG for five year intervals from 1950-4 to 2000-4. More importantly, we also changed the model to be one explaining the changes in LAMRIG so as to identify the determinants of reforms in the labor regulations.

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

where $\Delta LAMRIG_{it}$ is the change in the index for country i between period $t-1$ and period t , LO represents dummy variables for the legal origins of the legal system (French civil law, English common law etc) and X is a vector of other country characteristics. This model was estimated using random-effects with standard errors clustered at the country level and also with the Blundell-Bond System GMM estimator. Not surprisingly, for explaining changes in LAMRIG over time, we found that the origins of the country's legal system to be a much less important determinant than they had been in explaining only the differences across countries as in Botero et

al (2004). What did turn out to be more important were the log level of GDP per capita, the lagged change in LAMRIG, the size of the black market premium (a proxy for crisis in capital flows and exchange rate management), and lagged trade reforms. The latter findings suggest that trade liberalization has the effect of making workers more vulnerable to various kinds of shocks, motivating them and their supporters to seek more protection through labor regulations. Indeed, another important determinant was in fact the five year lag in the unemployment rate.

III. Identifying the Effects of the LAMRIG Index of Inequality, Growth, Labor Force Participation and Unemployment

In examining some selected potentially important effects of LAMRIG, we turn first to the so-called Freeman Conjecture (Freeman 2008 and 2010) concerning the effects of labor regulations on both unemployment and growth. Freeman had suggested both that a benefit of more rigid labor regulations may be to “reduce the dispersion of earnings and income inequality” (Freeman 2008) and that this could be accomplished without significantly reducing the rate of economic growth (Freeman 2010). The intuition that Freeman provided for expecting an inverse relationship between employment protection legislation and income inequality is that Employee Protection Legislation (EPL) protects employment for the majority of the population (employees) against a minority (employers) so as to keep overall income inequality in check. Yet, the relationship between employment protection and growth can be ambiguous because, while on the one hand employment protection legislation hinders worker mobility and hence prolongs inefficient worker-firm matches that hurt economic growth, the effect can be the opposite if the EPL reduces the turnover of highly skilled workers and promotes well-being and innovation (Agell, 1999; Acharya et al.2010.)

Our new index of labor law rigidity (LAMRIG) provides a good opportunity for

investigating these two hypotheses using the same data, sample and method (which as noted above we believe has not been done). The first three columns of Table 1 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 the dependent variable. Columns (1) to (3) show that Freeman's finding of a negative relationship between employment protection and inequality obtains when our new labor regulation rigidity index is used with each of three alternative specifications.⁵ Column (1) supports this view using the most limited specification, i.e., when only one other control is included, namely, the level of development (GDP per capita). Column (2) does the same while allowing for non-linearity in the effect of the level of development. In column (3) we add other standard controls such as the share of government expenditures in GDP (as in Calderón et al., 2005) and an index of ethnic fractionalization. While the latter measure seems positively related to income inequality, the addition of these controls does little to weaken the observed negative relationship between LAMRIG and income inequality. Notice that these results are replicated if (as an alternative to the Gini coefficient), we use the share of labor compensation in GDP (from the Penn World Tables.)

Columns (4) to (6) in Table 1 show the results when our new index of labor law rigidity LAMRIG is added to standard growth regressions. The simplest specification (column 4) supports the conventional view that there is an inverse relation between the rigidity of labor laws and growth rates, implying that more rigid employment protection legislation is associated with lower rates of per capita GDP growth. Yet, columns (5) and (6) show that, when standard growth determinants (such as investment and human capital) are taken into account, the parameter estimate of LAMRIG on growth changes from negative and significant to positive and

⁵ Calderón et al. (2005) find weak effects on inequality from both their *de jure* employment protection index (based on ILO conventions ratifications) and their *de facto* employment protection measure.

insignificant.⁶

In conclusion, the results with our new broader index of employment protection presented in Table 1 tend to support Freeman (2008, 2010) in that the relationship between employment protection and income inequality is negative while that with economic growth is at best unstable and non-robust. In light of the vast interest and literature on these subjects, we need to stress that this exercise is largely illustrative, not free of methodological issues which suggest that the results should be treated with caution.

Next we turn to the effects of LAMRIG on labor force participation and unemployment. In these cases in order to take advantage of the large cross-country and over time coverage of LAMRIG, the major challenge was to obtain at least somewhat comparable coverage on suitable measures of both labor force participation and unemployment. We also deemed it important to distinguish between males and females, and also between youth and the labor force as a whole. For both labor force participation relative to the population and the unemployment rate, we relied primarily on data from the ILO Library kindly provided to us by the staff of that library, but falling back on World Bank data from World Development Indicators for countries and time periods in which the the ILO data was missing (primarily for the more recent years).

The models to be estimated in each case were for simplicity and comparability of the following form:

$$Y_{it} = \alpha + \beta_1 \log \text{GDPPC}_{it} + \beta_2 \text{CWI}_{it} + \beta_3 \text{GS}_{it} + \beta_4 \text{SY}_{it} + \beta_5 \text{EF}_i + \gamma \text{LAMRIG}_{it} + e_i + e_t + \varepsilon_{it} \quad (2)$$

Where GDPPC represents GDP per capita in 2005 US dollars from the Penn World Tables, CWI

⁶ We also estimated Table 1 using the pair of employment protection legislation measures from Hill, Mosley and Prakash (2009.) Although not shown here the results obtained with Hill et al.'s *lawpos* measure of de jure employment protection legislation are very much in line with those we report in table 1, i.e., it has a negative and mostly significant effect on income inequality but no robust and clear effect on economic growth rates. The results are less clear-cut when using Hill et al.'s enforcement measure (a variable they call *practicepos*): it still carries the expected negative sign on inequality but its statistical significance is much weaker, while the effects on per capita growth rates all remain ambiguous.

represents Civil War Intensity, GS represents the share of Government Expenditures in GDP from the World Bank's World Development Indicators, SY represents average years of schooling (for those in the labor force), EF represents Ethnic Fractionalization and e_i and e_t represent fixed effects for country and year, respectively and ε_{it} the unexplained random error. As indicated above, the GDPPC measure could among other things be seen as a crude proxy for enforcement and administration of the labor regulations. CWI, GS and EF could all be thought of as affecting labor market outcomes directly.⁷ To mitigate potential endogeneity, in the case of GDPPC and LAMRIG, however, these have in most cases been specified as entering in five year lag terms.

Table 2 presents the descriptive statistics on each of the relevant measures utilized in this analysis. Note that, as expected, the labor force participation rates among youths (15-24) are on average lower than among those of the population as a whole and those for females lower than those for males, especially in the case of the population as a whole. By contrast, the unemployment rates among females are higher on average than among men, and those among youths higher than among those of the populations as a whole. Note, the considerable variability in the Civil War Intensity variable which we deem an especially relevant explanatory variable. The entries for the different countries and years provided in the ILO data identified the sources, be they censuses, surveys or "estimates". When the latter two categories were given as the sources, we included the data only when there was another set of estimates for nearby years which were quite consistent. In all cases where there was data on these labor force participation or unemployment rates for multiple years within the relevant five year period, we entered the average of these rates for the five year period as a whole. In a few cases, where general trends

⁷ Since it is possible that these variables could also affect these outcomes through LAMRIG, investigating this possibility is a task that we plan to investigate in the very near future.

were clearly visible in the data but there was no data for a certain five year period, we interpolated between the entries of the two neighboring periods to fill in the missing observation. This was done separately for the labor force, the unemployed and the population so that labor force participation was measured as those in the labor force relative to the population in the appropriate age group and for the unemployment rate, those unemployed relative to those in the labor force. In each case such data came with the specific source of that data. For both the labor force participation and unemployment rates we calculated these rates for youth (aged 15-24), and for those of all ages, and did so separately for males and females.

Given the tradeoff between wanting to have as many observations on our labor market outcome measures as possible and but the aforementioned issues concerning dubious consistency in the different data sources (most importantly between censuses and surveys for certain years and countries), we have estimated the relationships in two different ways. First, we present in Table 3 below the results for the largest possible samples (those for which the descriptive statistics in Table 2 were calculated) and only three of the explanatory variables (the lag of log of GDPPC, the lag of LAMRIG and the lagged value of the relevant labor market outcome measure) are included. Then in Tables 4 and 5 we present the corresponding results based on a smaller sample that arises the additional explanatory variables are included and the stricter criteria for consistency of the observations on the labor market outcome variables.

In Table 3 it can be seen that in almost all cases the lag of the dependent variable has a positive and significant effect. In each case, the models have been estimated with fixed effects for both year and country. The effects of lag logGDPPC have positive and significant on the overall participation rates but negative one in the case of youth labor force participation and insignificant effects on the unemployment rates. The main interested is in the coefficients of lag

LAMRIG. In only a few of the cases are the effects of this variable statistically significant. The most notable of these are the positive effects of lag LAMRIG on the overall unemployment rates of both males and females and though of lower significance on the unemployment rate of young males. As far as labor force participation rates, the only one for which the coefficient of lagLAMRIG is significant is that for young males in the 15-24 age group.

In order to examine also the effects of different possible measures of LAMRIG for each dependent variable, along with the effects of some of the other explanatory variables included in equation (2), in Tables 4 and 5 we present the results not only with the smaller but perhaps higher quality data sample but also three different ways of including log LAMRIG. The results using the same lag log LAMRIG measure used in Table 3 are presented in column (2) for each dependent variable. But for comparison purposes, we also present the results in columns (1) and (3) of each table when either the current level of LAMRIG or the Change in LAMRIG, respectively, is used. Given the panel data character of the model, for each set of estimates we use the Hausman test and the chi square test criterion to choose between fixed and random effects, but to save on space present only the results for the preferred specification (that choice indicated at the bottom of each column). In almost all cases, that is with fixed effects. Since Ethnic Fractionalization does not vary over time, it cannot be included in the specifications when country fixed effects are used. Also to save space, we omit the standard errors, representing statistical significance only by the stars underneath the coefficients.

Turning first in Table 4 to the results for Labor Force Participation Rates, we can see that Log GDPPC tends to lower labor force participation both among youth and among the population of all ages. Conceivably, this could be reflecting better enforcement of the labor laws. The effect of Civil War Intensity on Labor Force Participation tends to be negative for both male

and female youths and for people of all ages but only in a few cases are these negative coefficients statistically significant. The effects of Average Schooling vary considerably by both age group and gender, being negative for youth since enrollment in school may be the major reason why they are not in the labor force. For all age groups together (dominated therefore by adults), however, average schooling tends to have a strong positive effect on labor force participation, and especially so for males.

Turning to the column (2) estimates in these two tables for the effect of Lag LAMRIG, we can see that for youths 15-24, the effect seems somewhat negative, especially for females but is never statistically significant. For all age groups together, however, the effects on males and females are quite different, being positive and significant for females but negative and not significant for males. From the column (1) results, it can be seen that the same positive effect on female labor force participation for those in all ages is evident when LAMRIG is used instead of Lag LAMRIG. When the Change in LAMRIG is used as in column (3), its effect on labor force participation is positive and significant for female youths but not for females of all ages. In any case, in general, the positive effects of either LAMRIG or Lag LAMRIG on labor force participation among females in general is a rather striking finding supporting the suggestion of Gonzales et al. (2015) that labor regulations constitute a major means for narrowing the gap between males and females in their labor market outcomes. It would seem to indicate that greater regulation tends to make females feel more comfortable about working (generally outside the home and for the most part in formal sector jobs).

Next we turn in Table 5 to the corresponding effects on youth and overall unemployment rates. Among youths, it can be seen that the share of Government Spending in GDP has positive and sometimes marginally significant effects on unemployment. Not

surprisingly, the effects of Civil War Intensity tend to have positive effects on unemployment of both genders and both age groups, though the effects are not statistically significant. Although none of the LAMRIG measures seems to exert a significant effect on unemployment rates among youths, for males of all ages, the effect of Lag LAMRIG is positive and significant, and for females positive but not significant. This is certainly one of the frequently hypothesized adverse effects of rigid labor regulations on the economy. Note that when current value of LAMRIG is used as in the column (1) entries in these tables, the effect on unemployment is no longer statistically significant and indeed is usually negative. Hence, the apparent effect of LAMRIG in raising the unemployment rate is not instantaneous and becomes significant only after about five years. Yet, this lagged specification is preferred to mitigate the potential endogeneity between the two variables.

IV. Conclusions

Employment protection legislation can have potentially important effects, either positive or negative on many different economic outcomes. Until now the lack of relatively comprehensive indicators of labor law rigidity for sufficiently many countries and especially for sufficiently numerous time periods has held back progress in research trying to pin down these potentially important effects. The issue is also complicated further by the fact that there are several different labor market outcomes of interest and different people may want to place more weight on some outcomes than others. The desirability of liberalizing labor regulations at the present time in many countries remains very uncertain, and very controversial within and across countries. For example, France is presently deeply embedded in heated debate over the wisdom of the government's proposal to liberalize its labor regulations and seemingly without any resolution in sight. In the meantime, opposing sides in this debate are fighting each other and in some cases

undermining the safety of the population and destroying both physical and social capital.

The objective of this paper has been to remedy this state of affairs by making use of our newly created index of the rigidity of labor market regulations which exists for not only a larger number of countries than used before this, but also and indeed especially for a longer time period to mitigate the potential problem of simultaneity bias. .

Our new panel measure of employment protection legislation covers approximately 30% more countries and is available over about 40% more years than the other existing measures. It supports the view that the extent of employment protection legislation varies considerably not only across countries but also over time. For variations across countries, the legal origins theory advocated by Botero et al (2004) seems to apply quite well, indeed even better than previously considered with a smaller sample of countries. However, regarding variations over time, in general the results reported in Campos and Nugent (2015) and summarized above suggest that legal origins are by no means a dominant factor in explaining such changes. Once we examine the effects of other political economy influences, we obtain a much broader picture of the political economy conditions that can influence the direction and magnitude of changes in the rigidity of these labor regulations. As noted above these seem to reflect the importance of crises of various sorts, e.g., in managing international financial balances and exchange rates, and unemployment, and also the influences of prior trade liberalization and changes in GDP per capita.

More explicitly in this paper we go on to apply our labor regulations rigidity index LAMRIG to examine at least a few of the many plausible effects on labor market and developmental outcomes. Indeed, in both Tables 3 and 5 we have provided some evidence that increasing the rigidity of labor regulations now may have the adverse effect of increasing the unemployment rate among males some five years later. In Table 3, at least, we also find a similar

effect on female unemployment rates. In neither case, however, do we find an effect on the unemployment rates of youths, male or female that is significant at the 5% level. At the same time, however, with the same index, we have shown in Table 3 that it may increase the labor force participation rate of male youths and in Table 4 that it has a seemingly strong positive effect on labor force participation rates of females as a whole. In this latter case, moreover, the contemporaneous effect of LAMRIG on female labor force participation is even large that that of lag LAMRIG.

In Table 1 also we have shown that LAMRIG seems to have the desirable effect of reducing income inequality without necessarily reducing the growth rate of GDP per capita. This finding is consistent with the aforementioned “Freeman conjecture”..

Clearly much more research would need to be done to see how robust these results would be to changes in the control variables, other means of reducing endogeneity in the explanatory variables and perhaps also to changes in the sample to make the results more relevant to a particular type of country.

It is our view, however, that these results constitute a beginning towards a fuller analysis of the determinants of employment protection legislation (levels and rates) across countries and over time. These findings can be of potential importance to policy-makers as they provide useful new evidence on both the determinants and effects of labor market reforms. The fact that both positive and negative effects of labor market rigidity have been identified with the same data set raises the interesting question of how reforms in labor regulations might be tweaked in such a way that benefits could be obtained without the costs that have been identified here.

Future research would also benefit from the construction of indexes with even fuller and more extensive time and country coverage than the one we construct here. This can be done by

digging deeper into the ever-improving availability of information on labor laws over time and across countries. As mentioned, it will also be useful to fully compare differences in the determinants of our index of the rigidity of labor regulations to those of the various “labor rights” indexes that have been constructed and also to examine possible complementarities or alternative substitution possibilities between *de jure* labor regulatory reform captured by the LAMRIG index and enforcement or improved administrative capacity.

Finally, three important other research areas that should be mentioned. One is to extend the links between employment protection legislation (like our LAMRIG), to subjective well-being and gender equality. Flavin et al. (2014), e.g., maintain that countries with more extensive labor market regulation tend to have higher subjective well-being, irrespective of their level of per capita income. A second important extension would be to construct new indexes on an annual basis. This would surely allow us to obtain a better understanding of the dynamics of both the determinants and effects of employment protection legislation before, during and after the Great Recession that started in 2007. Finally, in view of the fact that our overall measure of EPL (LAMRIG) seems to yield some effects that are likely to be deemed positive (like lower inequality and higher labor force participation rates) but others like higher unemployment rates that are deemed negative, it would be desirable to extend this analysis by disaggregating the aggregate LAMRIG into various component indexes such as those for rigidity in hiring, firing and hours of work. Conceivably, one or more of these components might be responsible for the positive effects and others for the negative ones.

References

- Acharya, V., Baghai, R. & Subramanian, K. (2013). "Labor laws and innovation." *Journal of Law and Economics* 56(4): 997 – 1037.
- 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 labor markets: Norms, market failures, and social insurance." *Economic Journal* 109: 143-164.
- Algan, Y. & Cahuc, P. (2009), "Civic virtue and labor market institutions," *American Economic Journal: Macroeconomics* 1(1): 111–45, 2009.
- Allard, G. (2005). "Measuring job security over time: In search of a historical indicator for EPL (Employment protection legislation)." Madrid: Instituto de Empresa, Working Paper 05-17.
- 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., 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: IDB.
- Anderson, G., Gahan, P., Mitchell, R., and Stewart, A. (2012), "The Evolution of Labor Law in New Zealand: A Comparative Study of New Zealand, Australia and Five Other Countries," *Comparative Labor Law and Policy Journal*, 33(1): 137-170.
- Artuc, E., Chaudhuri, S. & McLaren, J (2010). "Trade shocks and labor adjustment: A structural empirical approach," *American Economic Review*, 100 (3): 1008–1045.
- Autor, D., W. Kerr and A. Kugler (2007), "Does Employment Protection Reduce Productivity? Evidence from US States," *Economic Journal*, 117, F189 - F217.
- 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., L. Nunziata and D. Venn (2009), "Job protection legislation and productivity growth in OECD countries," *Economic Policy* 24(58): 349-402.
- Beck, T., Demirguc-Kunt, A. & Levine, R. (2003). "Law and finance: Why does legal origin matter?" *Journal of Comparative Economics* 31(4):653-675.

- Belot, M, J Boone & J van Ours (2007), “Welfare-Improving Employment Protection,” *Economica* 74: 381-396.
- Beramendi, P. & T. Cussack (2009), “Diverse Disparities: The Politics and Economics of Wage, Market, and Disposable Income Inequalities” *Political Research Quarterly* 62(2): 257-275.
- Beramendi, P. & Rueda, D. (2014), “Inequality and Institutions: The Case of Economic Coordination,” *Annual Review of Political Science*, 17, 251-271.
- Bertola, G. (2009), *Labor market regulation: Motives, measures, effects*, Conditions of Work and Employment Series No.21, Geneva: International Labor Office, 2009.
- Bertola, G. (2014), “What Is Natural About Unemployment? Policy sources and implications of labor market rigidities,” Jackson Hole KC Fed Policy Symposium.
- Betcherman, G. (2014), “Labor market regulations: what do we know about their impacts in developing countries?” Washington, D.C. Policy Research Working Paper 6819, March 2014.
- 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.
- Blanton, S. & R. Blanton (2007), “What Attracts Foreign Investors? An Examination of Human Rights and Foreign Direct Investment.” *Journal of Politics* 69 (1): 143–55.
- 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.
- Caliendo, L., M. Dvorkin & F. Parro (2015), “Trade and Labor Market Dynamics,” NBER WP 21149.
- 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.
- Cameron D. (1978), “The expansion of the public economy: a comparative analysis,” *American Political Science Review* 72(4):1243–61

- 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.
- Deakin, S., P. Lele & Siems, M. (2007). "The evolution of labor law: Calibrating and comparing regulatory regimes," *International Labor 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.
- Dix-Carneiro, R. (2014), "Trade Liberalization and Labor Market Dynamics," *Econometrica*, 82(3): 825–885.
- Djankov, S., R. La Porta, F. Lopez-de-Silanes, A. Shleifer & J. Botero (2003), "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.
- Eichhorst, W., M. Feil & Braun, C. (2007). "What have we learned? Assessing labor market institutions and indicators." Bonn: IZA.
- Etevez-Abe, M., Iversen, T., & Soskice, D. (2001), "Social protection and the formation of skills: a reinterpretation of the welfare state," in P. Hall and D. Soskice (eds). *Varieties of capitalism. The institutional foundations of comparative advantage*, Oxford University Press.
- 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.
- Fiori, G., Nicoletti, G., Scarpetta, S. & Schiantarella, F. (2012), Employment effects of product and labor market reforms: are there synergies? *Economic Journal* 122(558): F79–F104.
- Flavin, P., Pacek, A. C., & Radcliff, B. (2014). "Assessing the Impact of the Size and Scope of Government on Human Well-Being," *Social Forces* 92(4): 1241-58.
- 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
- Gaston, N. ad D. Nelson 2004. "Structural Change and Labor Market Effects of Globalization," *Review of International Economics*, 12, 769-792.
- Goldberg, P. & N. Pavcnik (2007). "Distributional effects of globalization in developing countries," *Journal of Economic Literature*, XLV (2): 39–82.
- Gonzales, C., S. Jain-Chandra, K. Kochhar and M. Newiak (2015), "Fair Play: More Equal Laws Boost Female Labor Force Participation," IMF Staff Discussion Note 15/02.
- 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.
- Griffith, R. and G. Macartney (2014), "Employment Protection Legislation, Multinational Firms, and Innovation," *Review of Economics and Statistics* 96 (1): 135-150.
- Grossman, G. & E. Helpman (1994), "Protection for Sale," *American Economic Review*, 84 (4): 833-850.
- 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.
- Holmlund, B. (2014), "What Do Labor Market Institutions Do?" *Labour Economics*, 30: 62-69.

- Kanbur, Ravi and Lucan Ronconi 2016 Enforcement Matters: The Effective Regulation of Labor
- Kerrissey, Jasmine (2015). "Collective Labor Rights and Income Inequality," *American Sociological Review*: 0003122415583649.
- Kucera, D. (2002). "Core labor standards and foreign direct investment" *International Labor 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.
- Loayza, N. and J. Rigolini (2011). "Informal employment: Safety net or growth engine?" *World Development* 39(9): 1503-1515.
- Mosley, L. (2011), *Labor Rights and Multinational Production*. Cambridge: Cambridge University Press.
- Mosley, L. & S. Uno (2007), "Racing to the Bottom or Climbing to the Top? Economic Globalization and Collective Labor Rights." *Comparative Political Studies* 40 (8): 923-48.
- Motavaseli, M. & M. Ghasemi 2006. "Evaluation of the employment protection indices in Iran", *Taghizat-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.
- Murillo, M. (2001), *Labor Unions Partisan Coalitions, and Market Reforms in Latin America*. Cambridge: Cambridge University Press.
- Murillo, M. and A. Schrank (2005). "With a Little Help from my Friends? Partisan Politics, Transnational Alliances, and Labor Rights in Latin America" *Comparative Political Studies* 38, 971-999.
- NATLEX (2012). International Labor 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. & R. Layard (1999), "Labor Market Institutions and Economic Performance," in O. Ashenfelter & D. Card (eds), *Handbook of Labor Economics: Volume 3C* (Amsterdam; North-Holland): 3029-3084.
- OECD (2004). *OECD Employment Outlook 2004: Employment Protection Regulation and Labour Market Performance*. Paris: OECD.
- Peretto, P. (2007), "Corporate taxes, growth and welfare in a Schumpeterian economy," *Journal of Economic Theory*, 137, 353-382.
- 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.
- Rueda D. & J. Pontusson (2000), "Wage inequality and varieties of capitalism," *World Politics* 52(3):350-83
- Rodríguez-Garavito, C. (2005), "Global Governance and Labor Rights: Codes of Conduct and Anti-Sweatshop Struggles in Global Apparel Factories in Mexico and Guatemala." *Politics and Society* 33 (2): 203-33.
- Rodrik, D. & F. Rodríguez (2001) Trade policy and economic growth: A skeptic's guide to the cross-national evidence, in B. Bernanke and K. Rogoff (eds), *NBER Macroeconomics Annual 2000*, 15(1), pp. 261-325.
- Saha, B. K. Sen and D Maiti 2013. Trade Openness, Labor Institutions and Flexibilization: Evidence from India, *Labor Economics* 24, 180-95.
- Saif, I. & El-Rayyes, T. (2010). "Labor 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.
- Saint-Paul, G. (2000), *The Political Economy of Labour Market Institutions*, Oxford: Oxford University Press.
- Siems, M. & S. Deakin (2010), Comparative law and finance: Past, present, and future research, *Journal of Institutional and Theoretical Economics*, 166 (1): pp. 120-140.
- Sicat, G. (2004). "Reforming the Philippine labor market," *Philippine Review of Economics*.

Volume XLI, No 2, pp. 1-36.

Thelen K. (2004), *How Institutions Evolve: The Political Economy of Skills in Germany, Britain, the United States, and Japan*. Cambridge: Cambridge University Press.

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.

Wallerstein M. (1999). "Wage-setting institutions and pay inequality in advanced industrial societies," *American Journal of Political Science* 43(3):649–80

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 (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.

World Bank (2014). *Doing business 2015: Going Beyond Efficiency*. Washington, D.C.: Oxford University Press.

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

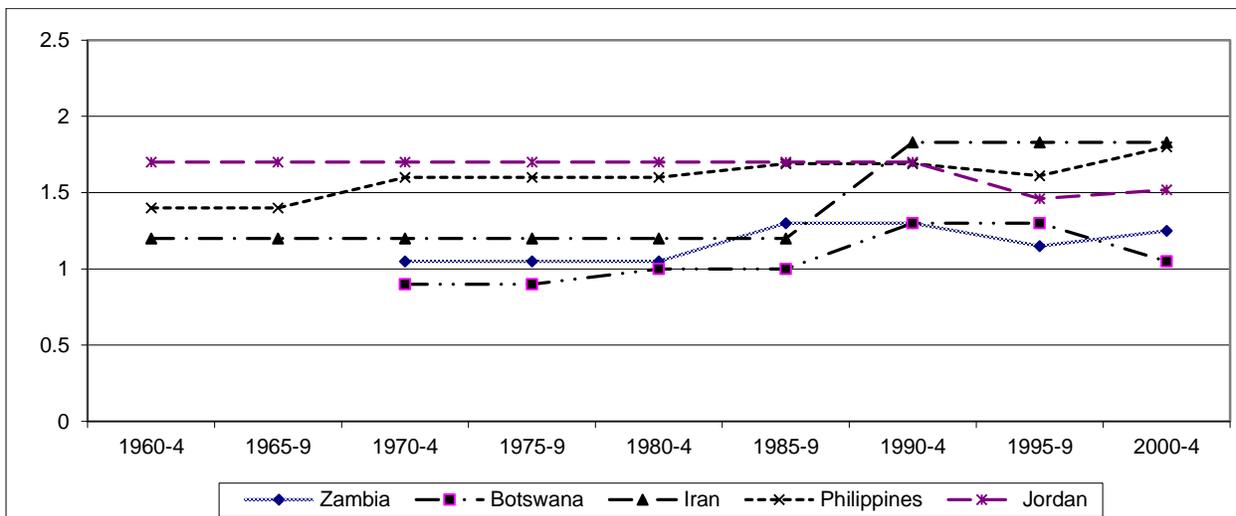
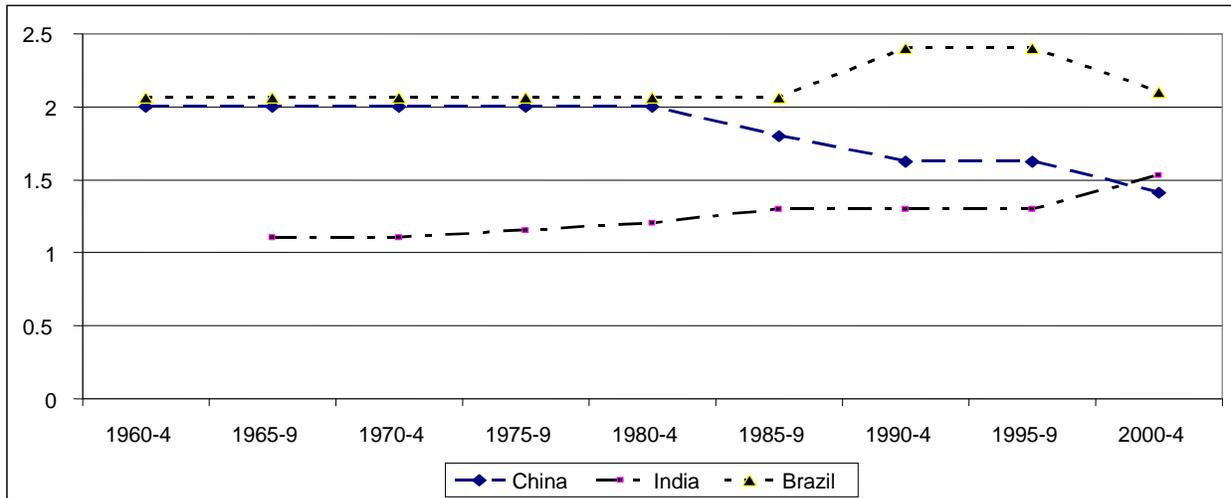
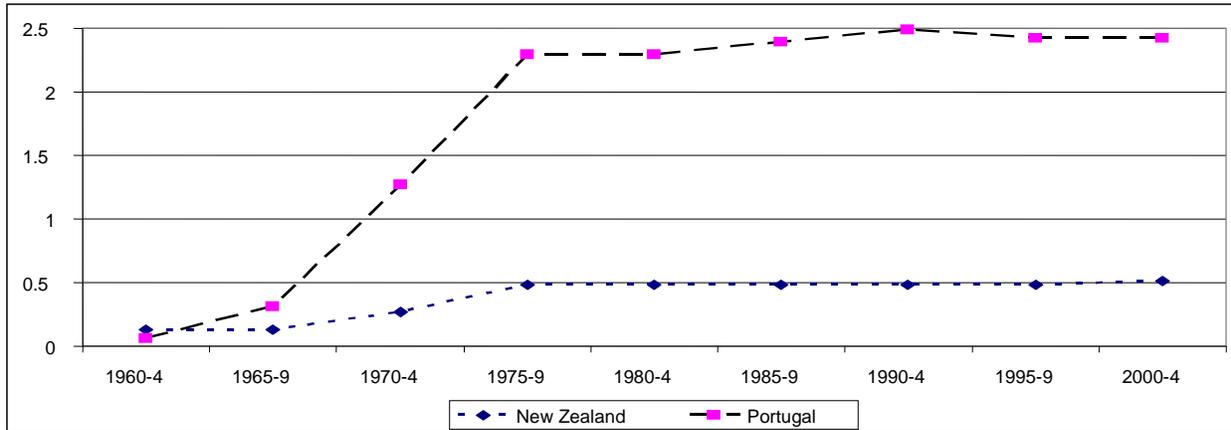


Table 1
The Regulation of Labor, Income Inequality and Economic Growth

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

Table 2 Descriptive Statistics for Labor Market Variables

Variable	mean	Min	Max	Std. dev.	Obs
Participation rate_youth	51.92	15.50	91.47	12.46	889
Participation rate_youth_female	41.64	4.53	93.05	17.24	887
Participation rate_youth_male	61.98	18.40	94.11	13.37	887
Participation rate_female	42.60	2.44	89.74	18.58	988
Participation rate_male	74.38	41.70	97.02	10.83	971
Unemployment_youth	16.93	0.27	71.32	11.21	605
Unemployment_youth_female	19.65	0.23	99.33	14.58	603
Unemployment_youth_male	15.54	0.25	61.56	9.83	603
Unemployment_female	10.52	0.10	68.60	8.44	707
Unemployment_male	7.74	0.08	54.60	6.05	708
log GDP	7.43	4.59	10.57	1.27	1143
Government Share of GDP	18.37	1.38	70.72	10.65	1477
Civil War Intensity	0.70	0.00	15.80	1.64	1011

LAMRIG	1.46	0.00	3.50	0.59	1164
Lag of LAMRIG	1.45	0.00	3.50	0.60	1003
Change of LAMRIG	0.04	-0.99	1.38	0.18	878
Average Schooling Year	5.84	0.00	13.58	3.59	1500
Ethnic Fractionization	32.46	0.00	93.00	28.85	1491

Table 3

VARIABLES	Total Youth Participation Rate	Female Youth Participation Rate	Male Youth Participation Rate	Total Youth Unemployment Rate	Female Youth Unemployment Rate	Male Youth Unemployment Rate	Female Participation Rate	Female Unemployment Rate	Male Participation Rate	Male Unemployment Rate
Lag loggdp	-2.108*** [0.497]	-1.469** [0.570]	-3.240*** [0.604]	-0.230 [0.859]	-0.571 [0.999]	0.590 [0.724]	5.309*** [0.753]	0.167 [0.418]	3.559*** [0.746]	0.368 [0.265]
Lag LAMRIG	1.572 [1.305]	0.402 [1.546]	3.184** [1.361]	3.022 [1.925]	3.687 [2.251]	2.868* [1.616]	1.904 [1.592]	1.810** [0.836]	1.797 [1.731]	1.711*** [0.522]
Lag Total Youth Part. Rate	0.538*** [0.0484]									
Lag Female Youth Part. Rate		0.511*** [0.0450]								
Lag Male Youth Part. Rate			0.450*** [0.0527]							
Lag Total Youth Unemployment Rate				0.120* [0.0685]						
Lag Female Youth Unemployment Rate					0.0830 [0.0659]					
Lag Male Youth Unemployment Rate						0.113 [0.0693]				
Lag Female Participation Rate							0.343*** [0.0405]			

Lag Female Unemployment Rate								0.256***		
								[0.0438]		
Lag Male Participation Rate									0.0628	
									[0.0413]	
Lag Male Unemployment Rate										0.229***
										[0.0460]
Constant	38.06***	32.54***	53.40***	12.31*	16.97*	4.511	-15.39***	3.710	38.07***	0.258
	[5.070]	[4.778]	[6.957]	[7.363]	[8.614]	[6.187]	[5.096]	[3.029]	[5.411]	[1.910]
Observations	443	443	443	366	366	366	528	461	528	458
R-squared	0.379	0.312	0.428	0.023	0.018	0.032	0.467	0.137	0.109	0.177
Number of country	141	141	141	139	139	139	144	143	143	142

Standard errors in brackets ***p<0.01, **p< 0.05, * p<0.10

Table 4 Effects of LAMRIG Measures on Labor Force Participation Rates

	L.F. Participation								
	L.F. Participation Rate_Youth			Rate_Female Youths			L.F. Participation Rate_Male Youths		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	-2	-3
Log GDP	-7.451 (***)	-9.061 (***)	-12.358 (***)	-10.884 (***)	-10.649 (***)	-15.383 (***)	-3.845 (***)	-4.533 (***)	-4.710 (***)
Gov share of GDP	-0.024	-0.141	-0.415	0.022	0.039	-0.003	-0.059	-0.066	-0.079
Civil War Intensity	-0.487	-0.510	-0.676 (*)	-0.404	-0.384	-0.748 (*)	-0.480	-0.620 (*)	-0.623 (*)
Average Schooling year	-0.372	-0.552	-0.471	-1.082	-0.885	-0.956	0.252	-0.248	-0.097
Ethnic Fractionization								0.038	0.043
LAMRIG	1.188			1.535			1.604		
Lag LAMRIG		-0.879			-2.476			0.109	
Change of LAMRIG			2.146			3.695 (*)			0.825
Constant	103.624 (***)	115.393 (***)	137.817 (***)	125.643 (***)	106.880 (***)	3.695 (***)	79.179 (***)	100.110 (***)	100.675 (***)
Observations	420	389	348	420	389	348	420	389	348
R2	0.122	0.131	0.167	0.316	0.250	0.251	0.348	-	-
Adj R2	-0.171	-0.188	-0.180	0.087	-0.024	-0.061	0.131	-	-
(P>chi2)	0.003	0.000	0.000	0.000	0.000	0.000	0.008	0.346	0.269
Model	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Random Effect	Random Effect

Table 4 (Continued)

	Participation rate_Female			Participation rate_male		
	(1)	(2)	(3)	(1)	(2)	(3)
Log GDP	-9.414 (***)	-8.233 (***)	-2.111	-6.752 (**)	-8.742 (***)	-5.719 (*)
Gov share of GDP	-0.010	0.007	0.006	-0.073	-0.072	-0.024
Civil War Intensity	-0.429	-0.399	-0.036	-0.262	-0.488	-0.556
Average Schooling year	-0.024	0.396	1.618 (**)	1.446 (*)	1.757 (**)	1.762 (**)
Ethnic Fractionization			0.158 (***)			
LAMRIG	5.221 (***)			-0.898		
Lag LAMRIG		3.517 (**)			-2.474	
Change of LAMRIG			-5.434			3.135
Constant	110.649 (***)	75.769 (***)	40.960 (***)	104.902 (***)	128.215 (***)	107.470 (***)
Observations	471	435	392	469	433	390
R2	0.660	0.638	0.078	0.252	0.306	0.296
Adj R2	0.562	0.524	0.064	0.036	0.086	0.045
(P>chi2)	0.000	0.000	chi2=-0.65<0	0.000	0.000	0.000
Model	Fixed Effect	Fixed Effect	OLS	Fixed Effect	Fixed Effect	Fixed Effect

Table 5 The Effects of Alternative LAMRIG Measures on Unemployment Rates

	Unemployment rate_Youths			Unemployment Rates Female Youths			Unemployment Rate Male Youths		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	Log GDP	-9.613 (***)	-10.142 (***)	-8.266 (***)	-11.559 (***)	-12.453 (***)	-10.805 (***)	-9.361 (***)	-9.969 (***)
Gov share of GDP	0.098 (*)	0.099 (*)	0.058	0.121 (*)	0.126 (*)	0.071	0.087 (*)	0.090 (*)	0.051
Civil War Intensity	0.537	0.391	-0.102	0.475	0.277	-0.344	0.498	0.369	-0.110
Average Schooling year	0.137	0.239	0.391	-0.113	0.082	0.102	-0.296	-0.225	0.070
Ethnic Fractionization									
LAMRIG	-2.728			-3.953			-2.216		
Lag LAMRIG		0.495			-1.086			-0.118	
Change of LAMRIG			-2.387 (*)			-2.209			-1.396
Constant	71.506 (***)	83.235 (***)	2.387 (***)	80.776 (***)	106.873 (***)	95.884 (***)	71.732 (***)	85.124 (***)	73.884 (***)
Observations	260	252	239	260	252	239	260	252	239
R2	0.279	0.263	0.325	0.246	0.195	0.199	0.252	0.242	0.299
Adj R2	-0.190	-0.233	-0.156	-0.244	-0.347	0.372	-0.234	-0.268	-0.201
(P>chi2)	0.001	0.000	0.011	0.000	0.001	0.000	0.001	0.000	0.001
Model	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect

	Unemployment Rate_Females			Unemployment Rate_Males		
	(1)	(2)	(3)	(1)	(2)	(3)
Log GDP	-7.561 (***)	-7.207 (***)	-7.560 (***)	-3.677 (**)	-3.765 (**)	-4.267 (**)
Gov share of GDP	-0.034	-0.059	0.049	-0.030	-0.041	-0.004
Civil War Intensity	0.784	0.882	0.625	0.165	0.227	0.010
Average Schooling year	0.360	0.333	0.285	-0.144	-0.135	-0.225
Ethnic Fractionization						
LAMRIG	-0.802			0.354		
Lag LAMRIG		1.923			2.125 (**)	
Change of LAMRIG			-1.884 (*)			-1.546 (*)
Constant	52.025 (***)	54.225 (***)	55.716 (***)	29.653 (***)	30.054 (***)	-1.546 (***)
Observations	332	322	295	336	326	300
R2	0.228	0.230	0.317	0.250	0.267	0.343
Adj R2	-0.126	-0.134	-0.041	-0.088	-0.073	0.008
(P>chi2)	0.000	0.000	0.000	0.000	0.000	0.000
Model	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect