The Freeman Conjecture

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Abstract: The Freeman conjecture relates law, inequality and growth. It postulates that the effects of the rigidity of labor laws on income inequality tend to be mostly negative, while its effects on employment and growth are basically ambiguous. This paper offers the first empirical test of this conjecture which is made possible by a new measure of the rigidity of labor regulations we construct covering more than 130 developing and developed countries. In addition to its extensive country coverage, another unique feature of this new measure is its time dimension which extends from 1960 to 2004, on a 5-year average basis. With this new index, one can now study levels *and* changes in employment protection legislation across a much larger number of countries over a more satisfactory time window. Our preliminary results support the Freeman conjecture. Using the WIDER inequality data set and PWT growth rates, our preliminary econometric results support the Freeman conjecture: more rigid employment law decreases inequality but has no significant effect on growth. The final paper will considerably extend these results: it will include a wider range of inequality and growth measures, employment outcomes, human and physical capital and perhaps international technological linkages, as well as a detailed analysis of the Freeman conjecture across regions and per capita income level groupings.

Keywords: labor rights, labor market institutions, employment protection legislation, structural reforms, growth, inequality.

* The data set and supporting appendices are available at http://www.naurocampos.net/papers/lamrig.html

In a series of important scientific contributions concerning the effects of labor laws and regulations, Richard Freeman argued that more rigid labor regulations "reduce the dispersion of earnings and income inequality" (Freeman 2008) and that their "effects on other aggregate outcomes, such as employment and unemployment are inconclusive" (Freeman, 2010.) The intuition for expecting an inverse relationship between employment protection legislation and income inequality is straightforward: labor laws protect jobs and earnings of the majority of the population (employees) against a minority (employers) hence keeping overall income inequality in check. The ambiguity of its growth effects is less clear-cut and can have many causes and underlying mechanisms. For instance, the relationship between employment protection laws and growth can be ambiguous because their rigidity, by hindering worker mobility, prolongs inefficient worker-firm matches which hurt economic growth (Autor et al. 2007, McLeod, 2011), but the effect can be the opposite if employment protection legislation reduces the turnover of highly skilled workers and promotes innovation (Agell, 1999; Acharya et al.2010.)

The availability of a new index of the rigidity of labor laws ("LAMRIG") provides a good opportunity for investigating these two hypotheses using exactly the same measure, country coverage, time window, data set, and econometric method (something we are not aware has been done previously). Table 1 has some baseline results. The first three columns of Table 1 display regressions with the Gini coefficient for income inequality as the dependent variable (from the UNU-WIDER data set), while columns 4 to 6 have the growth rate of per capita GDP as dependent variable (from PWT). Columns 1 to 3 support Freeman's expectation of a negative relationship between employment protection and inequality when our labor regulation rigidity index (LAMRIG) is used in each of the three alternative specifications. These results seem stronger than those by Calderón et al (2005) who find weak effects on inequality from both a *de jure* employment protection index (based on ILO conventions ratifications) and from *de facto*

employment protection. Column 1 supports this view when only one other control is included, namely, the level of development. Column 2 does the same 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.

Columns 4 to 6 display the results of adding our LAMRIG index to standard growth regressions. The simplest specification (column 4) suggests an inverse relationship between LAMRIG and growth rates, implying that more rigid employment protection legislation is associated with lower rates of per capita GDP growth. However, columns 5 and 6 show that, when a limited set of standard growth determinants (such as investment and human capital) are taken into account, the estimate changes sign, from negative and significant to positive and insignificant. On this basis we claim that these results with our new broader index of the rigidity of employment protection laws support Freeman (2008, 2010) in that the relationship between employment protection and income inequality is negative but that with economic growth is unstable and inconclusive. Given the vast literature on these subjects and the methodological problems of endogeneity, omitted variables and measurement errors, we stress that these results should only be regarded as tentative. Yet, it is our hope that they will motivate further research.

Indeed, it is our objective for the final paper to extend these baseline results very considerably: it will include a wider range of inequality and growth measures, employment outcomes, human and physical capital and perhaps international technological linkages, as well as a detailed analysis of the Freeman conjecture across regions and per capita income level groupings.

References

Acharya, V., Baghai, R. & Subramanian, K. (2013). "Labor laws and innovation." *Journal of Law and Economics* 56(4): 997 –1037.

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

Autor, D., W. Kerr and A. Kugler (2007), "Does Employment Protection Reduce Productivity? Evidence from US States," *Economic Journal,* 117, F189 - F217.

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.

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.

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.

Campos, N. and J. Nugent (2014), "The Dynamics of Employment Protection Legislation in Developing and Developed Countries: A Panel Study, 1960-2004," mimeo.

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.

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.

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

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.

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

Saint-Paul, G. (2000), *The Political Economy of Labour Market Institutions*, Oxford: Oxford University Press.

Table 1
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:

Constructing an index of the rigidity of labor legislation across countries and over time

The vast majority of existing indicators of the rigidity of labor market legislation are limited primarily to high-income or OECD economies and use data covering the post-1995 period. Before discussing the construction of a new index that addresses each of these limitations, we briefly review the existing alternative measures.

2.1 Existing measures of labor market legislation rigidity

As noted in various surveys, e.g., Bertola (2009), Djankov and Ramalho (2009), Freeman (2010) and Betcherman (2014), the availability of EPL indexes over time for countries outside of the OECD and Latin America is very limited. To our knowledge, there are only a few indexes that have reasonable cross-country and over time coverage going back to the late 1960s or beyond.

As noted above, there have been various attempts at empirically capturing differences across countries in collective labor rights based on compliance with ILO Conventions. Forteza and Rama (2006) and Rama and Artecona (2000) create an index of the rigidity of labor market institutions for over 100 countries based on ILO conventions signed by each country. These regulations may affect who is hired but not the extent to which firms can adjust their work force over time. It also has the disadvantage of having practically no variation over time since once a convention has been signed it is extremely unlikely to reverse that decision. Another index is that of Kucera (2002) concerning the rules governing unions and collective bargaining. This measure is also 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 Mosley and Uno (2007) and Greenhill et al. (2009).

Indeed, aside from indexes capturing collective labor rights usually based on ILO Conventions, almost all other indexes, e.g., Blanchard and Wolfers (2001), OECD (2004), Allard (2005a), are confined to developed countries.[1] An exception is the Job Security (JS) Index of Heckman and Pages (2000, 2004) which covers most Latin American and Caribbean countries from the late 1980s to the late 1990s, at intervals a decade apart. Although similar in spirit, the Heckman and Pages (JS) and Allard (EPL) indexes are built up from sources, methods and index aggregation procedures that are by no means identical.[2] 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 only the 1990s onwards.

Clearly, no single index can reflect all relevant labor market institutions (such as wage flexibility, team production, social dialogue, pension plans, and workers use of the courts) that

[1] These built upon earlier studies such as Lazear (1990), Grubb and Wells (1993), and Nickell (1997.) For further labor rigidity-related indexes focusing on high-income (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).

[2] The JS index is defined as the discounted value of dismissing a worker at an expected future date based on the likelihood and costs of dismissal implied by the labor laws and regulations (excluding the costs of court actions).

one might think could exercise influence on various political economy outcomes (Freeman 2010). Although each of the indexes above captures important dimensions of the restrictiveness of labor laws and regulations for firms, as shown by Addison and Teixeira (2003), the various aggregate indices that have arisen are not always highly correlated and their application has sometimes resulted in contradictory findings.

2.2 Constructing a new index of labor market legislation rigidity

In what follows, we describe the construction of LAMRIG, our index of labor market legislation rigidity. In its construction, we use the same detailed content analysis method proposed by BDLLS[3] for 85 countries in the late 1990s and apply it to the labor laws found in NATLEX and other sources.

NATLEX is the most comprehensive and exhaustive depository of labor laws available today. It is fully and freely accessible on-line (at http://natlex.ilo.org). NATLEX is a database of national labor, social security and related human rights legislation maintained by the ILO's International Labour Standards Department (note that the technical development of NATLEX was undertaken with funding provided by the United States Department of Labor.) The entries in NATLEX provide abstracts of legislation which are indexed by subject classifications (where possible, the full text of the law or a relevant electronic source is linked to the record.) NATLEX contains over 80,000 laws from 196 countries and over 160 territories from 1946 onwards.[4] In the construction of LAMRIG, we focused on the entries from the following categories (sub-categories in parenthesis) from the NATLEX depository: (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"). The information from the laws identified under each of these categories was then used to construct a measure consistent with the BDLLS Employment Laws index in covering "alternative employment contracts," "cost of increasing hours worked," "cost of firing workers," and "dismissal procedures."

Although we drew on information from each of these four dimensions, we report only a single aggregate index of rigidity of overall employment protection legislation. This is because we found that missing or ambiguous information at the component level contribute to measurement errors at the component level and that changes in the components often offset each other, making the aggregate more reflective of overall changes.

In constructing LAMRIG we use the detailed content method and the following step-by-step procedure. In step 1 we compiled all the information from the four categories listed above from NATLEX for around year 1997 and map these into the Employment Laws Index for the BBDLS' original 85 countries for 1997. In other words, our first step is to establish and understand the link between the laws in NATLEX and the coding they were given in the

[3] 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.

[4] 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.)

Employment Laws Index by BDLLS (2004). In Step 2 we use NATLEX and the BDLLS coding method to extend the BDLLS Employment Laws Index to an additional 60 developing countries (for a total of 145 developed and developing countries); in this step only for the 1995-1999 time period. In Step 3 we use the information in NATLEX (and to a lesser extent LEXADIN and country-specific sources of employment regulations) for years before 1997 and then again after 1997 until 2005 using the same mapping and coding established in the first two steps. When we cannot find any other or new labor law between years we leave the value of the index unchanged.

We subjected the individual country indexes to various cross-validations. For instance, we check whether or not the relevant portions of LAMRIG diverge 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. It is also worth noting that the five-year time window we use minimizes the potential for such discrepancies because most disagreements among other sources originate from different preferences in terms of when a law was proposed, enacted or fully implemented. The end result is an unbalanced panel of scores on the aggregate LAMRIG index for well over 130 countries measured as 5-year averages from 1950-54 through 2000-04 wherever possible. Each country's score is constructed using the same subcomponents as in BDLLS. As with BDLLS, the scores on LAMRIG range from 0 to 3.5, with higher values reflecting more rigid employment protection legislation.[5] For some five-year periods LAMRIG covers as many as 145 countries.

Two important points should be made. The first refers to whether an increase in the index should be considered desirable (a "reform") or undesirable. Views on this have varied not only between employer and labor groups but also among different professional analysts according to their measured or perceived effects (e.g., Eichhorst et al. 2007, Freeman 2010, Acharya et al., 2013, Bertola, 2014). Still others (Agell, 1999, Boeri et al., 2000, Nicoletti et al., 2000) have stated that this determination should be seen as more complex, e.g., depending on the identity and magnitude of other market imperfections, regulations and so on.

Since LAMRIG is a *de jure* index because of weak and more varying enforcement and rule compliance in developing countries, the second point is that the differences between the letter of the law and its implementation in practice (de facto) may be larger in developing than in developed countries and may also vary over time. When the gap between de jure and de facto regulations is high, informality is likely to be high and vary along the business cycle (Loayza and Rigolini, 2011). Greenhill el al. (2009), however, show that differences between labor laws and labor practices (regarding their effects on the international diffusion of labor rights) are less marked than one would expect, that is, the effects from enforcement (*de facto*) seem to be quantitatively smaller but not qualitatively different (from *de jure*).

2.3 Selected Country Examples of LAMRIG

In this sub-section, we try to demonstrate that variations over time and across countries in our index of employment protection legislation generally accord with expectations.. Figure 1 shows

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

the time paths of LAMRIG scores from the early 1960s to 2005 in five year averages for 10 different countries. We start in Figure 1a with the Portugal and New Zealand comparison extensively discussed in BDLLS (2004). Specifically, BDLLS (2004) pointed out that New Zealand and Portugal were similar in a number of respects including income per capita (in the late 1990s) but differed in their legal traditions, i.e., New Zealand's legal system being based on English Common Law and Portugal's on French Civil Law. BDLLS used this comparison to illustrate the aforementioned legal origins hypothesis that French Civil Law (and Socialist law) was associated with greater rigidity (of labor laws) than the English Common Law tradition. While in the 1995-9 period (on which BDLLS concentrated) the gap between the two countries was large, 2.43 for Portugal but slightly less than 0.5 for New Zealand, in the early 1960s the gap between the two countries was negligible.[6] Clearly, if 1960-4 scores had been used, this comparison would not have been a good one for illustrating the power of the legal origins theory. Although as indicated above one could also argue that the English common law system might offer some dynamic benefits (less rigidity over time), it would seem dubious that Portugal would not have experienced these benefits when its rigidity index was as low as New Zealand's.

In order to illustrate differences in the index over time in countries outside the OECD, Figure 1b shows LAMRIG scores for three large developing countries, India, China, and Brazil and Figure 1c shows them for five other smaller countries but in each case with the different countries representing different legal traditions. In Figure 1b the three countries represent English, Socialist and French legal origins, respectively. All three have had LAMRIG scores that were relatively high throughout the period. Socialist law China's LAMRIG started high with a score of 2.0 in the early 1960s but declined to 1.42 by 2000-4.[7] The rapid growth of China with declining LAMRIG scores after 1980 might be considered evidence in favor of Fallon and Lucas' view (1991, 1993) that rigid labor regulations distort the incentives in the labor market and hence are detrimental for growth. Common law India's LAMRIG score started at about 1.5 in the early 1960's (quite high compared to Common law New Zealand's) and hardly changed since.[8] The failure of India's relatively high index to decline might seem surprising to some and also to cast some doubt on the dynamic version of the legal origins theory.[9]Civil law Brazil's LAMRIG started high (like China's) but rose in the late 1980s with the 1988 constitution ,before declining during the reformist Cardoso government and even more so after the ascendance of the Workers Party,[10] suggesting that left or right government orientation may not be such a fundamental determinant of these changes as some believe.

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[6] The dramatic increase in LAMRIG for Portugal in the late 1960s and 1970s coincides with it 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.)

[7] Actually, the high score of China in the early years was not explicitly due to labor laws but rather to the restrictive rules governing state enterprises, the Industrial Enterprise Act of 1986 and the Regulation of Private Enterprise Act of 1988. With the 1994 Labor Act, the use of fixed term contract was allowed to a much greater extent and other incentives in labor use were provided to private enterprises which were then being encouraged.

[8] The comprehensive Deakin et al (2007) index is available for five countries since the 1970s. The conclusions for India using their index are similar to the ones using LAMRIG. The political power of India's trade unions would seem to help explain this.

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

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

Finally, Figure 1c shows LAMRIG in five developing countries from different regions and legal systems: Botswana and Zambia with English common law from Sub-Saharan Africa, Iran and Jordan from the Middle East and the Philippines from Asia (with French civil law). In these countries there are some quite substantial differences in the changes in the rigidity of employment protection legislation over time. Iran and Philippines saw their LAMRIG scores rise quite sharply over time.[11] Jordan's LAMRIG was steady at a relatively high value of 2.7, before falling substantially in 1995-9 and then rising again in 2000-4. Botswana's LAMRIG started low in the 1970s, rose to 1.3 in the 1990s before falling to 1.05. Zambia's LAMRIG scores fluctuate a bit but remain fairly low over the whole period.

In summary, the behavior of LAMRIG over time and across countries indicates that such regulations differ considerably across countries and, more importantly, over time. Indeed, there are cases in which the rigidity of the regulations changed sufficiently over time so as to completely reverse earlier rankings, like those of New Zealand relative to Portugal or that of China relative to Brazil and India. While LAMRIG differences across countries often reflect the low scores for Common Law countries and high ones for French Civil Law and Socialist countries as suggested by BDLLS (2004), this pattern is certainly not universal nor invariant over time. Especially because of the dynamic version of the legal origins thesis, and the possibility that other political and economic factors could also have important influences on labor regulations, further research with more complete data sets on the determinants and effects of employment protection legislation would seem desirable.

[11] In both cases, these transitions seem to have been related to significant political transitions from extremely authoritarian 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.)

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