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ABSTRACT

This essay reviews what economists have learned about the impact of labor market institutions, defined broadly as government regulations and union activity on labor outcomes in developing countries. It finds that: 1) Labor institutions vary greatly among developing countries but less than they vary among advanced countries. Unions and collective bargaining are less important in developing than in advanced countries while government regulations are nominally as important. 2) Many developing countries compliance with minimum wage regulations produce spikes in wage distributions around the minimum in covered sectors. Most studies find modest adverse effects of the minimum on employment so that the minimum raises the total income of low paid labor. 3) In many countries minimum wages "spill-over" to the unregulated sector, producing spikes in the wage distributions there as well. 4) Employment protection regulations and related laws shift output and employment to informal sectors and reduce gross labor mobility. 5) Mandated benefits increase labor costs and reduce employment modestly while the costs of others are shifted largely to labor, with some variation among countries. 6) Contrary to the Harris-Todaro two sector model in which rural-urban migration adjust to produce a positive relation between unemployment and wages across regions and sectors, wages and unemployment are inversely related by the "wage curve". 7) Unions affect non-wage outcomes as well as wage outcomes. 8) Cross-country regressions yield inconclusive results on the impact of labor regulations on growth while studies of country adjustments to economic shocks, such as balance of payments problems, find no difference in the responses of countries by the strength of labor institutions. 9) Labor institution can be critical when countries experience great change, as in China's growth spurt and Argentina's preservation of social stability and democracy after its 2001-2002 economic collapse. Cooperative labor relations tend to produce better economic outcomes. 10) The informal sector increased its share of the work force in the developing world in the past two decades. The persistence of large informal sectors throughout the developing world, including countries with high rates of growth, puts a premium on increasing our knowledge of how informal sector labor markets work and finding institutions and policies to deliver social benefits to workers in that sector.

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Once about a time – not so long ago – the international financial institutions and many in the economics and policy establishment believed that they knew how to create sustainable growth in developing economies. They had a tool kit of policy prescriptions that they could take from country to country to cure economic ills. For the labor market, the package called for reduced regulations and lower social protection, cuts in public sector pay and employment, weaker unions, and greater reliance on market wage setting compared to collective bargaining or administrative rules. The enemy of growth was "urban bias" (Lipton, 1977) -- government or union setting of pay and work conditions that benefit modern sector workers but that reduce the flow of workers from low productivity informal and rural sectors to the modern sector. The World Bank's 1990 Development Report presented the prevailing wisdom: "Labor market policies – minimum wages, job security regulations, and social security – are usually intended to raise welfare or reduce exploitation. But they actually work to raise the cost of labor in the formal sector and reduce labor demand ... increase the supply of labor to the rural and urban informal sectors, and thus depress labor incomes where most of the poor are found." (World Bank 1990, p. 63).

Underlying this perspective was the Harris-Todaro (1970) two-sector model that attributed joblessness in developing countries to institutionally imposed high urban wages. The model posited that the high wages induced rural workers to migrate to urban areas, where they became unemployed while waiting for good jobs. Migration continued until the rate of unemployment equated the expected urban sector earnings (the wage times the probability of employment) to rural earnings. In this situation, an increase in modern sector employment at the institutionally determined wage does not raise GDP. This is because the addition of a high productivity job induces enough rural workers to migrate into urban

unemployment to reduce rural output by the increased output due to the new urban job.1

World Bank and International Monetary Fund economists also worried that labor institutions would undermine structural adjustment programs designed to cure balance of payments deficits or other economic ills. Viewing the archetypical problem as one in which the developing country ran into a balance of payments deficit, they stressed the need to shift resources from labor-intensive non-traded goods and services to capital-intensive traded goods sectors. The least costly way to do this was to devalue the currency, which would raise the price of tradeable goods and services relative to non-tradeable goods and services and thus attract resources into the traded sectors. As long as tradeable goods were capital intensive, this would also shift the income distribution toward capital. The fear was that unions or other institutions that raised wages to preserve labor incomes would stop relative prices from moving in the desired direction. Absent a price-induced shift in resources, the country would have to undergo a recession to reduce imports and raise exports, which would be far more costly than a real devaluation.

At the 1992 World Bank Annual Conference on Development Economics, I reviewed extant evidence that labor institutions harmed economic development and stymied adjustments to macro-economic problems per this analysis and found it sparse and unconvincing (Freeman, 1993a). The strongest evidence was Fallon and Lucas's (1989) comparison of the response of employment to output and wages in 35 industries in India and 29 industries in Zimbabwe before and after these countries strengthened labor laws. Their analysis showed that industries adjusted employment to changes in output as rapidly after the

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1 Let W be the wage in the urban sector and Wr be the wage in the rural sector. Then the two sectors have equal expected earnings when eW = Wr, where e is the ratio of employment (E) to labor force (L) in the urban sector. Since this means that EWr = LR, dL = W/Wr dE. An increase in E increases the urban work force, which in turn reduces the rural

laws as before the laws but that employment was lower at the same output after the laws (ie that productivity improved, which could be interpreted as a positive outcome). Absent evidence that firms complied with the laws and that other factors did not affect outcomes over the same period (they noted that Zimbabwe became independent co-terminus with the change in labor regulations) I viewed the results as inconclusive at best. I was more impressed by the large declines in real minimum wages and average earnings in many African and Latin American countries during the 1980s that suggested that labor regulations were more "sawdust" than "hardwood".

The quantity and quality of research on labor institutions in developing countries has increased greatly since the early 1990s. Some countries changed labor regulations in ways that provide good pseudo-experiments of whether institutions help or hinder the working of labor markets. Many countries now regularly provide researchers with micro data files on individuals and establishments that permit deeper probing of hypotheses than is possible with aggregate data. Research institutions and individual researchers have developed new data sets with country labor codes and institutional practices that illuminate cross-country differences and provide input into cross-country growth and other regressions.

In light of all this, what have we learned about how labor institutions affect outcomes in developing countries?

The recent research has not uncovered a general law for the effects of institutions on outcomes – economic circumstances and institutions probably vary too much among countries to support any single generalization – but it has yielded new and in some cases surprising findings on how institutions affect outcomes. This has led to a more measured

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output.

view of what institutions do than in the World Bank's 1990 proclamation. Here are the main findings:

1) Labor institutions vary greatly among developing countries but less than they vary among advanced countries. Collective bargaining is weaker in developing countries than in advanced countries while labor regulations are nominally similar.

2) Contrary to my initial skepticism, compliance with regulations in the formal sector of many developing countries is sufficient that minimum wages appear to be binding. They produce spikes in the distribution of wages around minimum. Most studies find that minimum wages reduce employment sufficiently modestly so that minimums generally help the low paid.

3) Contrary to Harris-Todaro type models, minimum wages induce spikes in the distribution of earnings in the informal sector in several countries, suggesting that minimum determine reservation wages of workers in those sectors.

4) Wages and unemployment are negatively related across geographic areas, consistent with the wage curve and contrary to the Harris-Todaro model.

5) Mandated benefits increase labor costs and reduce employment modestly while the costs of others are shifted largely to labor, with some variation among countries.

6) Some mandated benefits increase labor costs and reduce employment modestly while the costs of others are shifted largely to workers and thus presumably do not impact employment.

7) Unions are associated with higher wages and non-wage shares of compensation and with lower turnover and less dispersion of pay. Estimates of the union effects on profits and productivity differ across countries.

8) Cross-country regressions yield inconclusive results on the impact of labor regulations on growth while studies of country adjustments to economic shocks, such as balance of payments problems, find no difference in the responses of countries by the strength of labor institutions.

The research has led analysts at the World Bank and other international institutions to moderate their initially negative assessments of labor institutions.[2] Readers familiar with the retreat of the Bank and the IMF from obiter dicta on free trade, unrestricted capital flows, and laissez faire policies will note that this fits with the new modesty of these institutions about what economists can scientifically assert about growth-inducing policies.[3]

9) Labor institution can be critical when countries experience great change, as in China's growth spurt and Argentina's preservation of social stability and democracy after its

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2 The 1995 World Development Review was the first major Bank statement in this regard: "Free trade unions are the cornerstone of any effective system of industrial relations. Unions act as agents for labor … monitor employers' compliance with government regulations … can help raise workplace productivity and reduce workplace discrimination … (contribute to) … political and social development." (World Bank 1995, p 79). In 2003 the Inter-American Development Bank declared: "Labor regulations are not cost-free, but deregulation is not the answer.... Unions are neither the sand in the wheels of the labor market nor the solution to low wages.... better labor market performance is compatible with lower earnings inequality ... The new agenda requires a strengthened labor authority and a complex network of public and private institutions" (Inter-American Development Bank, 2004 pp 7-8).

3 Indicative of this thinking: "Rising trade volumes are unambiguously related to growth, but the direction of causation is unclear." Zagha, Nankini, & Gill (IMF, 2006); "some of the more extreme polemic claims made about the effects of financial globalization on developing countries, both pro and con, are far less easy to substantiate than either side generally cares to admit." Kose, Prasad, Rogoff, & Wei (IMF, 2007); "greater caution toward certain forms of foreign capital inflows might be warranted"– Prasad, Rajan, & Subramian (IMF, 2007); "expectations about the impact of reforms on growth were unrealistic…our knowledge of economic growth is extremely incomplete… an economic system may not always respond as predicted (Zagha, Nankini, & Gill, 2006). "The Washington Consensus has been dead for years." Wolfensohn (2004). On the role of government see World Bank (1993).

2001-2002 economic collapse. Cooperative labor relations tend to produce better economic outcomes.

10) In the 1990s-2000s, the informal sector's share of employment increased or held steady in virtually all developing countries, including those with healthy growth and limited regulations (section 8). Even without deregulating the formal sector, an increasing proportion of workers in developing countries are working in largely unregulated markets.

1. The Debate over Labor Institutions

Developing countries, like advanced countries, evince substantial differences in labor institutions that *could* impact economic outcomes and growth. To quantify this variation, I summarize in exhibit 1 the mean and standard deviation of five measures of the institutional orientation of formal sector labor markets. The five measures are: the labor component from the Fraser Institute's (2006) index of economic freedom; the Botero, et al (2004) indices of the strength of employment laws and laws regarding collective rights; the power of firms to set wages and hire and fire reported in the (World Economic Forum's Globa Competitiveness Report (2006) and rates of unionization from the ILO (1996). I have scaled the indices so that high values mean that a country relies more on market forces than on institutions in determining outcomes. I differentiate developing countries by level of income and distinguish the traditional advanced countries (the West and Japan) from recently the developed Asian Tiger economies. Appendix A gives the measures for each country.

The average values of the measures in exhibit 1 show that developing countries have lower union density and are more likely to rely on firms/markets than collective bargaining/regulations to set wages compared to advanced countries. The Botero et al measure of employment law shows stronger laws in developing countries than in advanced countries but the measures of hiring and firing practices, collective relations law, and the

overall Fraser Index show little difference between advanced and developing countries. The newly industrialized Asian countries are usually the most market-oriented. The correlation matrix at the bottom of the exhibit shows that the four indices are positively correlated, which indicates that they are measuring broadly similar phenomenon but the correlations are lower than what one might expect if they were good measures of the same underlying institutional structures. The could reflect genuine differences in country policies or practices along the dimensions that each index covers or it could reflect substantial measurement error in the indicators. Union density has a lower correlation to the four measures than they have among themselves.

The standard deviations below the means show considerable variation in institutions within groups. In 5 of the 6 measures, the variation is smaller among the developing countries than it is among the advanced countries. This is due to the divergence between the market-oriented US and the other English-speaking countries and the more institution-oriented countries in the European Union (Freeman, Boxall, Haynes, 2007). Finally, to the extent that institutions distort the operation of labor markets per the 1990 World Bank statement, the measures suggest that labor markets work better in some developing countries than in some advanced countries. By the Fraser Institute's index for labor, for example, the Ugandan labor market should work better than the German or Swedish labor markets.

Since institutions usually reduce dispersion of earnings across and among groups, another way to assess the importance of institutions in advanced and developing countries is to compare the dispersion of earnings among nominally similar workers. Exhibit 2 graphs the standard deviation of ln earnings among occupations and industries in countries by GDP per capita. It shows greater dispersion in lower income countries than in high income countries. To the extent that high dispersion reflects informational or other market failures,

institutions have greater scope to improve outcomes in developing countries than in advanced countries. To the extent that the lower dispersion reflects institutionally-enforced compression of wages from ideal market levels, on the other hand, the higher dispersion in low income countries might reflect better performing labor markets, per the Fraser Institute rating of the Ugandan market compared to those of EU countries.

Theoretical perspectives

Economists use three types of theories to analyze labor institutions.

The first, which I have labelled *distortionism*, views institutions as distorting otherwise ideal competitive market equilibrium. Consider analyses of unionism in a market where wages are at the competitive level and the union bargains for higher wages. The higher cost of labor leads unionized firms to reduce employment, which forces some workers to move to lower paid less productive non-union work, lowering economic efficiency. The higher the elasticity of demand for labor, the greater is the distortion in resource allocation.

The second type of theory treats institutions as mechanisms for efficient bargaining. Models of efficient bargaining predict that when firms/workers bargain they "leave no money on the table" and thus allocate resources optimally. This is the Coase Theorem at work in the world of labor institutions (Freeman, 1993b). This analysis suggests that institutionally determined rules, such as employment protection legislation, affect distribution but not production. More modestly, it suggests that through legal arrangements or shadow economy side-payments, there are "natural limits to the efficiency losses engendered by such regulations" (Squire and Suthiwart-Narueput, 1997).

The third type of theory focuses on ways institutions facilitate the flow of information and foster cooperative behaviour that *could* raise productivity. In this vein Freeman and Lazear (1995) modelled works councils as institutions that increase communication inside

firms and allow management and labor to make more informed and presumably better decisions. In addition, when dispersion of pay is high for non-competitive reasons such as monopsony (Manning, 2003), informational failures, or other factors, collective bargaining or government regulations can bring wages closer to the market-clearing level.

In sum, there are arguments that institutions reduce efficiency, do not affect efficiency, and raise efficiency. To determine which arguments are valid requires evidence on the links between institutions and outcomes that isolate the effect of institutions compared to other economic forces. On the basis of extant micro-data and statistical tools, I use a five-fold sieve for evaluating research on the impact of institutions:

*1) The institution should affect the t**argeted outcome.*** For instance, if the policy is a minimum wage, and the minimum is enforced, it should change the distribution of wages, producing a spike in frequency around the minimum. If an institution does not affect the price or quantity on which it is targeted it is likely to be a pro forma symbolic policy that is not implemented. For example, a government may have strong labor codes consistent with the Conventions of the International Labor Organization but allot no resources to enforce those codes and not impact outcomes.

*2) Evidence that the institution alters **quantities.*** Assuming that an institution affects the targeted outcome, it is critical to determine whether it reallocates resources or simply alters wages with no discernible impact on quantities. If it reallocates resources it is potentially distortionary. If it alters wages but not quantities, it could be efficiently redistributing income while leaving output unchanged, per efficient bargaining models. In the minimum wage case the critical evidence is the effect, if any, on employment.

3) Evidence that the outcome attributed to the institution did not occur in another setting absent the institution. This applies a difference in difference analysis by treating the

setting in which the new institution operates as the treatment and some setting where it does not operate as the control. Since many countries, sectors, or workers without an institution can serve as a counter-factual, there is a danger that the selection of one counter-factual rather than another may determine the conclusion. To minimize such dangers, the analysis should demonstrate that outcomes in the control were highly correlated with outcomes in the affected group *before the institutional change (*Abadie et al., 2007). Otherwise, the control is unlikely to be a good guide to how the affected group might have fared absent the policy.

4) Evidence that the estimated effect of the institution is sufficiently large to affect aggregate development. In advanced countries most workers are in the formal sector finding that an institution affects outcomes means that it will have a widespread impact. In developing countries where the share of the work force in the formal sector is small institutions are unlikely to affect aggregate outcomes unless they have *very large* effects on the formal sector, sizeable spillovers to the informal sector, or are located in sectors that may be particularly important for economic development, for instance traded goods.

5. *Identification of an institutional innovation from outcome data.* This is a "double blind test" in which the researcher looks at outcome measures as if he/she had no knowledge of any institutional change and identifies the period/country where the institution was at work. It is based on Andrews' (1993) test for structural changes in time series data with unknown change points. Ideally, the outcome data show a break that lines up with the change of policy that may have caused the break. In cross country time series growth data, the question would be whether the growth record of countries would identify those that adopted economic reforms that are supposed to help growth. It tests whether any innovation is sufficiently important to affect outcomes when other factors are also at workl.

2. Micro-evidence on minimum wages

The response of employment to minimum wages depends on the shape of the labor demand schedule in the range of the minimum. For all its contentiousness, the literature on minimum wages in the US and other advanced countries generally finds modest responses in employment (Card and Krueger (1997); Neumark and Wascher, 2006). The evidence that employment responses are often negligible does not mean that demand curves do not slope downward nor that a high minimum wage cannot decimate employment. Rather, it suggests that governments set minimum wages with due consideration to the risk that minima can cause more harm than good.

The studies summarized in Exhibit 3 find that in many developing countries, minimum wages raise the pay of low paid workers in the formal sector by enough to produce spikes in the distribution of earnings and that changes in the minimum change the wages for low paid covered groups. Studying compliance in Indonesia. Harrison and Scorse (2003) report that during the 1990s epoch of globalization compliance increased in both multinationals and domestic firms. With respect to employment, most studies find that minimum wages had modest adverse effects on employment, with however considerable variation across countries and studies, even by the same analyst. Alatas and Cameron (2003) and Rama (2001) found that employment effects in Indonesia were limited to small firms. Bell (1997) found larger employment effects in Columbia than in Mexico. Analysing Brazil, Lemos (2007) found no employment effects in the public or private sectors, while earlier reporting small negative long run employment effects and modest negative employment effects in the formal and informal sector (Lemos 2004a, 2004b)s. Gindling and Terrell (2007a) estimated an elasticity of employment to the minimum in Costa Rica of -0.10 but estimated an elasticity of employment to the minimum in neighboring Honduras greater than -1.0 (Gindling and Terrell, 2007b). Studies that use panel data to identify the workers

directly impacted by the minimum find larger employment effects than studies that estimate the effect from employment statistics for a wider group, but whether the differences among countries reflect differences in labor markets and in enforcement or in research designs is difficult to tell.

That most studies obtain elasticities considerably less than unity implies that increases in the minimum have the potential for being a viable anti-poverty tool. Analysing the link between minimum wages and poverty in 22 developing countries Lustig and McCleod (1997) find that changes in real minimum wages are associated with declines in poverty, which requires that the elasticity of demand be low. The high elasticity found for Honduras is a striking exception, indicating that each country case (and each potential change in the minimum in each country) must be considered carefully.

Studies that have examined the pattern of change in minimum wages as an endogenous variable raise doubts about the standard assumption that changes in minimum wages are exogenous to market conditions. Looking at changes in real minima wages in 23 developing countries in the 1980s-1990s, Squire and Suthiwart-Narueput found declines in the real minimum in 16 countries. Presumably governments allowed real minima to fall because they believed that in times of economic crisis falling real minima saved jobs. Rama (2000) shows that African counties in the CFA zone changed minimum wages in response to changes in the terms of trade, national output, and consumer prices.

The big surprise in studies of minimum wages in developing countries is a substantial body of evidence from Latin America that minimum wages *raise* wages in the informal sector as well as in the covered sector (Gindling and Terrell, 2005, Lemos, 2004b, Kristensen and Cunningham, 2006; Maloney and Nunez Mendez, 2003). In Brazil this is known as the "Efeito Farol" or lighthouse effect. In some cases, increases in the minimum appear to raise

wages more in the informal sector than in the formal sector. This effect runs counter to the model that economists often use to analyse minimum wages, in which labor displaced from covered employment moves to the uncovered sector and depresses wages there.

One interpretation of the positive wage spillover is that workers base their reservation wages on the minimum, perhaps because the high dispersion of pay in developing countries provides little guidance as to what wage they might expect. If low paid workers in the informal sector are paid less than low paid workers in the formal sector, their wages would increase more if the minimum induced all workers to have the same reservation wage. But perhaps something else is going on that is not captured in the model[4] or perhaps the measures of wages in the informal sector are poor. In any case, the results devastate the application of the standard model to understanding what minimum wages do in developing countries.

3 Wage Curve

The wage curve is an empirical relation between wages (w) and unemployment (u) that is usually written in log-log form: $\ln w = a + b \ln u + X$, where X refers to other factors that affect wages (Blanchflower and Oswald, 1994). Fit with cross section data across regions, the wage curve tests the prediction of the Harris-Todaro two-sector model that high wages induce unemployment due to the migration of rural labor to high wage cities contrary to the finding in advanced countries that wages are lower when unemployment is higher as wages fall to equilibrate the supply-demand imbalance.5 If estimated wage curves had the

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4 In a general equilibrium closed economy the minimum would shift capital as well as labor to the informal sector, which could raise wages there if the shift raised its capital/labor ratio.

5 Note that the inverse relation indicates that the adjustment process is insufficiently powerful to clear the labor market and eliminate the correlation in the time frame covered. There is debate about the applicability of the wage curve analysis to the US, but US studies also find unemployment and wages positively related.

opposite sign in developing countries from those in advanced countries this would signal a major difference between labor markets. Migration would dominate the link between wages and unemployment in developing countries whereas wage adjustments to unemployment would dominate the link in advanced countries.

Between 1993 and mid 2007 researchers estimated wage curves for 13 developing non-transition economies: Argentina (Galiana, 1999), Brazil (Amadeo and Camargo, 1997), Chile (Berg and Contreras, 2004); Mexico (Castro Lugo, 2006), Uruguay (Bucheli and Gonzalez, 2007) in Latin America, Burkina Faso (Lachaud, 1998), Cote D'Ivoire (Hoddinott, 1996), South Africa (Kingdon and Knight, 1998, 2006), in Africa; and Turkey (Ilkkaracan and Raziye, 2003), Korea (Blanchflower and Oswald, 1994), Taiwan (Rodgers and Nataraj, 1999) China (Sabin, 1999; Wu 2004), India (Bhalotra, 1993). These studies obtain negative coefficients on ln unemployment of the same order of magnitude as the coefficients in advanced countries – an elasticity of about -0.10. The negative estimated relation between unemployment and wages implies that the Harris-Todaro model does not represent labor markets in the developing countries in the period covered. [6]

This conclusion is consistent with analyses of labor market adjustments in the 1990s in Sub-Saharan Africa, whose experience motivated the model. For South Africa Kingdon and Knight (2004) reject the two sector story of urban joblessness on the grounds that unemployed workers do not forego informal sector jobs to search for a high wage urban job. Similarly, Rama's (2000) analysis of the CFA African countries rejected "the hypothesis that labour market policies and institutions were the obstacles preventing wages in the formal sector from adjusting to a more unfavorable international context" (p. 495). Summarizing

[6] See Babecky, Ramos and Sanromá (2008) for a meta-analysis of wage curves that cover all countries that is consistent with this conclusion for developing countries.

research on African labor markets, Kingdon, Sandefur, and Teal (2006) conclude that real wages were "more downwardly flexible than previously thought and … surprisingly responsive to unemployment rates" though large wage differentials remain between the formal and informal sectors. Sizable flows of labor between the informal and formal sector in some countries also argues against the Harris-Todaro model.

In short, the evidence rejects the two sector model that makes institutions the prime cause of divergences between earnings and productivity among sectors and of the large pay differences among industries and occupations shown in exhibit 2. Given that the two sector model does not fit reality, we must seek look elsewhere for the causes of the great dispersion of pay in developing countries: Efficiency wages or gift exchanges? Implicit profit sharing between firms and workers? Unmeasured differences in human capital? Transportation or communication problems that make the sectors separate islands in the economy and raise the costs of search? The door is open for innovative analyses.

4. Employment Regulations

Employment protection legislation (EPL) seeks to protect the jobs of current employees by requiring that firms pay severance if they lay them off. Many laws also require the firm to gain approval for dismissals from a labor court or works council. Closely related regulations forbid firms from hiring replacements during a labor dispute and guarantee workers the right to return to work after the dispute. The regulations essentially deal with property rights at work – whether the worker or the firm "owns" the job. Regulations that give greater ownership to workers should reduce job turnover and tilt market outcomes toward experienced workers against new entrants, whereas those that give greater ownership to firms tilt outcomes toward capital and more mobile younger workers. Still, by making

layoffs more expensive, EPL increases the cost of hiring workers (whom the firm may lay off in the future), which risks reducing total employment.

For advanced countries, two decades of studies spurred by the OECD have quelled the fears that EPL greatly affects employment. Most studies find that EPL laws redistribute employment to incumbent workers with no clear impact on aggregate employment or unemployment (OECD, 2004, 2006).7 For developing countries, research has just begun. In Latin America, job security provisions and costs of dismissals are extensive and thus more costly than in advanced OECD countries (Heckman and Pages 2000). Even so, studies of EPL legislation that compare employment before and after changes in the law and/or between covered and uncovered groups in particular countries find effects on total employment in some countries but not in others. The strongest country evidence for effects of laws is for Columbia. In 1990 Columbia lowered severance pay and gave firms greater latitude to lay off workers. Using the Colombian National Household Survey, Kugler (2004) found that the weakened EPL was associated with growth of employment and a decline in job tenure in the formal sector relative to the informal sector and with increased job separations and hires in the formal sector. This churning induced a modest fall in unemployment duration and aggregate unemployment.

By contrast, studies of EPL legislation for Chile find no such effects in time series data (Edwards and Edwards 2000) and household data (Montenegro and Pages 2004). Montenegro and Pages find that EPL regulations shift employment from young unskilled workers to senior skilled workers as in advanced countries. Petrin and Sivadasan's (2006) analysis of establishment data shows no impact of Chile's 1991 and 1994 changes in

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7 In 2004 the OECD summarized the literature as saying that "the evidence of the role played by EPL on aggregate employment and unemployment rates remains mixed" (p 81)

employment regulations on employment, the number of hires and fires, or the speed of employment adjustment, though they estimate that wages and marginal productivity changed in ways that they attribute to changing EPL laws.8

Using firm-level data sets for 16 countries, including five Latin American countries, Haltwanger, Scarpetto, and Schweiger (2008) show that gross job flows (the sum of jobs created and jobs destroyed) range from 25 to 30 percent and vary similarly by size of firm and industry across countries. Using the US as the metric for what a relatively unregulated competitive labor market would produce they find that flows in the other countries are lower than in the US and relate the differences to measures of labor regulations. Latin American regulations are comparable to European Union regulations and both the Latin American and EU countries have lower gross flows than the US. However, it is the entry and exit of firms rather than the employment behavior of existing firms that underlies this difference, which they term "somewhat surprising from a theoretical perspective (p 26)". Given the high level of gross job flows in all of the countries, it is unclear whether any regulation-induced difference in job flows adversely impacts net job reallocation or efficiency.

Several studies have looked at how India's labor laws affect outcomes in the formal sector, exploiting the fact that labor regulations vary across states and over time. Besley and Burgess (2003) created an index of changes in the laws governing employment protection and industrial disputes for Indian states from 1947 to 1997 and made before-after contrasts of employment and output in states that did/did not change the laws and between the formal and informal sector within states. Their main specification showed that pro-worker regulations

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8 I find their direct analyses of employment and hiring more convincing than their interpretation of their estimated gap between wages and marginal productivity, hich show a rise in the gap after the 1984 change in regulations but not after the 1991 change and a rise in the gap for blue collar workers in 1995 when the law did not change.

induced firms to shift employment and output from the formal to the informal sector,.9 although they report that results "are not robust to including state-specific time trends." (Besley and Burgess, fn 21). Bhattacharjea (2006) criticizes the index as being based on: 1) misreading legal changes in three states (Andhra Pradesh; Maharashtra, Rajasthan); 2) coding laws so that passing three laws in one year in one direction counts less than passing the same laws in three separate years; 3) failing to take account of the way state labor laws interact with other labor laws. The result is that some of the patterns "stand out for anyone who is reasonably familiar with India": Kerala, known as pro-labor, is coded as pro-employer while Gujarat and Maharashtra, known as pro-employer, are coded as pro-worker.

Ahsan and Pages (2008) report, however, that the results are robust to Bhattacharjea's amended measures. They find that the laws that regulate the procedures for the resolution of industrial disputes have more robust and greater effects on formal sector output and employment than those relating to employment protection legislation. Neither Burgess & Besley nor Ahsan and Pages find any gains to workers from the legislation, which raises questions about the purpose of these regulations: why have EPL or . Finally, looking at the effect of regulations in the context of trade liberalization, Hasan, Mitra, and Ramaswamy (2007) find that states with greater regulations have smaller elasticities of labor demand, which suggests that the laws may protect jobs by reducing flexibility. Overall, Indian labor institutions come closer to fitting the 1990 World Bank view that regulations do more harm than good than the institutions in other countries, though their impact is limited on the aggregate economy due to the huge size of the Indian informal sector.

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9 Indicative of the political sensitivity of the analyses, the Indian Ministry of Finance misread the study as showing that "states which have more pro-worker regulations lost out on industrial production" when the finding is that more pro labor laws shifted production to the informal sector, conditional on omitting state time trends, as cited by Bhattacharjea, 2006.

5. Mandated benefits

Mandated benefits are non-wage compensation (social insurance, compensation for injuries at the job, maternity leave, vacation or holiday pay, and so on) that governments require firms to provide workers or to pay taxes for government provision. Employers often complain about the cost of the benefits as if they are add-ons on wages. But if workers desire the benefit and if wages are flexible workers will pay part and possibly the full cost through lower wages. Summers (1989) argued that mandated benefits can be a more cost-effective way to deliver public goods than government provision through general taxes. Studies of the incidence of mandated benefits for advanced countries show that workers bear the full incidence in some cases (Gruber, 1997a) and a sizable share of the cost in others (Gruber and Krueger (1991), Ooghe, Schokkaert, and Flechet (2003)). Workers are more likely to bear a large proportion of the cost when they value the benefit highly.

Many developing countries mandate benefits for workers. Most Latin American and Caribbean countries use payroll taxes to fund retirement, work injury benefits, and health care in national social insurance systems. Most have paid vacations, and some have maternity leave as well as other benefits that could increase the cost of labor. Analyses of the incidence of mandated benefits in Latin America give different results by benefit and country. Gruber (1997b) estimated that when Chile switched funding social security from payroll taxes to general revenues, the reduction in payroll taxes was passed entirely onto workers in the form of higher wages. This implies that the payroll taxes had no effect on labor demand. But using a similar methodology In Colombia, Kugler and Kugler (2003) find modest shifting of the payroll tax, which implies that the tax raised the cost of labor in the formal sector, and affected demand. When Colombia changed its mode of funding severance pay from a pay-as-you-go system to private accounts in which the employer deposited a

proportion of the worker's wage, Kugler (2002) estimated that 60% to 80% of the cost shifted to workers in the form of lower wages. This suggests that under the pay-as-you-go system workers were dubious that firms would pay severance if financial difficulties forced layoffs whereas the private accounts guaranteed that they would get severance pay.

6 Union Effects

Developing country unions range from China's All Chinese Federation of Trade Unions, a government controlled agency that seeks to advance worker interests within bounds set by the Communist party to Korea's aggressive independent enterprise unions to Peronist unions in Argentina to South Africa's COSATU, which played a major role in the anti-apartheid struggle. Most developing country unions are weak. Many are more involved in political activity than in collective bargaining. But enough unions in developing countries engage in collective bargaining to enable researchers to examine what unions do to wages in the tradition of Lewis (1963, 1986) and what they do to non-wage outcomes in the tradition of Freeman and Medoff (1984).

Because data is limited, however, many studies estimate union effects from small non representative samples and most compare outcomes between union and nonunion workers/firms with similar characteristics rather than undertaking more methodologically preferable longitudinal analyses of workers or workplaces that change union status. The one advantage of studying union effects in developing countries is that in some countries governments have changed drastically their treatment of unions in short periods of time – for instance from outlawing collective bargaining and restricting unions to allowing them to operate freely, which offers the rare opportunity to compare the functioning of a union-free economy to an economy with free unions.

Exhibit 4 summarizes the findings on the link between unionism and economic outcomes in the countries for which I found quantitative studies.

The most extensive work is on Mexico. Estimated union/nonunion wage differentials ranges from 5% or less to 10%-15%, with unions having their biggest effect on the wages of lower paid workers. This implies that they reduce wage dispersion and inequality. Popli (2006) confirms this result but reports that the lower dispersion of pay between union and nonunion workers narrowed from 1984 to 2000. Comparing unionized and nonunion establishments, Fairris (2005, 2006) finds that unionism is associated with a higher share of compensation to non-wage payments and more training of workers; with lower quits in foreign-owned firms (though not in Mexican-owned firms). Union firms have higher productivity and comparable profits as in nonunion firms. In contrast, Maloney and Ribeiro (1999) estimate that unions increase employment in Mexico, which suggests that they lower productivity. Absent longitudinal changes in union status, however, these patterns could reflect selectivity of unionized firms rather than any causal impact of unions on firm performance.

For Brazil, Arbache estimates a union wage premium in manufacturing on the order of 5% to 7%, but also finds, contrary to most studies, higher wage dispersion among union workers than among nonunion workers. Menezes-Filho et al (2005) estimates that union density within Brazilian manufacturing firms is associated with a union wage effect of 12%, and that unionized firms have lower productivity and profitability but that union firms that introduced profit-sharing schemes had substantial increases in productivity and profits. The studies for other Latin American countries, based on small surveys, find that unions are associated with lower productivity or profits. The study for Peru reports lower profits but comparable productivity in unionized firms as in nonunion firms, which implies that the

unions must have gained higher wages. The study for Guatamala finds 10% lower productivity among unionized coffee plantations in a sample of 37 large plantations but finds no union/nonunion differential in productivity in the five plantations that changed union status over the period.

Quantitative studies of unions in Africa have concentrated on wage effects. In South Africa, unions appear to raise wages by 10% to 20%. Since South Africa has high unemployment, one might be tempted to blame the unemployment on high union wages per the Harris-Todaro model but Butcher and Rouse note that the union share of the South African work force is too small for the estimated wage effects to explain the country's unemployment. The wage curve for South Africa shows an inverse relation between wages and unemployment. In other African countries, Blunch and Verner (2004) estimate that unions raise wages by about 6% in Ghana, with the effect coming largely from higher wages for lower paid workers while Verner reports a larger union-nonunion differential in Ghana of 16%. Tsafack-Nanfosso (2007) estimates a union/nonunion wage differential of about 14% in the Cameroon[10] and finds that the standard deviation of log earnings among unionized workers is considerably lower than among nonunion workers.

Three studies find lower wages among unionized worker in Africa. Estimates for Zimbabwe show higher productivity as well as lower pay in union workplaces, which is not easily reconcilable with other research (Verner, 1999). Estimates for the Cameroon give lower union wages in 1993 and 1994 (Thomas and Vallee, 1996). Estimates for Senegal find lower union wages in 1980-85 (Terrell and Svejnar, 1989). Since it makes little sense for

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10 He reports a 51% union wage effect using a selectivity term, but has no way to identify the likelihood of being union beyond functional form. Models of this type often yield extremely high or low estimates that reflect the absence of any genuine instrumental variable. (Freeman and Medoff, 1982).

independent unions to negotiate lower wages for members, in all of these cases, the unions are presumably not "normal unions" doing collective bargaining. At various times, governments in these countries suppressed independent unions or ran unions as appendages of the governing party.11 What is needed is a study of the circumstances and behavior of African trade unions to inform the quantitative analyses.

Turning to Asia, Malaysian unions operate primarily at the establishment level because the government restricts industrial unions. Using establishment data Standing (1992) finds that unions reduce skill differentials and lower quits, and are associated with higher productivity, more product and process innovations, more firm-sponsored training, and greater enrollment in a pension plan. The differences between the outcomes for firms with and without unions far exceed the differences in outcomes between firms with plant level unions and those that had industrial level unions. Bhandari's (2008) data on the wage differences between union and nonunion Indian workers based on a small (551 person) sample reports differences of wages 6% for contractual workers and 25% for permanent workers.[12]

Like Malaysia, Korean unions are largely enterprise based, with membership restricted to regular employees. Studies compare wage and other outcomes between regular employees in firms with and without collective bargaining agreements, and between non-regular workers between those firms as well. The estimated impact of Korean unions on wages is in the low single digits. Fields and Yoo (2000) found that the union differential doubled during the period of rapid union growth, but this was from a modest 3% to a still

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11 Unions in Senegal and Cameroon have been in conflict with governments over time, and the unions in Zimbabwe have long opposed the Mobutu dictatorship

12 Using a regression model decomposition, he reports a 57% union wage effect for permanent workers. This appears to reflect the way the decomposition treats huge differences in regional and migration characteristics between union and nonunion workers.

modest 6%. Park (2006) reports a union differential of 5% for all workers, larger for women (12%) than for men (2%), but also finds that non-standard workers, who are excluded from the enterprise union, are paid less in union establishments. Unionism is also associated with greater employment of non-standard workers, suggesting that firms substitute them for more expensive union labor. Using a 1991 survey of establishments, Kleiner and Yee (1997) estimated the impact of unions and works councils deemed 'effective' by management and labor leaders on non wage outcomes. They found lower turnover, similar productivity and lower job satisfaction among workers in the unionized settings. By contrast, they found that works councils were positively associated with productivity and satisfaction. Both unions and works councils appear to have affected decisions about terminations and downsizing.

The country which experienced the most striking change in union status is Uruguay. From 1973 to 1984 Uruguay's military dictatorship outlawed collective bargaining. The return of democracy gave unions the right to bargain with employers, first under a tripartite system in which unions, management, and government bargained together (1985 to 1991, covering some 60% of production workers), and later by management and unions without government involvement. Labor market outcomes differed with these regime shifts. During the dictatorship real wages fell 49 percent while the rate of unemployment varied cyclically, reaching 16% in 1983. Thereafter unions raised wages, which induced firms to invest in capital. Unionized firms had sufficiently higher productivity that firms suffered no profits loss (Cassoni, Labadie, and Fachola, 2005). Using establishment data, Cassoni, Allen, and Labadie (2000) found that elasticities of employment to output and wages were lower with collective bargaining than in the union-free environment, suggesting that unions reduced employment flexibility.

Korea, like Uruguay, has had distinct regimes governing unionization. Before Korea achieved democracy in 1987, the government allowed only an official union movement to operate and used state police powers to assist employers in labor disputes. Democracy brought with it a near doubling of union membership but union density fell in the 1990s and 2000s (Jeong, table 2.1, 2007). Some Korean unions formed a second more militant federation, and the older federation became more aggressive as well. Governments have tried unsuccessfully to ameliorate the intensity of disputes by establishing Tripartite Committees for social dialogue and requiring that firms introduce works councils. Wages increased greatly during democraticization and income inequality fell but the 1997Asian financial crisis weakened union strength. Real wages fell by 9.3% in 1998, as unions agreed to low nominal wage changes despite high inflation. Jeong's (2007, chapter 4) analysis of collective bargaining contracts shows that the unions shifted from seeking wage gains to protecting jobs. Lee and Na's (2004)1999 survey of 300 firms found only a weak union impact on firm responses to the crisis: unionized firms were more likely to downsize through retirements than layoffs.

Finally, taking a more aggregate approach, Feldmann (2009) related the reports of executives in the World Economic Forum's Global Competitiveness Report on the quality of labor-management relations to aggregate unemployment. With measures of labor relations for 1995 to 2003, he conducted a longitudinal regression analysis with country-specific random effects that shows that cooperative relations reduce unemployment, as does flexible labor regulations as reported by executives.

In sum, research finds that unions are associated with higher wages (save for the African studies noted), higher non-wage compensation, lower dispersion of earnings (save for the Brazilian study noted), reduced quits and greater training. But the studies show

varying relations between unions and productivity or profitability across studies and countries. While this variation is consistent with the notion that what unions do differs across countries, it also reflects differences between the often small surveys and groups covered and limitations of the study designs.

7 Cross country evidence

Many economists are dubious about what we can learn from cross-country growth regressions.[13] The data sets are small, the measures of institutions are often weak, and our knowledge of economics is too limited to identify the "right" model for analyzing how an institutional intervention affects an entire economic system. Analysts have trouble pinning down the effects of education or trade on growth in cross-country regressions (Krueger and Lindahl 2001; Rodriguez and Rodrik 1999) so what hope is there of uncovering the more subtle effects of labor institutions? These are valid concerns but since the bottom line in development is growth, there is something to be learned from regressions of growth rates on measures of labor institutions.

One strand of cross-country analyses focused on labor institutions uses data from the World Bank's Data Base of Labor Market Indicators Across Countries (Rama and Artecona 2002). This data base contains measures of indicators of institutions such as the number of ILO conventions a country has ratified, the level of minimum wages, mandated days of maternity leave, union and government shares of the work force. Because the data are sparse, Forteza and Rama (2001) average the four measures to form an aggregate indicator of

13 T.N. Srinivasan (National Academy of Sciences, 2004) worries about "data of varying quality from disparate economies … (subject to) … measurement errors and biases … (and) a two-way relationship between growth and some of the explanatory variables" (p 14)

institutional "rigidity" for 1970-1999 and warn analysts that "*time-variant indicators of labor market rigidity cannot be used in the empirical analysis*".

By the indicators measure, the ten most flexible labor markets: South Africa, Uganda, Zimbabwe, Kenya, Tanzania; and China, Hong Kong, Jordan, Indonesia, and Chile. The ten most rigid labor markets include France, Sweden, Belgium, Denmark, and four former Soviet bloc countries, Hungary, Belarus, Krygyz Republic, Bulgaria, and Algeria and Uruguay. I list the countries to highlight the problems with categorizations of this type. There is remarkable institutional variation among countries at both ends of the flexibility spectrum. In the flexible group, South Africa has strong trade unions and an extensive labor code based on those in Europe, whereas unions could barely operate in Idi Amin's Uganda or Robert Mugabe's Zimbabwe; China did not have a working labor market until the 1990s while Hong Kong had a free market under British law. In the inflexible group, Belarus is a residual Soviet-style dictatorship, Hungary is part of the EU, Denmark is famed for high labor mobility and "flexicurity" while France relies extensively on minimum wages. Changes in labor regulations in Uruguay, the ex-Soviet countries, the African countries, and China suggest that no single index can capture their institutions over the entire period. Given these measurement issues, institutions would have to be incredibly powerful to show up as determinants of growth in cross country regressions.

Forteza and Rama (2001) test whether their measures of rigidity were associated with the success of World Bank adjustment programs. They do this by interacting the indices with dummy variables for the timing of World Bank credits and loans and entering the interaction terms into regressions of the growth of GDP per capita. The idea is that countries that obtain

Bank loans/credits should increase growth more if they have less rigid labor markets.[14] Growth regressions with fixed country effects yield, however, similar coefficients on the labor rigidity index before and after receipt of Bank aid.15 Decomposing the index into its separate parts, Forteza and Rama find that different indicators have different relations with growth: "relatively high minimum wages are associated with better economic performance before adjustment" (p 24) while union and government shares of the work force were associated with slower growth before and after the receipt of loans.16

Ignoring the warning that the Labor Market indicators data should not be used as time-variant measures, Calderon and Chong (2005) create rigidity indices over time to conduct a panel analysis of growth rates. For developing countries their panel regressions with country fixed effects show that the number of ILO conventions has a large negative effect on growth, while the average of indicators has little effect. Models estimated with generalized method of moments with instrumental variables show stronger negative effects on growth,17 but regressions that relate growth over the entire period to the average indicators find that one of the four measures is *positively* related to growth while the others have no significant relation.

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14 Someone skeptical of the value of Bank assistance and advice might argue the opposite but the regressions show that growth rates tend to improve after receipt of Bank assistance.

15 For instance, the estimated coefficient in table 5 on the interaction terms for the aggregate rigidity indicator on the years right before a program is -.094 while the coefficient on the years right after the program is -.097 -- a negligible difference of .003.

16 These measures are negatively associated with growth rates only when industrial countries are included in the data set. (Forteza and Rama, p 23)

17 By contrast, for advanced countries, the indices have negative impacts on growth regardless of the statistical methodology, which reflects the less rapid growth of institution-driven EU countries than of the more market driven US and other English-speaking countries.

Botero, et al (2004) and Calderon and Chong (2005) use the Botero et al measures of labor laws introduced in exhibit1 to analyse aggregate outcome. Botero et all report that across all countries in the data set the employment law and collective action indices are associated with lower utilization of labor overall and with higher unemployment for young workers. Calderon and Chong (2005) (table 6) regress growth rates on the Botero measures of labor codes and obtain an insignificant coefficient on the index of employment laws but a positive coefficient on an index for social security laws, that at face value implies that countries with social security laws grow more rapidly than others .

The labor subindex of the Fraser Institute, which the Institute reports at five-year intervals from 1970 to 2000 and yearly thereafter, provides another source of data on labor institutions across countries. To see whether the labor subindex is associated with economic growth I estimated the following equation:

$$\Delta \text{Ln GDP} = a + b\ \text{INDEX} + c\ \text{LABOR} + d\ \ln \text{GDP}(-1) + Dc + Dt + uij$$

where ΔLn GDP is the annual growth rate in ln GDP per capita over each period, 1970-75, 1975-1980, and so on through 2000 to 2004; INDEX is the Fraser index of economic freedom excluding the labor subindex; LABOR is the subindex of measures of minimum wages, hiring and firing practices, collective bargaining, unemployment benefits, and use of the draft; Dd are country dummy variables; and Dt are time dummy variables.

If market-driven economies improve growth, the b coefficient in this regression should be positive. Similarly, if labor institutions harm growth the c coefficient will be positive. The regression, which is summarized in appendix B, yields a significant positive coefficient on the INDEX variable for developing and advanced countries, which supports the notion that market-oriented economies enjoy higher growth. But for both sets of

countries the coefficient on the LABOR measure is negative and insignificant, which rejects the hypothesis that labor institutions reduce the rate of growth.

In sum, there is no strong support for the proposition that labor institutions affect economic growth positively or negatively.

8 **Country Cases**

Case studies of country experiences are the methodological polar opposite of cross country regressions. Country studies allow analysts to use country-specific data rather than generic cross-country indicators and to situate their interpretations of the data in hopefully deep knowledge of country institutions and practices. But country cases are not a random sample from the countries in the world, and they invite attention to country specifics – great leaders, particular events – that do not readily generalize. Still, there is much to be learned from them.

In 1988 the World Bank initiated studies of labor market adjustments in twelve developing countries (Chile, Argentina, Bolivia, Costa Rica, Brazil; Ghana, Kenya, Egypt, Cote D'Ivoire; and Korea, Malaysia, Thailand). The analysis (Horton, Kanbur, Mazumdar, 1994) reached three conclusions: 1) "real wages were more flexible than generally supposed, which would support adjustment"; 2) "labor reallocation across sectors has been more or less in the desired direction" (ie toward tradable goods); and 3) "labor market institutions such as unions and minimum wages, often argued to be an impediment to adjustment, have more subtle effects on the workings of the labor market" (Preface, p x). These conclusions fit with the econometric findings reviewed earlier and with the more measured view of labor institutions and economic outcomes that has emerged in recent years.

That labor institutions have modest impacts on economic performance on average does not mean that in particular situations they may not affect growth or help or hinder

economic adjustments. Some countries in the Bank study underwent major changes after the researchers completed their empirical investigations – the Chilean economy improved greatly; Argentina went from boom to bust; Cote D'Ivoire suffered civil war; East Asia suffered financial crisis. Consideration of how labor institutions performed under these circumstances would enrich the conclusions of the Bank studies. Much might also be learned by analyses of cases where institutions appear particularly harmful or beneficial to the economy or of institutions in countries with great growth failures or successes. From this perspective I examine next institutions in China's move to a market economy and in Argentina's recovery from economic meltdown.

China

China's transformation from communist planned economy to a market economy and entry to the global trading system is one of the most important developments in recent economic history. As part of this shift, the country radically changed its labor market institutions. From the 1960s through the late 1980s, China did not have a working labor market. The state/party controlled the demand and supply of labor (Walder, 1986). The state was the primary employer. It set pay through a national pay grid and mandated benefits such as health care, retirement, and housing. It controlled hiring and firing and assigned workers to jobs. It limited migration through Hukou residency restrictions. Fearing that unemployed urban youth might create a social problem in the 1980s, the state encouraged older workers to retire by promising to assign their jobs to their offspring.

Shifting from communist planning to markets in the mid 1980s through the 1990s, China freed firms and workers to make demand and supply decisions. It gave management of state-owned enterprises authority to hire and fire and introduce performance linked wages. It allowed greater private employment. In the 1990s it privatized many small and medium state-

owned enterprises and laid off several million workers from state enterprises. It weakened the Hukou system. With opportunity to find work, buy food, and obtain housing in the market, upwards of 100-150 million workers moved from rural to urban areas -- the largest internal migration in history. Workers and firms matched themselves in the job market rather than relying on state assignment.

Could China have successfully transitioned to a market economy with its pre-labor market institutions? Studies of wages, employment, and productivity during China's growth spurt suggest that the labor market reforms were an essential part of China's success (Meng 2000; Knight and Song 2005). Wages for skilled work increased, raising the return to education. Tens of millions found work in the private sector. Productivity rose in state owned enterprises. It is hard to imagine these changes occurring with the state setting pay and assigning workers to jobs, though it is hard to imagine a counterfactual test for this assertion.

The new Chinese labor market produced a huge income gap between rich and poor, evinced in a Gini coefficient that reached US levels by 2005, disturbing Party leaders, who worried about "mounting public anger over inequality and corruption" (Eckholm, 2001). To deal with these concerns, China enacted a new labor code in 2007 that required employers give written contracts to workers, restricted use of temporary laborers, made lay offs more difficult, and strengthened the power of the All China Federation of Trade Unions to organize and to bargain for wages and benefits. With World Bank (2006b) advice, the government sought to establish a national pension system. China's effort to develop labor institutions to reduce income inequality and insure against social disorder reflects a very different perspective on the role institutions in development than the fear that institutions are inimical to growth that motivates many economic studies.

Argentina

In the 1990s Argentina was the poster child of globalization and Washington Consensus policies. With the advice and assistance of the IMF, the country pegged the peso to the dollar, privatized many public enterprises, loosened controls on banking and foreign currency, and greatly increased the market orientation of its economy. Between 1990 and 2000, Argentina rose in the economic freedom index of the Fraser Institute (which measures reliance on market forces rather than institutions) from 84th in the world to 27th. Seemingly reflecting these changes, the Argentine economy grew rapidly in the 1990s, although with double digit unemployment and increased inequality. At its fall 1999 meeting, the IMF lionized Argentine President Carlos Menem for his economic stewardship, and he responded by thanking the IMF for its guidance. Washington Consensus? Think Argentina.

Two years later, the Argentine economy collapsed. The value of the Peso dropped to 1/3rd of the dollar, interest rates zoomed, real GDP fell by 18% and unemployment rose to 21.5%. Poverty increased greatly. The government froze bank accounts. In winter 2001 Argentina went through five Presidents or acting Presidents in less than two months. Angry protestors filled downtown Buenos Aires. The government gave up dollarization. It refused to meet the demands by the IMF and creditors to repay loans quickly. It funded an emergency unemployment benefits program and worked with Peronist unions to lessen social disorder. These institutions helped Argentina maintain its democracy and social stability. The country went on to a strong recovery based on an export-led boom that lowered unemployment and poverty. As with China's development of a labor market, there is no good counterfactual to assess how Argentina might have fared if it had weaker labor institutions or chosen to suppress protesters and unions to repay its international debts. But during the crisis labor institutions helped maintain political and economic order.

9. The Informal Sector

The majority of workers in developing countries work in the informal sector.[18] The traditional view has been that economic growth shrinks the informal sector and that as it does, more workers will gain the higher pay and economic security of the formal sector. This underlies the unease that 1990 World Bank Development Report expressed toward labor institutions: if only unions and governments leave well enough alone, the natural process will move workers out of the low productivity informal sector into good formal sector jobs.

The employment data summarized in Exhibit 5 contravene the picture of a naturally declining informal sector for the 1980s-2000s when the informal sector expanded its share of global employment, even in developing countries with rapid economic growth. Line 1 indicates that the proportion of workers in self employment increased in every region in the 1980s and 1990s. Line 2 shows that the non paid share of employment (the self-employed, employers, members of cooperatives, contributing family members and non-classified workers) increased. Line 3, which gives estimates of informal sector employment in eight of the ten most populous developing countries from a diverse set of country sources, tells a similar story. In seven of the countries the informal sector share of employment rose while it held stable in Indonesia. [19]Line 4 shows that even in Korea, arguably the world's greatest growth success, the informal sector remains a large and growing share of the work force.

The shocker in exhibit 5 is that informal sector employment rose in rapidly growing countries such as China, India, and the Philippines, and Korea as well as in countries with

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18 The ILO defines informal sector employment as self-employed; wage workers in insecure and unprotected jobs (unregistered, casual, temporary); household workers.

19 Data for particular countries not covered in the table confirm the trend. ILO (2001) estimates that the informal share of employment rose in 12 Latin American countries for which it obtained data. Scattered estimates show informal employment up in Ghana, Ethiopia, Kenya, and Nigeria.

anemic growth records. Why did rapid growth fail to shrink the informal sector? One likely reason is that productivity growth in the modern sector was so great that even massive expansion of output does not increase employment. China is instructive in this respect. Despite becoming the world's manufacturing center in the 2000s, China had fewer workers in manufacturing in 2002 than in 1987 (Bannister, 2005b, table 1). Presumably this is because it adopted modern labor-saving technology, though it could also reflect Chinese firms outsourcing manufacturing jobs to the informal sector.20

Traditional models of developing country labor markets treat the informal sector as a last choice safety net where individuals seek employment when nothing is available in the formal sector. But this is not the full story. Some workers and firms may prefer the informal sector to avoid taxes and regulations and may make relatively good livings in those sectors. Studies of sectoral mobility for Mexico (Bosch and Maloney, 2007), Brazil (Bosch, Goni and Maloney, 2007), and Chile (Packard, 2007) show that formal/informal boundaries are porous, with many workers shifting from one sector to the other in response to economic changes. The dynamics of mobility in the sectors may, however, differ. Hoek (2007) finds that in the Brazilian formal sector, reductions in employment take the form of a reduced job finding rate while in the informal sector, reductions in employment take the form of higher separation rates. Ulyssea and Szerman (2007) find that more educated and older workers had longer job duration in the formal sector and shorter duration in the informal sector. They also show a rapid decline in the hazard rate for exiting the informal sector that implies long spells if workers do not leave within 6 months.

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20 Loayza, Oviedo, and Serven (2005) show that rapid growth reduces the informal sector share of output while labor and product market regulations raise the informal sector share of GDP. There is no inconsistency between their regressions of the informal share of *output* on growth and the failure of observed growth to reduce informal sector shares of

Comparisons of wages across sectors and activities shows that in Mexico and Brazil employees in the informal sector earn less than employees in the formal sector but that the self-employed earn as much or more than formal sector workers (Maloney, 2000, Bosch, Goni and Maloney, 2007). Still, workers laid off from formal sector manufacturing suffer earnings decline of nearly 50% one year later and about 33% two years later, with middle aged workers hit hardest by a layoff (Hoek 2006). For El Salvador and Peru, Marcouiller et al (1997) find that informal sector workers earned significantly less than formal sector workers. In Argentina poverty among older persons is greater the greater the proportion of their working lives spent in the informal sector.

Given the size and persistence of the informal sector in developing economies, we need more studies of how workers fare in this sector, of the links between formal and informal job markets, and of possible innovative social insurance schemes to improve the working lives of those in the informal sector, be it through social security pensions (Auerbach, et al 2007), occupational health and safety laws, increased enforcement of regulations (Almeida and Carneiro, 2007) or perhaps through associations of the self-employed like SEWA (http://www.sewa.org/) and so on.

Conclusion

This review has found that regulations and unions are not the bugbear to development that many believed them to be years ago. Some labor policies have adverse effects on employment in some countries but the magnitudes are generally modest. Evidence on the wage curve, the spillover of minimum wages to the informal sector, and the mobility of workers between the informal and formal sectors show that the two-sector model that has guided much thinking about labor markets in developing countries does not capture the way

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employment.

those markets operate. The evidence suggests instead that labor markets adjust to conditions in developing countries much as they do in advanced countries and do not impede macro-economic adjustments. The Chinese example suggests that a functioning labor market can help development while the Argentine example suggests that labor institutions can help preserve social stability during turbulent times.

The 800 pound gorilla in this review is the increased share of the informal sector in successful developing countries. Because research has focused largely on formal sector labor markets, we know far too little about the informal market setting in which most workers make their living, about policies and institutions that can help raise productivity in the informal sector, improve occupational health and safety, and deliver social services and protections to workers. The informal sector is going to be the locus of work for the majority of workers for the foreseeable future and should be the focus of labor market analyses as well.

Exhibit 1: Average values (standard deviations in brackets), of Measures of Labor Institutions in Developing Countries, level of income compared to Developed Countries, circa 2005[21]

Income Group	Fraser Institute	Employment law	Collective relations law	Wage setting	Hiring and firing	Union density
Low income	5.410 (1.796)	6.08 (1.831)	6.260 (1.233)	5.224 (1.219)	3.906 (0.755)	13.208 (7.207)
Lower middle income	5.400 (1.202)	5.011 (1.802)	5.428 (1.255)	4.997 (0.664)	3.793 (0.716)	12.705 (8.481)
Upper middle income	5.723 (1.017)	4.937 (1.705)	5.174 (1.049)	4.945 (0.833)	3.532 (0.748)	26.389 (14.354)
All developing	**5.501 (1.335)**	**5.292 (1.813)**	**5.575 (1.240)**	**5.036 (0.874)**	**3.738 (0.740)**	**17.855 (12.452)**
Traditional developed	**5.696 (1.374)**	**4.795 (2.224)**	**5.433 (1.562)**	**4.248 (1.174)**	**3.561 (1.034)**	**33.552 (19.723)**
Recently developed	6.364 (1.696)	5.814 (1.852)	6.000 (0.940)	5.600 (0.711)	4.179 (0.965)	29.589 (16.914)

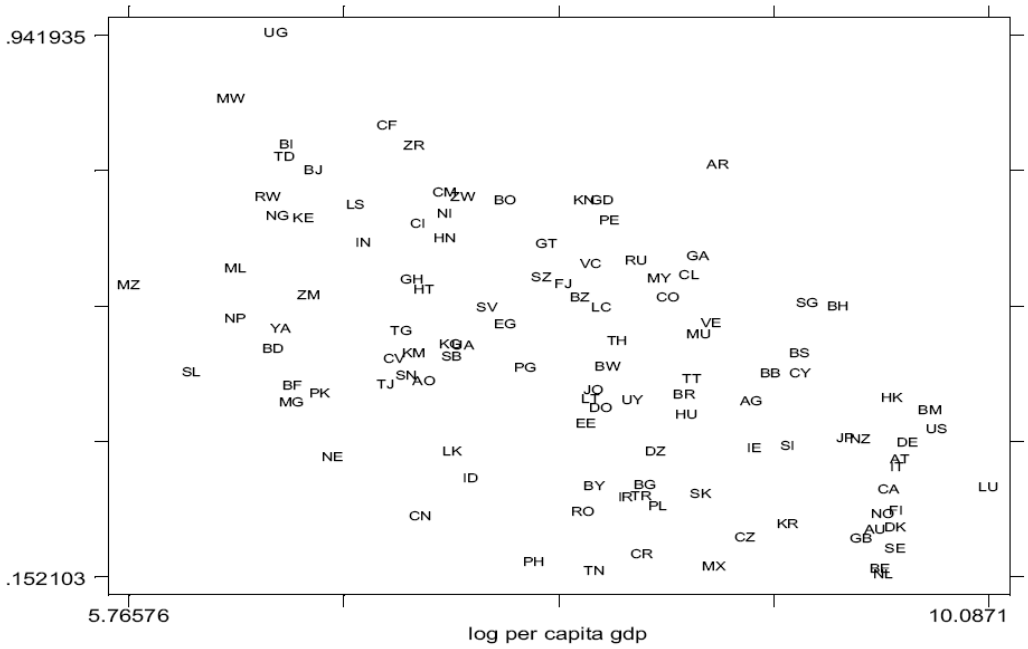
Source: Tabulated from country data in Fraser (2007), Botero et al, World Economic Forum as given in appendix table, with countries classified by World Bank income levels. Recently developed countries include high income countries outside the major Western countries.

21 The correlations among the six indicators.

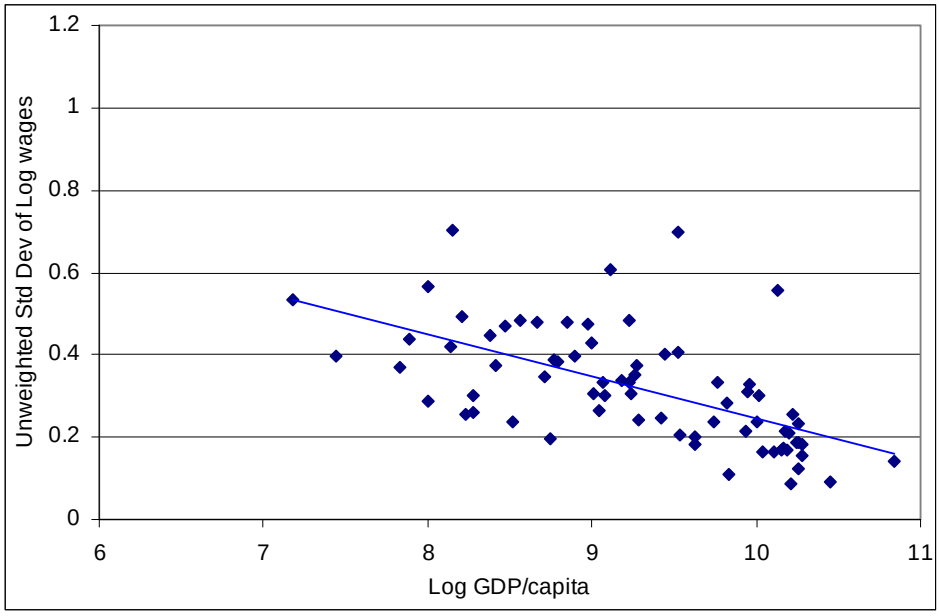
	Fraser Institute	Employment law	Collective relations law	Union density	Wage setting
Fraser Institute	1.000				
Employment law	0.435	1.000			
Collective relations law	0.390	0.487	1.000		
Union density	0.092	0.317	0.113	1.000	
Wage setting	0.346	0.211	0.139	0.171	1.000
Hiring and firing	0.462	0.260	0.424	-0.094	0.507

Exhibit 2: Dispersion of Earnings by Occupation and Industry, by income level of countries

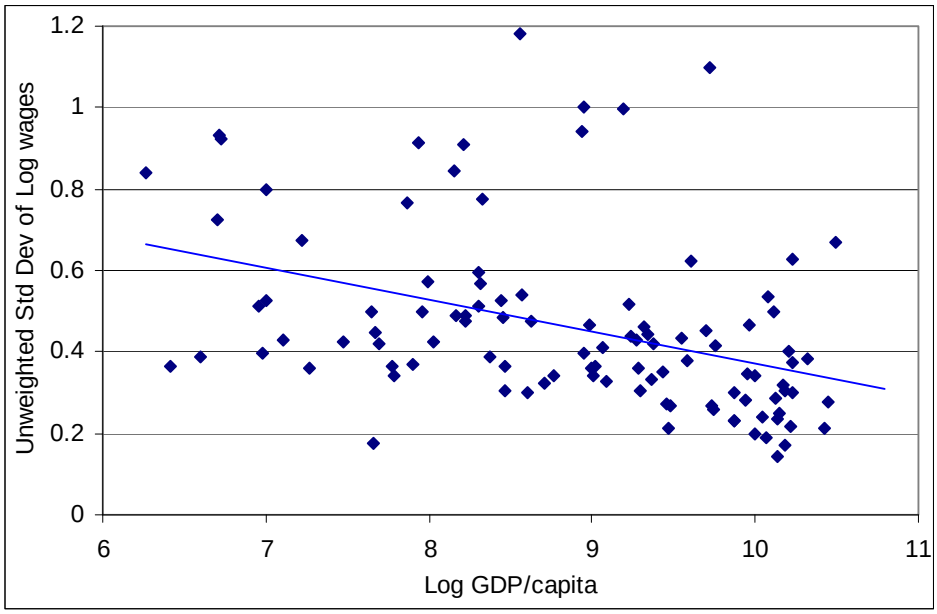
A) Standard Deviation of ln Earnings by Occupation (Freeman and Oostendorp, 2000)



B) Standard Deviation of ln Earnings by Industry (ILO data, 19--



C) Standard Deviation of ln Earnings by Industry (UNIDO data, 19--



Source: A, Freeman and Oostendorp, 2002
B, Penn World Table (v6.2); ILO (2006)
C, Penn World Table (v6.2); UNIDO Industrial Statistics (2006)

Exhibit 3: Studies of Minimum Wage in Developing Countries, 1990s-2007

Area, study, year	Nature of data	Findings
BRAZIL Lemos (2006,2004)	Individual data	Compresses distribution in informal and covered, 2006 no effect on employment; 2004 some
Chile, Montenegro and Pages (2004)	Changes in minimum, 1960-1998, individual data	Minimum shifts employment from young and unskilled workers to older and female workers
Costa Rica Gindling & Terrell (2007, 2005, 1995)	Individual data	Raises wages in informal + formal 1995 study: no loss of employment in formal; gain in informal; 2007, minimum lowers employment in public sector
Honduras, Gindling & Terrell (2007)	Individual data to establish spikes, sectors and size of firm over time, 1990-2004	1% increase in the minimum wage increases wage in medium and large firms by 0.29% in the average wage; reduces employment by -0.46%; does not affect small firms where employment grows
Columbia, Arango and Pachon 2004	Panel date for cities, 1984-2001	Improves earnings of families high in income distribution, reduces it in bottom quintile; reduces employment, especially for women, young, less educated
Columbia, Mexico Bell (1997)	Firm level data	No effect in Mexico; effect in Columbia;
Mexico (Bosch and Manacorda (2007)	Individual	Minimum shifts distribution for uncovered as well as covered; small employment effect
Mexico (Feliciano, 1998)	Cross state panel data, 1970-1990	Decline in real value of Mexican minimum wage increased employment of women with elasticity between -.58 and -1.25.
Trinidad &Tobago Strobl & Walsh (2003),	Individual with longitudinal job loss	Spikes shows that min affects wages, lowers employment of affected group
Puerto Rico Castillo-Freeman & Freeman (1992),	Spike, Uses imposition of US min wage	W, modest E ε ~-0.10; large fall in employment in very small industries
LA + Caribbean, Kristensen & Cunningham (2006),	Individual data, focus on spikes	In 10 countries minimum affects informal and covered; 4 it affects only informal
LA Maloney and Nunez Mendez(2004), LA	Individual wage to establish spikes in formal and informal sectors Longitudinal job loss	Affects distribution in 6 of 8 LA countries Stronger effect on informal in Brazil, Mexico, Argentina, Uruguay; employment losses in Columbia; job loss greater for low wage
LA Maloney et al (2001)	Spikes in wage data	Four yes, three no
LA, Lustig & McCleod, 1997, x-country	Aggregate poverty 1990s vs 1980s	Reduces poverty

Area, study, year	Nature of data	Findings
Indonesia Alatas & Cameron (2003)	Individual W spike, firm E geographic time series	Wage effects; no E in large firms; some in small
Indonesia (Harrison and Scorse, 2003)	Plant level data over time	Compliance with minimum wage rises 1990-99 with both multinationals and exporting firms more likely to comply with labor standards
Indonesia Rama (2001),	Time series,	Modest wage, little effect on aggregate employment but shift in employment from small firms
Indonesia SMERU (2001)	Individual data from National Labor Force Surveys; Firm-based survey; province level panel for employment 1988-1999	Spikes in minimum wages for blue collar workers but not others; compliance rises with firm size and increased over time; .estimated elasticity of total employment – 0.112, larger for females, youths, less educated;
Ghana Jones(1997),	Individual wage data; time series 21 years	Spike at minimum in distribution; in informal as well as covered. W, E shift to informal $\varepsilon \sim -0.10$
Many countries Squire & Suthiwart-Narueput (1997)	Changes in minimum among countries, 1970-90	Real minimums fall in 16/23 Min/Average falls in 6/17

Exhibit 4: Studies of Union Effects in Developing Countries

Country	wage	dispersion	turnover	benefits	productivity	profits	Other
Mexico	10-15%	lower	lower	higher	higher	none	Increased training
Uruguay	5%?		Lower		higher	higher	Lowers elasticity of demand
Guatamala					Lower in cross-section, not in fixed effects		
Peru					Modest negative but not significant effect	Lower in all cases	Higher capital labor ratios
Brazil	5% to 12%	higher			Lower, unless with profit-sharing	Lower unless with profit-sharing	More likely to go to profit-sharing
South Africa	10-20%, bigger for blacks	lower		higher			Lowers coefficients on other variables in earnings
Ghana	6-16%	Lower					
Cameroons a	14%	Lower					
Cameroons b	-8% to -11%						
Senegal	-13%						
Zimbabwe	-17%				14%		
Malaysia	15-20%		lower	higher	higher		Increases training
Korea	3%-7% bigger for women	Lower, but non-standard	lower	higher	Works council raises		Unions lower, WC raises job sat; substitute non-standard

Source: Mexico Fairris (2003, 2005); Popli (2006), Maloney and Ribiero (1999), Panagides and Patrinos (1994); **Uruguay,** Cassoni, Labadie & Fachola (2001), Cassoni, Allen, and Labidie (2000); **Peru,** Saavedra and Torero (2005); **Brazil,** Menezes-Filho, Zylberstajn, Chahd, Pazello (2005), Arbache, 1998; **Guatamala** Urizar and Lee (2005)
South Africa, Kingdon, Sandefur, Teal (2004),; Butcher and Rouse (2001); Hofmeyr & Lucas (2001), Schultz and Mwabu (1998),; Moll (1993); P-C Michaud and D.Vencatachellum (2001); **Ghana,** Blunch and Verner (2004); Verner (1999); **Cameroon,** a, Tsafack-Nanfosso (2007), 1999 survey of 1,074 wage earners; b, Miller and Vallee (1995) and Vallee and Thomas (1994), 1993 and 1994 survey; **Senegal** Terrell and Svejnar (1989);

Zimbabwe (Verner, 1999); **Malaysia** Standing (1992) ; **Korea,** Lee and Na (2004); Fields and Yoo,(2000) Park, 1991; Cheon, 2006

Exhibit 5: Indicators of the trend in the informal sector share of employment

1) Self-employment share of non-agricultural Employment (ILO 2002) 1980s to 1990s

World	26% to 32%
Africa	44% to 48%
Latin America	29% to 44%
Asia	26% to 32%

2. Unpaid Workers as Share of Total Employment (ILO, LaborSta, 2007), 1993-2002

World	55% to 60%
Developing Countries	
Advanced Countries	

3.[22] **Selected Country measures, by population of country**

China 1990 to 2005 51% to 52.8%
India 1993/4 to 2004/5 92.7% to 94.1%
Indonesia 1990 to 2003 28.2% to 28.2%
Brazil Urban 1990 to 2003: 40.6% to 44.6%
Pakistan, urban 1997/8 to 2001/2 64.6% to 66.5%
Bangladesh to 2000s to 65%
Nigeria, urban 1960s to 2005 25% to 45%-60%
1970s to 1990s 50% to 65%
Mexico 1991 to 1998 61.2% to 63.6%
Philippines Vietnam 2000s 70%

4. Informal Sector Employment in Korea, by definition

Self-employed	1990 to 2004	39.5% to 34.0%
Non-regular	2001 to 2005	26.8% to 36.6%
Temporary	2001 to 2005	16.6% to 29.4%
Non-standard	1990 -2004	45.8% to 48.8%

Source: Line 1, ILO, Women and Men in the Informal Economy: a statistical picture (ILO, 2002), table 2.5
Line 2, Estimated from ILO, Laborstats, 2007
Line 3, China, India, Brazil from OECD, March 2007, table 1.1; Indonesia, Felipe and Hasan, 2006, Pakistan, Gennari, 2004; Nigeria a, Nwaka 2005; Nigeria b, , Mexico, Martin 2000, table 4; Philippines, Venida; UN, ILO;
http://www.ilo.org/public/english/employment/skills/informal/who.htm for Bangladesh
Line 4 Korea, 1990-2004 OECD, Factbook 2006, Economic, Environmental, and Social Statistics, Self employment rates as percentage of total civilian employment 2001-2005, defined as non-regular; temporary, OECD, Korea, table 5.13; 1990-2004, Ki Seong Park 2006, Non-standard employment, figure 1

22 China, India, Brazil from OECD, 2007, table 1.A.3 For Indonesia Wiebe reports 68% for 1993; http://www.socialalert.org/pdf/IndonesieBROCH%5B1%5D.pdf reports over half informal in 2000s. http://indonesiaurbanstudies.blogspot.com/2007/05/urban-planning-and-informal-sector-in.html reports 64%

Appendix Table 1: Developing Country Labor Laws and Practices

Country	Fraser Institute (2004)	employment law	collective relations law	union density	Co. Flexibility of Wage determination 7 –employer vs 1 cb	Co. Control of Hiring and Firing Practices 7-employer 1 - regulated
Uganda	8.6	0.35	0.38	3.9	6.3	5.0
Zambia	8.6	0.15	0.29	12.5	--	--
Pakistan	7.8	0.34	0.31	5.5	5.7	4.5
Haiti	7.3	na	na	--	--	--
Bangladesh	6.7	na	na	4.3	5.3	4.0
Ghana	6.2	0.29	0.48	25.9	3.7	4.4
Kenya	5.8	0.37	0.23	16.9	5	4.9
India	5.7	0.44	0.38	5.4	5.4	2.6
Malawi	5.7	0.18	0.25	--	5	3.5
Nigeria	5.5	0.19	0.21	17.2	4.6	4.5
Mongolia	5.4	0.33	0.23	--	5.9	4.6
Zimbabwe	5.2	0.25	0.44	13.9	2.8	2.2
Tanzania	5.1	0.68	0.32	17.4	4.5	3.7
Vietnam	4.8	0.54	0.48	--	5.4	4.2
Benin	4.1	na	na	--	5.3	4.1
Chad	3.7	na	na	--	5.4	3.6
Mali	3.6	na	na	13.7	4.5	3.4
Madagascar	3.1	0.47	0.46		5.3	3.6
Senegal	2.8	0.51	0.57	21.9	--	--
Mozambique	2.5	0.79	0.58	--	8.7	3.6
Guyana	8.2	na	na	25.2	5.1	4.5
Namibia	7.2	na	na	22.0	4.3	3.0
Thailand	7.0	0.41	0.36	3.1	4.7	4.2
Nicaragua	6.8	na	na	23.4	5.5	3.7
Cameroon	6.6	na	na	14.7	4.8	3.6
Jamaica	6.6	0.16	0.23	--	5.5	4.0
Jordan	6.6	0.7	0.38	--	5.9	3.4
Georgia	6.5	0.77	0.57	--	6.0	4.9
Sri Lanka	6.4	0.47	0.51	--	4.5	2.7
Dominican Rep.	6.0	0.6	0.27	17.3	5.1	3.9
Macedonia	5.8	na	na	--	5.5	3.3
Albania	5.7	na	na	--	5.7	4.8
El Salvador	5.5	na	na	7.2	5.5	4.9
Azerbaijan	5.4	na	na	--	5.2	4.7
Egypt	5.3	0.37	0.41	29.6	5.9	3.9
Armenia	5.2	0.6	0.52	--	5.6	4.9
Indonesia	5.0	0.68	0.39	2.6	4.2	3.6
Philippines	5.0	0.48	0.51	22.8	4.4	2.6
Honduras	4.9	na	na	4.5	4.3	3.1
Ukraine	4.8	0.66	0.58	--	5.0	4.8
Bolivia	4.8	0.37	0.46	16.4	5.4	3.1
China	4.7	0.43	0.33	54.7*	5.2	4.5
Colombia	4.3	0.34	0.49	7	5.5	3.8
Tunisia	4.3	0.82	0.38	9.8	3.7	4.2
Peru	4.3	0.46	0.71	7.5	5.7	3.3
Guatemala	4.2	na	ns	4.4	4.4	3.6
Ecuador	4.2	0.4	0.64	9.8	4.5	3.0

Morocco	4.1	0.26	0.49	4.8	5.1	3.7
Algeria	3.7	na	na		3.9	3.4
Paraguay	2.9	na	na	9.3	3.8	2.7
Malaysia	7.9	0.19	0.19	11.7	5.6	4.0
Uruguay	7.3	0.28	0.35	11.6	5.0	3.7
Hungary	7.1	0.38	0.61	52.5	5.7	4.0
Mauritius	6.7	na	na	25.9	3.1	3.6
Slovak Rep.	6.6	0.66	0.45	52.3	5.6	4.8
Botswana	6.5	na	na	11.5	5.1	3.7
Costa Rica	6.1	na	na	13.1	4.4	4.1
Bulgaria	6.0	0.52	0.44	51.4	5.6	4.5
Russia	5.8	0.83	0.58	74.8*	5.6	5.0
Latvia	5.8	0.72	0.53	--	5.7	3.9
Panama	5.6	0.62	0.46	14.2	4.0	3.0
Mexico	5.5	0.59	0.58	31	5.0	3.0
Croatia	5.5	0.49	0.45	--	5.1	3.8
Lithuania	5.4	0.62	0.5	--	5.8	3.1
Chile	5.3	0.47	0.38	15.9	6.1	3.4
South Africa	5.1	0.32	0.54	21.8	3.4	2.3
Argentina	5.1	0.34	0.58	25.4	4.0	2.7
Brazil	5.0	0.57	0.38	32.1	4.1	3.1
Romania	5.0	0.33	0.57	40.7	5.6	3.1
Poland	4.8	0.64	0.57	27.0	5.0	3.5
Turkey	4.3	0.4	0.47	22.0	5.1	3.5
Venezuela	3.5	0.65	0.54	14.9	4.2	1.9
Unit. Arab Em.	8.9	na	na	--	6.3	5.0
Kuwait	8.6	na	na	--	6.1	4.5
Hong Kong	8.6	0.17	0.46	18.5	6.4	5.8
Bahrain	7.4	na	na	--	6.2	3.1
Trinidad & Tob.	7.1	na	na	--	4.9	4.0
Singapore	6.9	0.31	0.34	13.5	6.0	5.9
Malta	6.8	na	na	57.9	5.1	3.0
Estonia	6.1	na	na	26.4	6.2	4.4
Slovenia	5.6	0.74	0.49	--	4.6	2.9
Taiwan	5.3	0.45	0.32	27.9	6.2	4.6
Israel	4.8	0.29	0.31	23.1	5.1	4.4
Cyprus	3.1	na	na	53.7	4.2	3.3
Iceland	8.0	na	na	70.7	4.5	5.4
United States	7.9	0.22	0.26	12.7	6.1	5.4
Switzerland	7.4	0.45	0.42	20.0	5.8	5.4
Canada	7.1	0.26	0.2	31.0	5.6	4.3
Japan	7.0	0.16	0.63	18.6	5.9	3.6
United Kingdom	6.9	0.28	0.19	26.2	5.9	4.4
Australia	6.6	0.35	0.37	28.6	4.6	3.5
New Zealand	6.5	0.16	0.25	23.2	5.8	3.8
Spain	6.2	0.74	0.59	11.4	4.8	2.9
Portugal	5.9	0.88	0.65	18.8	4.4	2.8
Ireland	5.8	0.34	0.46	36.0	3.2	3.4
France	5.7	0.74	0.67	6.1	4.6	2.4
Luxembourg	5.7	na	na	39.5	4.3	3.2
Italy	5.5	0.65	0.63	30.6	3.3	2.6
Netherlands	5.4	0.73	0.46	21.8	3.1	2.8
Denmark	5.1	0.57	0.42	68.2	4.2	5.4
Belgium	5.0	0.51	0.42	38.1	3.0	2.6
Czech Rep.	5.0	0.52	0.34	36.3	5.6	3.5

South Korea	4.9	0.45	0.54	9.0	5.5	4.1
Austria	4.4	0.5	0.36	36.6	2.7	3.8
Norway	4.2	0.69	0.65	51.7	3.9	3.0
Greece	4.0	0.52	0.49	15.4	3.4	2.9
Finland	3.9	0.74	0.32	59.7	2.5	3.6
Sweden	3.5	0.74	0.54	77.2	3.3	2.4
Germany	3.3	0.7	0.61	29.6	2.8	2.3

Appendix B: Regression:

Coefficients (Std Errors) on Regression of Annual Growth rates of GDP per capita on the labor subindex and the economic freedom index of the Fraser institute (with the labor subindex removed), 1970-2004

Lagged GDP per capita	-.066 (.007)
Labor subindex for developing countries	-.002 (.002)
Economic freedom index* for developing countries	.010(.002)
Labor subindex for OECD countries	-.001 (.002)
Economic freedom index* for OECD countries	.009 (.003)
Year Dummies	yes
Country Dummies	yes
Number of observations	314
Number of countries	85

Source:
Indices of Economic Freedom, Fraser Institute 2006
Gwartney, James and Robert Lawson (2006). *Economic Freedom of the World: 2006 Annual Report.* Vancouver: The Fraser Institute. Data retrieved from www.freetheworld.com.

http://www.freetheworld.com/2006/2006Dataset.xls

Labor subindex. Listed as 5B on the data set
Economic freedom index * Simple average of subindices for separate areas, excluding the labor subindex. Analysis using the full economic freedom index gives comparable results, but then has the labor index entered in two places

GDP growth rates – Change in natural log of real GDP/capita in const prices (Laspeyres) from Penn World Tables divided by number of years (5 years except 4 years for 2000-2004)
Lagged GDP – log GDP per capita with 5-year lag (4 year in the case of 2000-2004)

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