

DISTRIBUTION, EFFICIENCY, AND LABOR MARKET REGULATION: IN THEORY, IN OECD COUNTRIES, AND IN LATIN AMERICA

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In a perfect world, labor markets would not be regulated. Competition, rather than union contracts or legislation, would determine wages at a level consistent with full employment. Only technological obstacles would prevent labor reallocation toward the most productive jobs and occupations. No subsidies would be paid to unemployed workers, and employment would not be taxed.

The world we live in is not perfect, however, and the market for labor services is more heavily regulated than most other markets. The intensity and character of institutional interference with laissez-faire determination of employment and wages exhibit some variation over time, but they vary sharply across countries. Relating labor market outcomes to institutional indicators—from payroll taxes financing unemployment and social security benefits, to the minimum wage, collective bargaining provisions, and job security legislation—has made it possible to assess empirically their implications for aggregate and disaggregated employment and unemployment rates, for wage inequality, and for macroeconomic trends and cycles. The literature mostly treats labor market institutions as exogenous determinants of labor market outcomes. Less attention has been directed at explaining and interpreting the motivation behind institutional arrangements in the labor market. Efforts in the latter direction are all the more necessary when researchers study labor market institutions in a heterogeneous group of countries, as in the case of the

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contributions collected in Heckman and Pagés (2004). The chapters of that book, as well as the editors' introduction, provide interesting analyses of individual Latin American countries and comparisons of samples of Latin American countries and member countries of the Organization for Economic Cooperation and Development (OECD). The studies make it clear that comparisons across diverse countries are useful, but difficult, and they are not easily conducive to sharp insights. When the structure of the problems facing the countries (and markets and individuals within countries) is very heterogeneous in the sample considered, it is necessary in principle and hard in practice to disentangle the implications of structural characteristics from those of institutions and policies.

To understand why policy aims at distorting labor market outcomes, it is important to consider the effects of institutions on distribution and allocation in a second-best environment. Policies that would be clearly inefficient in a hypothetical representative-agent/perfect-markets situation can appeal to workers' representatives because they make it possible for their constituents to earn a larger share of aggregate welfare. The pros and cons of labor market institutions thus depend on deep structural and political features of different economies. The implementation of legislation and other collective action reflects not only the relative efficiency of market and policy mechanisms from a hypothetical representative agent's perspective, but also whether and how financial and other market imperfections prevent workers from internalizing profitability losses (see Bertola, 2004). The effectiveness of labor market regulation in shifting welfare toward workers depends on the extent to which employers may flexibly adjust on other margins, which in turn reflects an economy's degree of openness to international trade and factor flows, among other factors (see Bertola and Boeri, 2002). Moreover, the extent to which labor interests influence institutional arrangements reflects political factors, which in turn depends on a country's social and political structure.¹

This paper offers a simple formalization of some relevant interaction channels and discusses their applicability to OECD and Latin American countries. Section 1 outlines a simple framework for labor market analysis, which offers a stylized representation of realistic sources of production and welfare inefficiencies. Section 2 discusses how institutional interference with *laissez-faire* in labor markets bears

1. See Saint-Paul (2000) for a wide-ranging analysis of the political economic channel, with special emphasis on redistribution across categories of workers.

on labor allocation. The formal framework used to illustrate the relevant insights is a simple explicit version of models analyzed by Bertola (2004b); an appendix reports mathematical derivations.

Section 3 discusses how detailed evidence from OECD countries can be interpreted from the resulting theoretical perspective. Section 4 offers an illustrative empirical exercise on simple available indicators of aggregate labor market institutions and outcomes in both OECD and Latin American countries. The exercise shows that basic insights from the similarly limited OECD evidence that was available in the early 1990s are applicable to Latin American countries. Section 5 concludes with an outline of new challenges and opportunities in empirical analysis of countries that regulate their labor markets heavily, but that differ in important respects from OECD members and lack comparable statistics regarding disaggregated labor market outcomes.

1. A SIMPLE PERSPECTIVE ON LABOR MARKETS

The following discussion is centered on a basic tool of labor economics, namely, the negative relation between employment and wage levels implied by a standard labor demand function. The appendix specifies a constant-elasticity functional form for that relation, with multiplicative shifts in the level of productivity and wages associated with each employment level. Specifically, the market features both good jobs, which are characterized by relatively high productivity, and bad ones, with relatively low productivity. Workers may also not be employed. For simplicity, non-employed workers' income-equivalent flow of utility is a given constant in the model discussed in the appendix and illustrated by the figures below. The qualitatively similar implications of upward-sloping labor supply are briefly discussed below.

1.1 Perfect Markets

The labor market model has only two endogenous variables: the overall level of employment and the fraction of that employment allocated to high-productivity jobs. Consider first how these are determined when efficient marginal conditions maximize total production in a static setting. As shown in figure 1 and derived formally in the appendix, the wage earned by employed workers depends on the fraction of

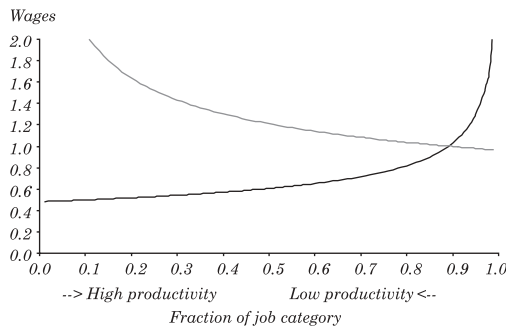
high-productivity employment, which in equilibrium is such as to equalize wages across all employment opportunities if mobility among them is costless. The overall level of employment must be such as to equalize that single wage to the income-equivalent utility flow of individuals who are not employed. These individuals are out of the labor force in the perfect-market situation discussed here, but they may be involuntarily unemployed in some of the institutional configurations discussed below.

This employment allocation maximizes production, inclusive of equivalent non-employment income. It thus also maximizes the income of the “representative” individual who owns labor and other factors of production in the same proportions as the aggregate economy. It does not, however, maximize the income of workers. In the baseline case, in which the non-employment opportunities of workers are represented by a given constant, if the marginal worker is indifferent to employment, then all workers are, and their welfare is left unchanged by the fact that some of them are employed.

1.2 Underemployment

Since the average product of labor is larger than its marginal product, suppliers of labor benefit from restricting supply, like any monopolist. Workers as a group enjoy higher total income and utility if the level of employment is lower than that which equalizes wages and non-employment opportunities, because the labor demand relation implies that all wages will then be higher than non-employment income.

Figure 1. Labor Allocation across High- and Low-productivity Jobs^a



a. The crossing point is identified by equation (2) in the appendix. The parameters are as follows: $A_g = 2$; $A_b = 1$; $\beta = 0.33$; and $W_u = 1$.

Figure 2. Worker Welfare as a Function of Non-employed Labor^a



a. Equation (4) in the appendix. The vertical line identifies the competitive allocation ($W_g = W_b = W_u$). The parameters are as follows: $A_g = 2$; $A_b = 1$; $\beta = 0.33$; $W_u = 1$; and $\alpha = 0.1$.

Of course, that lower level of employment can still be allocated efficiently across jobs. In that case, as shown in figure 2, worker welfare increases with non-employment as the latter becomes larger than in *laissez-faire*, and it continues to increase until further decreases in employment outweigh the positive wage-bill effect of higher wage rates.

1.3 Worker Reallocation Costs

Consider next the implications of labor demand shocks. Labor productivity at each job may, with some probability, switch from good to bad or from bad to good. If mobility is costless, it should ensure that employment levels are so much higher at the good sites that the downward-sloping productivity (and wage) of labor is equalized across all jobs. If mobility is costly, however, the marginal productivity at good jobs must be higher than that at bad ones, because only a positive spread between the two can offset mobility costs. If the costs of mobility are paid by risk-averse workers rather than by a well-diversified representative agent, then the wage instability generated by costly arbitrage across employment opportunities has important implications for worker behavior and worker welfare.

The appendix formally analyzes a situation in which the labor income of a worker who is relocating from a bad to a good job falls short of the good wage by a fixed proportion that represents, for example, time spent seeking and reaching the new employment opportunity. Mobility costs are specified as a fraction of the wages for

high-productivity jobs. Since those wages decrease (along downward-sloping labor demand functions) when the labor market delivers more labor to such jobs, more intense mobility reduces the cost of mobility.² The simple model also supposes that workers' utility is a strictly concave function of their labor income, net of mobility costs. As in Bertola (2004b), this represents the limited opportunities for workers to access financial markets in order to smooth their consumption in the face of labor income shocks.

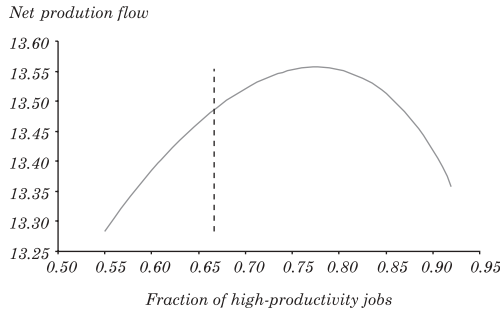
Since mobility toward good jobs is financed out of relatively low consumption flows, its costs in terms of utility are higher than they would be if labor income risk could be insured and pooled at the aggregate level. To spur mobility, future expected wage gains need to be larger when their decreasing marginal utility is smaller relative to that of the moving workers' low consumption. The labor market delivers larger wage differentials by allocating less labor to currently more productive jobs or, equivalently, by reducing the intensity of labor mobility from low- to high-productivity jobs. As fewer units of labor move from low- to high-productivity jobs, the latter become less numerous in steady state, and aggregate production is low in an economy where risk-averse workers finance mobility.

The net production flow of the model in the appendix is plotted in figure 3 as a function of the share of employment in high-productivity jobs, for given total employment. The labor allocation delivered by this simple labor market's decentralized equilibrium is identified by the vertical dashed line. It falls short of maximizing production for two reasons. On the one hand, the intensity of labor reallocation is lower than would be necessary to maximize production flows, because the specification of mobility costs makes them a decreasing function of mobility through external effects. On the other, workers' utility curvature unambiguously implies that the fraction of good employment is reduced by the need to offer larger wage differentials to moving workers. When mobility costs bear on individual workers' consumption, rather than on aggregate resources, decentralized decisions intuitively fail to maximize the latter. As in the case of the total employment level, if workers' consumption coincides with their labor income, then the

2. This may represent market-thickness effects of the type studied by Hosios (1990) and others in markets that clear through search rather than price-taking behavior. In such models, these external effects may imply that mobility is excessive in decentralized equilibrium. The simple framework outlined in the appendix has that implication if mobility costs are specified as a fraction of bad wages.

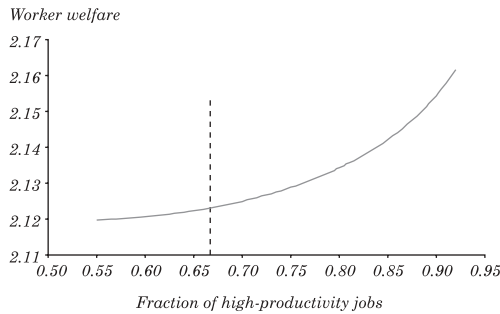
impact of labor allocation on their welfare differs from the impact of that same variable on total production (and on the welfare of individuals who earn non-labor income). The average utility yielded to workers by each unit of employment allocated on the basis of uninsured mobility decisions is plotted in figure 4. It is a monotonically increasing function of the fraction of high-productivity employment, for the simple reason that average wage both increase and become more equal as more workers are employed at firms with a strong labor demand.

Figure 3. Aggregate Production as a Function of High-productivity Employment^a



a. Equation (10) in the appendix. Aggregate production is net of mobility costs. The parameters are as follows: $A_g = 2$; $A_b = 1$; $\beta = 0.33$; $W_0 = 1$; $\alpha = 0.1$; $p = 0.2$; and $X = 0.3$. The vertical line identifies the allocation implied by condition 9 in the appendix.

Figure 4. Average Welfare of Employed Workers as a Function of High-productivity Employment^a



a. Equation (12) in the appendix. The parameters are as follows: $A_g = 2$; $A_b = 1$; $\beta = 0.33$; $W_0 = 1$; $\alpha = 0.1$; $p = 0.2$; and $X = 0.3$. The vertical line identifies the laissez-faire allocation implied by condition 9 in the appendix.

In summary, the simple model highlights related, but conceptually different interactions among the welfare of workers, the economy's productivity, and the allocation of labor across high-wage, low-wage, and non-employed states. First, as workers disregard the portion of the economy's total production that does not accrue to them in the form of wages, their welfare is not maximized by the laissez-faire employment level determined by decentralized decisions. Reducing employment has a negligible negative effect at the point at which the wage is equal to non-employment opportunities, but the higher wage enjoyed by all the workers who remain employed has a first-order beneficial effect on collective workers' welfare. This is obviously true when all employed workers are strictly indifferent between employment and non-employment in laissez-faire, and it is also true when an upward-sloping labor supply schedule lets employed workers enjoy some surplus. Second, reallocation of labor from low-productivity to high-productivity jobs improves the economy's total productivity. However, when it is driven by the mobility decisions of risk-averse workers whose consumption directly bears the cost of mobility, it is not as beneficial to their welfare and, in decentralized equilibrium, falls short of the intensity that would maximize total production net of mobility costs.

2. LABOR MARKET INSTITUTIONS AND INCOME DISTRIBUTION

The stylized model above highlights qualitative mechanisms that arguably motivate most collective interventions aimed at altering laissez-faire wage and employment outcomes. This section discusses that possibility and explores whether and how collectively decided policy measures and structural mechanisms interact to determine labor market outcomes.

2.1 Overall Employment

Workers' preferred employment level differs from that of a hypothetical representative individual interested in maximizing the economy's total production flow over and above the workers' non-employment opportunities. If workers only earn labor income, they do not mind reducing the portion of output that accrues to other factors of production. Hence, they prefer wages to be higher than those delivered by competitive interactions, and they may gladly accept the reduction in employment that delivers that outcome. If the wage is

increased above that which equates aggregate supply and demand, workers who have no stake in profits or rents are collectively better off. Lower employment is a matter of indifference at the margin in *laissez-faire*. As wages become discretely higher than non-employment welfare, the simple sum of workers' utilities continues to increase until the lower welfare of workers who fall back on the outside opportunity more than compensates the higher wage earned by the workers who remain employed.³

This perspective can rationalize legal, or otherwise collectively set, minimum wages. If individual workers were allowed to bid for employment, any situation in which some workers remain unemployed who would rather be working would unravel to the competitive outcome. A legal prohibition to do so, as implied by mandated minimum wages or by the administrative extension of collective wage agreements to all workers, supports an outcome that is in the workers' collective interest because it eliminates each individual worker's incentive to bid for another's job. Of course, the unemployed would *ex post* prefer to be employed, especially if (as in the situation illustrated above) individual utility functions are strictly concave. However, a low-employment outcome can be agreeable to all workers if non-employed workers can partake of the higher average productivity and wages of employed workers. Some such redistribution occurs through *intrafamily* transfers, as in the case when the unemployed are sons and daughters of the employed. Outcomes with a larger wage bill and lower employment (and profits) may also be supported by a system of payroll taxation that funds either non-employment subsidies—such as pensions, unemployment benefits, and other welfare transfers—or public-sector employment opportunities at favorable wage-effort ratios (Algan, Cahuc, and Zylberberg, 2002). The purpose and effect of all such policies are similar to those of an explicit wage floor: while the latter prohibits workers from bidding down other workers' wages, income support eliminates the need to bid for employment.

A variety of collective policies can thus insert a wedge between labor demand labor supply, thereby reducing employment. Contractual or legislative lower bounds on wages result in open unemployment, as do tax-and-subsidy schemes in a smaller or less effectively employed

3. This point is reached sooner when labor supply is steeper. As discussed by Bertola, Blau, and Kahn (2002b), this can explain why labor market regulation tends to cause smaller employment losses for worker groups with rigid labor supply (such as prime-age males).

labor force. In different countries and periods, a range of policies are implemented in divergent ways and more or less incisively (see the discussion in the next section), and they can be interpreted in terms of distributional conflicts taking place under structural constraints, represented by the downward slope of the labor demand function. Not only the ease of union organization and the ability to enforce collectively agreed wages on all workers, but also the ability to use non-market instruments to redistribute the wage bill from high-wage employed workers to unemployed workers affect the desirability and feasibility of the low-employment outcome that approximates the maximization problem illustrated in figure 2.

2.2 Labor Reallocation and Income Stability

Institutions also interfere with the dynamics of labor reallocation in the face of labor demand shocks. Recall that the simple model outlined above does not allow workers to shelter their consumption from labor demand fluctuations by accessing financial markets. Then, smaller wage differentials and easier mobility not only improve workers' welfare through a standard consumption-smoothing channel, but also better aligns individual mobility incentives to aggregate rates of transformation, which tends to improve productive efficiency as indexed by the proportion of high-productivity employment in the model. Addressing this imperfection would thus be in the interest of both employers and workers.

In reality, workers' consumption and their mobility investments can be financed by contingent financial securities, by self-insurance through asset accumulation and decumulation, and by private labor contracts with employer-financed training or severance pay provisions. All such instruments fall short, however, of implementing the smooth consumption paths and efficiency-based reallocation and retraining decisions that would characterize a labor market with perfect financial market access. Empirically, earnings and consumption data tend to track each other quite closely at the individual level, especially at the low end of their distributions.⁴

When private financial and labor market contracts cannot shelter workers' consumption from idiosyncratic labor demand shocks and ensure that labor reallocation takes place efficiently, collective

4. See Attanasio and Davis (1996); Cutler and Katz (1992); Blundell and Preston (1998); Blundell, Pistaferri, and Preston (2002).

interventions can try to achieve both goals. In the stylized framework outlined above, improvement on the laissez-faire outcome entails taxing the payroll of high-productivity jobs, subsidizing that of low-productivity jobs, and reducing the workers' cost of moving from the latter to the former. Intuitively, taxing high wage realizations that have relatively low marginal utility and subsidizing the consumption of workers who earn low wages makes sense from an ex ante insurance point of view. Moreover, since equalization of take-home pay would remove workers' incentives to move toward high-productivity jobs, a policy package meant to mimic a first-best allocation also needs to finance mobility out of aggregate resources, subsidizing mobility as needed to ensure that additional production is valued on the risk-neutral basis appropriate for idiosyncratic shocks.

Many real-life policies can be interpreted from this perspective. Progressive taxation can smooth workers' income and consumption, thereby offsetting the implications of missing insurance markets (Varian, 1980). Centralized contracts which specify a compressed wage structure across heterogeneous regions or sectors can be rationalized by risk aversion on the part of immobile workers (Agell and Lommerud, 1992). Unemployment insurance schemes, in turn, can fund job losers' search for high-productivity jobs and ease their exit from low-productivity, low-consumption jobs while also making them more reluctant to take similar ones. Active labor market policies offer training and job-search assistance to displaced workers, as well as job subsidies to low-earners; they can, in principle, address the efficiency implications of uninsured workers' reluctance to undertake forward-looking investment decisions. Employment protection legislation also tends to have qualitatively similar effects in an equilibrium environment. By making it costly to dismiss workers, such legislation induces labor hoarding at low-productivity firms, and the wedge between wages and labor's marginal productivity at such firms is similar to that introduced by an explicit low-wage subsidy. Concern with future firing difficulties discourages hiring at the model's high-productivity firms, so employment protection tends to depress wages below marginal productivity there, just like a payroll tax would. Employment protection measures can also ease reallocation, as mobility subsidies would, to the extent that they mandate payments to workers who are laid off through no fault of their own, induce such payments in equilibrium, or encourage employers to react to labor demand shocks by reorganizing their workforce internally rather than through market mechanisms.

Using such policies to address the shortcomings of laissez-faire allocations is desirable in principle. In practice, the collective administration of tax subsidies and severance schemes is imperfect and certainly not costless, such that these mechanisms may be more or less advisable in different circumstances.

Unemployment Insurance...

The details of policy implementation are important in models that explicitly account for the informational asymmetries that prevent markets from supporting insurance contracts and prevent collective policies from achieving perfect efficiency. Much depends on equilibrium interactions and what causes unemployment in the first place. When unemployed workers are tempted to exert low search effort, a declining pattern of benefits can induce them to intensify their search initially. This efficiently reduces the duration of unemployment, even though the relatively high initial level of benefits affords the same overall insurance as that implied by a lower constant level (Shavell and Weiss, 1979). However, the different search behavior of unemployed workers influences the equilibrium distribution of wage offers: declining benefits can lead to the inefficient rejection of low wage offers by unemployed workers receiving high initial benefits, even as their stronger search effort increases their rate of matching (Albrecht and Vroman, 2003); and high initial benefits can reduce the efforts of currently employed workers to retain their jobs (Wang and Williamson, 1996). The benefits and costs of unemployment insurance systems depend on the character of information problems and market interactions, while the balance between them depends on the efficiency of policy implementation.

...and Employment Protection

Employment protection legislation requires that the termination of individual employees be motivated and that workers be given reasonable notice or financial compensation in lieu of notice. It grants workers a right to appeal against termination, sometimes stipulating reinstatement with back pay when the appeal is successful. Since such rights may not be lawfully overridden by contractual provisions, employment protection legislation interferes with individual contractual freedom as regards dynamic aspects of employment protection, just like administrative extension of collective agreements similarly interferes with individual wage-contracting freedom. Furthermore,

legislation often mandates administrative procedures, involving formal negotiations with workers' organizations and local or national authorities, when large employers wish to proceed to collective dismissals or plant closures. These and other aspects of labor law aim at addressing informational problems and ascertaining whether dismissals are fair: in countries with stringent employment protection legislation, the letter of the law may allow employers to fire incompetent or lazy workers, but firms are required to prove—through regrettably costly court procedures—that termination is justified. The administrative review of collective dismissals is generally aimed at ascertaining that employers have properly considered ways to adjust internally and encouraging them to compensate workers for the social costs of dismissals—costs that financial markets may fail to internalize properly to firms' dynamic profit maximization problems. While it would be quite naive to expect government interventions to provide free of cost the same insurance that markets find it impossible to provide, it would also be naive to presume that properly designed policies cannot go some way toward resolving the relevant imperfections (Bertola, 2004).

2.3 Insurance and Production Efficiency

Institutional intervention in the labor market certainly entails costly information collection and performance monitoring, together with possible deadweight inefficiencies, but at the same time it may improve the efficiency of market allocations in an imperfect world. Not only markets, but also collective policies can present difficulties for implementing appropriate state-contingent transfers both to improve workers' welfare and increase aggregate production (and profits). The relative merits of different policies vis-à-vis markets depend on structural features. A society that can process information more efficiently at the aggregate level than in market interactions is likely to feature active policy interventions based on tax-and-subsidy packages or the direct management of labor reallocation costs. Societies with limited administrative capabilities might tend to privilege simple regulatory policies and, as in the case of employment protection legislation, mandate employers (who are presumably better informed and better insured than their employees) with avoiding or financing labor reallocation.⁵

5. Experience-rated contributions to reallocation or unemployment funds, of the type advocated by Blanchard and Tirole (2003), may combine elements of both. In reality, workers' marginal utility and employers' marginal productivity are not directly observable, and they are much more heterogeneous than in the simple two-state model used here for illustration purposes. Hence, labor courts and designers of bureaucratic schemes face difficult problems.

In general, one would expect to see relatively limited policy interference in economies where it causes small beneficial effects and large deadweight losses because, for example, a very elastic structure of economic interactions gives ample scope for individuals to escape regulation and taxation. However, the welfare effects of policy are not the same for workers who cannot shelter their consumption from income fluctuations and for individuals who can access perfect financial markets. As shown in figure 4, workers benefit from an increased allocation of labor to high-productivity jobs, but mobility per se does not improve workers' welfare, which is only a function of the overall level and stability of wages. While an efficient allocation of labor increases profits, it does not benefit uninsured workers when it is achieved by making wages more flexible (and consumption more volatile). Hence, workers and other agents differ in how they are affected by any given policy's impact on productive efficiency.

To illustrate this point, I present a policy that, in the context of the uninsured labor reallocation model of section 1, imposes a proportional payroll tax on all employment relationships at good firms, pays a proportional subsidy to all workers employed by bad firms, and uses a portion of excess good-wage tax revenues (which exceed low-wage subsidies, since bad jobs are less numerous and pay lower wages than good jobs) to pay a subsidy to all workers who are changing jobs. This policy configuration leaves employers free of turnover costs, but the implications for marginal productivities can be similar to those of employment protection legislation, as mentioned.

By correcting the misallocation introduced in *laissez-faire* by workers' inability to access financial markets, redistribution and mobility subsidies can improve both workers' welfare and the economy's overall production flow, provided the policy implementation is efficient (that is, more efficient than private financial market interactions). Figure 5 plots worker welfare and overall production as a function of the tax-and-subsidy rate, when 20 percent of net tax revenues is lost to administrative and deadweight costs. Although policy implementation is costly, efficiency gains can be obtained in the second-best situation we are considering. The welfare of workers whose consumption is smoothed by the tax-and-subsidy component of the policy increases relative to its *laissez-faire* level, normalized at unity in the figure. The policy also has a positive effect on the economy's overall production flow, since it subsidizes mobility and increases the fraction of high-productivity employment.

Figure 5. Total Net Production Flow and Worker Welfare as a Function of Labor Taxes and Subsidies, with Mobility Subsidies^a



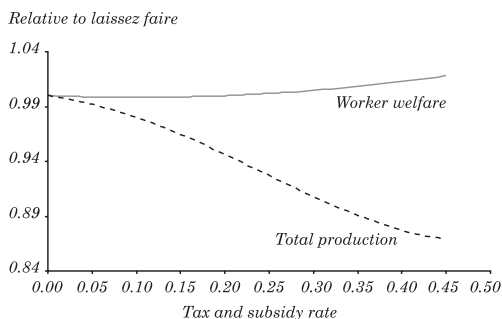
a. Large proportion of resulting revenues from taxes on high wages is used to subsidize low wages. Total net production flow is from equation (10) and worker welfare from equation (12) in the appendix; $\lambda = 80$ percent of the remaining revenue finances mobility subsidies; other parameters are as in the previous figures.

Figure 5 shows that the welfare of workers increases as the policy becomes more incisive, because they benefit from higher, more stable consumption. It continues to increase even as net production flattens out, through the insurance-based channel. Figure 6 illustrates a very inefficient policy that sets to zero the fraction of payroll tax revenue devoted to mobility subsidies. Worker welfare is still an increasing function of the tax-and-subsidy rate (which smoothes consumption), but the net production flow declines dramatically as equalization of take-home pay removes workers' incentives to move toward more productive jobs. Workers' insurance gains lead them to prefer even very wasteful arrangements of this type to a laissez-faire that burdens them (and not society) with mobility costs and, as shown in figure 7, leads to a sharp decline of "profits" (or income flows accruing to factors of production other than labor) as incentives to mobility are removed. This can decrease total production if the supply of non-labor factors of production is elastic (for example, if capital can flow into and out of the economy considered).

In summary, just as workers who have no stake in aggregate production over and above their wages do not appreciate high employment that depresses wages toward their outside opportunity, so workers without access to financial instruments favor policies that stabilize their labor income. They support such policies even when they have negative effects on aggregate production, because they reduce labor mobility along

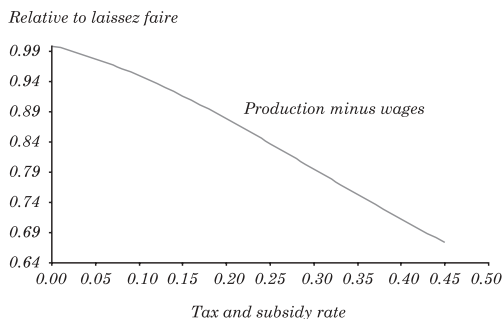
with the wage and consumption differentials that drive it. Labor market institutions may thus reduce overall employment when workers have limited access to ownership of non-labor factors of production and consumption-smoothing opportunities and when they have some weight in political decisionmaking processes. Under the same circumstances, wage compression may reduce workers' incentives to reallocate or retrain at the same time that dismissal restrictions with costly administrative authorization procedures prevent labor reallocation, rather than finance and encourage it.

Figure 6. Total Net Production Flow and Worker Welfare as a Function of Labor Taxes and Subsidies, without Mobility Subsidies^a



a. Large proportion of resulting revenues from taxes on high wages is used to subsidize low wages. The parameters are the same as in figure 5, except that $\lambda = 0$ (that is, high-wage tax revenue that is not used to subsidize low wages is wasted).

Figure 7. Gross Production Flow Minus Gross Wage Flow^a



a. The parameters are the same as in figure 5.

2.4 Why Are Institutions So Different across Countries?

The question of why institutions differ across countries is difficult to answer precisely, but it is easy to answer in broad generality. As illustrated by the theoretical framework discussed above, the benefits and costs of collective interventions in the labor market depend on structural features (such as the externality arising from the specification of mobility costs above), the ease of individual financial market access (as indexed by the degree of utility curvature in the simple model above), and the efficiency of collectively implemented policies.

The costs and benefits of the relevant policies and institutions also differ across individuals. Incomplete financial markets imply that aggregate efficiency considerations are not conveyed to all individuals by appropriate prices, and the resulting incentives to introduce distortions are heterogeneous across individuals with different productivity, non-employment opportunities, or mobility costs. Minimum wages, for example, certainly reduce the employment opportunities of low-productivity individuals at the same time that they increase the average wage and reduce the dispersion of wages among higher-productivity workers. Such distributional effects within the population of workers—rather than between workers and capitalists—interact importantly with a variety of economic and social characteristics of the relevant population. Heterogeneous labor productivity may depend on exogenous characteristics, such as age and gender, but it may also reflect policies and individual choices regarding education and training. The impact of lower employment on consumption and welfare for low-wage workers depends, first, on whether such workers belong to families who also gain from the better wages of higher-productivity workers and, second, on their non-employment opportunities.

The need to address market failures, the ability of collective schemes to do so, and the political weight of those interested in obtaining more protection against consumption shocks at the expense of productive efficiency all differ across economies and historical periods. This can, in principle, offer useful insight into the rationale of institutional settings and the desirability of reforms. Distributional concerns within an economy subject to uninsurable reallocation shocks can explain why labor market institutions often aim at providing job and wage security in the face of uninsurable labor demand shocks. Empirically, the relation between the relevant institutions and outcomes is complex. There

is no clear evidence that regulated labor markets lead to inefficiency or that open economies tend to deregulate (Agell, 2002). The effects of institutions depend on the same economic features that may lead to their adoption. It is thus empirically difficult to disentangle endogenous interactions among structural and institutional features from exogenous differences across countries. Labor market institutions, employment prospects, and access to financial markets all interact endogenously, and it is not easy to ascertain the direction of causality in these interactions since institutions' economic effects also bear on their desirability. For example, the proportion of long-term unemployment is high in countries with high job security and generous unemployment benefits. Models with exogenous institutions explain small flows in and out of unemployment as the endogenous result of optimizing choices by workers (who will not search as hard when benefits are high) and employers (who will not hire and fire as much when firing costs are high). It is also possible, however, to interpret the evidence in terms of institutions' desirability, since workers will be inclined to favor stringent employment protection and generous employment benefits when job loss entails long periods of unemployment with little job-finding prospects. The development of financial markets may also be partly endogenous to demand for financial services, which can be choked by extensive regulation and redistribution.

Such positive feedback between the motivation behind policies and their effects implies that small differences in truly exogenous features of different economies can lead to widely divergent outcomes. For example, cultural and ethnic homogeneity may ease the implementation of collective policies, while an efficient legal system may improve market interactions. The structure of product markets also matters, in that real wages are determined by producers' markups over labor costs and by union markups over non-employment welfare (Nicoletti and others, 2001). While such features are not easy to measure and need not be fully exogenous to economic interactions, progress has been made in bringing such a perspective to bear on labor market institutions. Djankov and others (2003) and Bertola and Koeniger (2004) offer different perspectives on the relation between indicators of judicial efficiency, labor market institutions and outcomes, and financial market features. The following sections outline simple empirical facts that, while stopping short of answering the question above, offer suggestive indications of meaningful covariation across aspects of labor market regulation and labor market outcomes.

3. SOME EVIDENCE FROM INDUSTRIALIZED COUNTRIES

A vast literature studies unemployment and other aspects of labor market experience in light of labor market institutions, emphasizing the contrast between the United States (and other Anglo-Saxon countries), on the one hand, and European (especially Continental European) countries, on the other. The experiences of these two groups of OECD member countries have largely mirrored each other over the last few decades: in the 1960s through much of the 1970s, the unemployment rate of typical European countries was much smaller than its U.S. counterpart, but by the late 1980s a virtually uninterrupted trend increase had raised European unemployment rates above U.S. rates by a large multiple. The literature seeking explanations for this reversal of fortunes focuses primarily on labor market institutions, such as high levels of union coverage and generous social insurance benefits. Since cross-country differences in such respects were largely the same in the 1960s, 1970s, and 1980s, the literature also focuses on restrictive monetary policy in Europe and other macroeconomic shocks that have been found to explain a large portion of diverging unemployment experiences, especially when interacted with institutional features. Public employment patterns and demographic factors (such as the rapidly decreasing youth population) also play a potentially important role.⁶

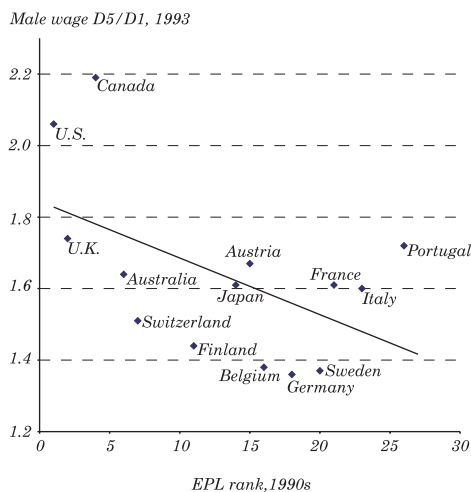
The relation between labor market institutions and the inequality and instability of labor incomes is particularly relevant from this perspective. Empirical work on such aspects can exploit the wide variation in the stringency of employment protection legislation across OECD countries. Only some employment protection features are readily measured quantitatively, such as the number of months' notice required for individual and collective dismissals. Others are more difficult to measure precisely, as in the case of the labor courts' willingness to entertain appeals by fired workers or judges' interpretation of the notion of just cause for termination. When available employment protection indicators are positively correlated with each other, however, it is possible to form qualitatively unambiguous cross-country rankings of

6. For a review of the issues and empirical results, see Bertola, Blau, and Kahn (2002a) and the references therein, especially Nickell and Layard (1999); Blanchard and Wolfers (2000); Nickell and others (2003); and Algan, Cahuc, and Zylberberg (2002). See Bertola (2001) for a review of simple economic insights and empirical indicators.

employment protection legislation and then to relate these rankings to qualitative indicators of labor market performance, in light of theoretical implications. The evidence reviewed by Bertola (1999) suggests that more stringent employment protection legislation is indeed associated with more stable aggregate employment paths. The remainder of this section briefly reviews some simple evidence on the relation between labor market institutions and labor income distribution and stability in OECD countries. The relevant empirical findings are illustrated by simple bivariate graphs. Since many aspects of labor market regulation are highly collinear across countries, these graphs offer remarkably clear insights, which can be confirmed on a multivariate basis.⁷

Figure 8 plots wage inequality against the OECD employment protection index. In line with the simple theoretical perspective outlined above, wages are compressed in the same markets where employment protection legislation is most stringent. Quantitative firing restrictions, in fact, could hardly be binding if wage fluctuations were completely unrestrained: wages would fall in response to the labor

Figure 8. Employment Protection and Wage Dispersion^a



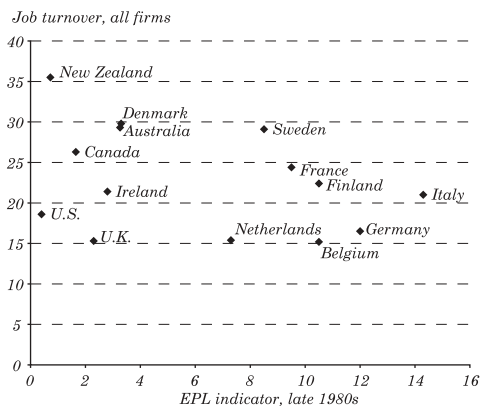
Source: Author's calculations, based on data from OECD.

a. The horizontal axis is the employment protection ranking based on 1990s indicators (the lower the value, the more stringent the protection); the vertical axis is the ratio of median wages to the tenth percentile of the wage distribution for full-time male workers.

7. See Bertola, Blau, and Kahn (2002b) and the references therein, and Bertola (2004a), which focuses particularly on the changing impact and configuration of labor market institutions in OECD countries.

demand shocks that employment protection legislation is meant to protect workers against, making stable employment profitable or inducing voluntary quits. Hence, limiting the freedom offered to employers and workers in setting wages gives force to quantity constraints. Moreover, to the extent that severance payments reduce workers' mobility costs and are larger when they are mandated by legislation than when they are left to imperfect private contracts, it is not surprising to find that more stringent employment protection legislation is associated with smaller equilibrium wage differentials. To the extent that job security provisions explicitly require, or implicitly encourage, payments from the firing firm to departing employees, more stringent employment protection legislation implies that mobility costs are at least partly borne by firms, rather than by workers, and this should be associated with smaller wage differentials in the presence of voluntary mobility across jobs. Figure 9 shows that indicators of the intensity of labor reallocation across firms are only mildly related to employment protection rigidity indicators. This negative evidence has been the subject of extensive investigation (see, for example, Bertola, 1999). The data are very noisy, which may explain the insignificant relationship between the two variables. The bivariate relationship displayed in figure 9, however, is not driven by obvious missing covariates. For example, the cyclical state of the economy has very small effects within each country, so the timing of turnover measurement cannot account for the lack of a stronger relationship between employment protection legislation and turnover. The evidence does not readily support a simple view of employment protection legislation as a rigidity factor. This may, perhaps, be taken to indicate that in terms of the simple framework above, payments to laid-off workers foster the financing of mobility by financially constrained workers.

In practice, rigid labor market configurations appear quite effective in sheltering workers from idiosyncratic labor-income fluctuations. The OECD index of the stringency of employment protection legislation is strongly associated with average tenure lengths (see figure 10). It is also positively associated with wage stability indicators (figure 11). The latter piece of evidence only refers to the few countries for which time-series stability indicators are available, but it is particularly relevant to the theoretical perspective outlined above. In heavily regulated labor markets, workers who are employed tend to remain employed, and their wages tend to remain stable over time. Stability of labor income for such workers is valuable in protecting their consumption (and that of their families) from fluctuations.

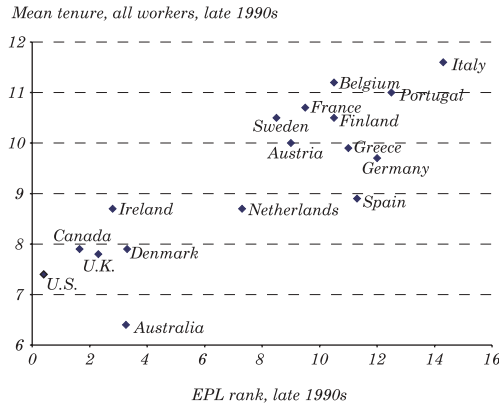
Figure 9. Employment Protection and Job Turnover^a

Source: Author's calculations, based on data from OECD.

a. The horizontal axis is the fixed-term and regular employment protection legislation ranking; the vertical axis is job turnover, measured as absolute employment increases and declines across all firms, normalized by employment level.

In the absence of suitable smoothing instruments, heterogeneous welfare losses from labor demand instability may rationalize frequently expressed concerns with increasing wage inequality and labor market insecurity in the United States, the United Kingdom, and other relatively unregulated labor markets. The simple evidence of figure 11 can also be interpreted in terms of the welfare effects of labor income inequality and instability at the individual level. As in Bénabou and Ok (2001), inequality can be associated with higher welfare for risk-averse individuals if mobility is intense and if the transition probabilities to higher and lower income (and consumption) levels are nonlinear, so as to give good prospects of upward mobility. This condition is almost satisfied in the United States, where individuals need not resent inequality very much. In other OECD countries, however, workers' prospects of upward mobility appear much more limited—and even when currently poor workers may look forward to higher future income, financial markets tend to prevent consumption smoothing. Data and information are scarce on households' (as opposed to firms') financial market access. Bertola and Koeniger (2004) show that less-developed consumer credit (as determined by countries' historically determined judicial efficiency) makes stable labor incomes more attractive from the perspective of welfare theory, and it is empirically associated with stringent employment protection legislation and wage compression in available cross-country data. To the extent that wage inequality is

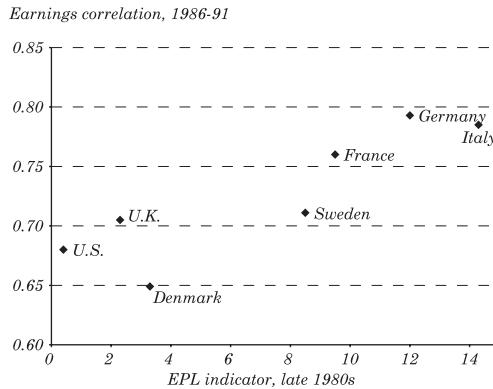
Figure 10. Employment Protection Legislation and Job Tenure^a



Source: Author's calculations, based on data from OECD.

a. The horizontal axis is the overall employment protection rank in the late 1990s; the vertical axis is the mean tenure across jobs existing in 1995.

Figure 11. Employment Protection Legislation and Earnings Fluctuations^a



Source: Author's calculations, based on data from OECD.

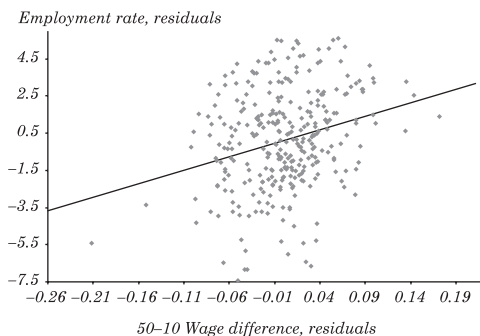
a. The horizontal axis is the overall employment protection indicator in the late 1980s; the vertical axis is wage stability, measured as the correlation of earnings over five years after 1986 for full-time employees.

endogenous to labor market institutions, it is not surprising that it is very limited in countries with low earnings mobility and tight borrowing constraints.

While labor reallocation across jobs is only mildly related to the stringency of employment protection legislation in OECD countries

(figure 9), flows between employment and unemployment are much smaller in economies with a high degree of employment protection (see Blanchard and Portugal, 2001). Economies that provide equal and stable incomes to employed workers often feature other institutions (like collective bargaining) that tend to increase average wages, make low-productivity workers difficult to employ, and generate a large and stagnant stock of unemployed workers. The data provide indications of meaningful trade-offs between employment rates and wage equalization. Figure 12 shows that higher wage inequality is significantly associated with higher employment rates, after controlling for country effects (which may capture institutional and structural features that change only slowly over time, if at all, within each country) and time effects (which may offer a stylized summary measure of the common technological or trade-related forces that tended to increase the differentiation and turbulence of labor demand in industrialized countries over the 1970–2000 period).⁸ To the extent that overall employment is lowered by high collectively bargained wages, unemployment and other forms of non-employment are concentrated at the beginning and end of individual working careers, as well as among women.⁹

Figure 12. Residuals from Regression on Year and Country Dummies^a



Source: Author's calculations, based on data from OECD.

a. The horizontal axis is the difference between the median wage and the tenth percentile of the overall wage distribution; the vertical axis is the employment rate of the working-age population.

8. Bertola, Blau, and Kahn (2002a) and Bertola (2004a) offer a more detailed discussion of such phenomena, as well as the role of labor market institutions in mediating the impact of structural shocks on wage and employment patterns.

9. Bertola, Blau, and Kahn (2002b) show that institutions motivated by rent extraction in labor's favor naturally tend to induce stronger wage increases and steeper employment declines, for elastically supplied labor.

4. LATIN AMERICAN DATA AND EVIDENCE

The literature is just beginning to apply the insights reviewed above to OECD countries. The cross-country set of labor market institutions and outcomes assembled by Djankov and others (2003) spans a very wide range of countries, and the authors argue that historically determined judicial and legal systems may be viewed as an exogenous source of institutional variability across countries. For Latin America, the contributions summarized and discussed by Heckman and Pagés (2004) offer mostly country-specific studies of time-series experiences, which emphasize the role and impact of labor market reforms and the use of microeconomic information. Reforms, however, are infrequent and seldom radical, and they do not appear to produce consistent patterns of effects.

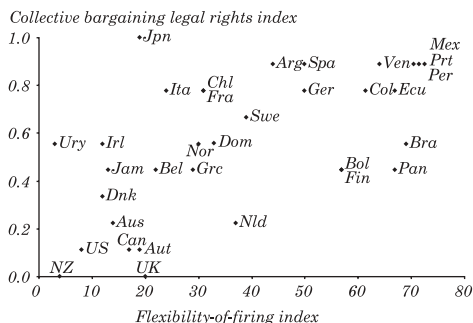
Research is hampered by the relative scarcity of comparable cross-country information on the relevant static, dynamic, and distributional aspects. Unemployment and labor force participation (or employment) rates are available in the World Bank WDI database yearly only from 1980 to 2000 for most (but not all) countries. Some yearly data are missing, perhaps indicating changes of country-specific definitions. Not all countries are large enough to represent an independent observation, and not all countries in the WDI database are also present in institutional-indicator databases. The relevant information is available for a set of twenty industrialized and sixteen Latin American countries.

The available information on Latin American institutions is also less plentiful and precise than that compiled and made available for OECD countries. The Heckman and Pagés (2004) study of Latin American labor laws is based on institutional information obtained from surveys of country officials, aggregated in an index aimed at summarizing in terms of wage labor costs the impact not only of social security and other tax-and-subsidy provisions, but also of firing restrictions, on the basis of U.S. turnover rates. This indicator is somewhat sparse and cannot properly assess employment protection legislation's impact on employment dynamics. However, when consistently computed for both OECD and Latin American countries, it does indicate that the latter tend to be more regulated. A similar impression is conveyed by the purely institutional indicators compiled by the World Bank's Rapid Response Unit, which are displayed in figure 13 along

with a simple index of collective-bargaining rights that may capture workers' ability to implement low-employment outcomes.¹⁰

These simple data deliver equally simple messages. First, institutional interference with employers' freedom to dismiss workers covaries positively with constraints on individual contractual freedom across both OECD and Latin American countries—and not only among the former. This is consistent with the notion that both may be motivated by underlying country-specific economic and political concerns with imperfect (especially from the workers' point of view) *laissez-faire* outcomes. Second, Latin American countries (with the exception of Uruguay and Jamaica) cluster in the high-regulation quadrant of the figure,

Figure 13. Covariation across Labor Market Institutions^a



Source: Author's calculations, based on data from World Bank, Rapid Response website (rru.worldbank.org/DoingBusiness); and International Institute for Corporate Governance, 2003 labor database (iicg.som.yale.edu/data/datasets/labor_dataset_4_01_03.xls).

a. The horizontal axis is the World Bank's flexibility-of-firing index from 0 (most flexible) to 100 (least flexible); the vertical axis is the International Institute for Corporate Governance's index of collective-bargaining legal rights, measured as the "normalized sum of (i) labor union power [employer duty to bargain with unions, extension of collective contracts to third parties, law allows closed shops, (ii) right to unionization in the constitution, and (iii) right to collective bargaining in the constitution" (index_col_barg1 in the data set). The countries included in the figure are as follows, with the abbreviated code given in parentheses: Argentina (Arg), Australia (Aus), Austria (Aut), Belgium (Bel), Bolivia (Bol), Brazil (Bra), Canada (Can), Chile (Chl), Colombia (Col), Costa Rica (CRI), Denmark (Dnk), Dominican Republic (Dom), Ecuador (Ecu), Finland (Fin), France (Fra), Germany (Ger), Greece (Grc), Honduras (Hnd), Ireland (Irl), Italy (Ita), Jamaica (Jam), Japan (Jpn), Mexico (Mex), Netherlands (Nld), New Zealand (NZ), Nicaragua (Nic), Norway (Nor), Panama (Pan), Peru (Per), Portugal (Prt), Spain (Spa), Sweden (Swe), United Kingdom (UK), United States (US), and Uruguay (Ury), Venezuela (Ven). Other countries omitted for lack of data or economic significance in unweighted regressions.

10. The index is from the 2003 Labor Database maintained by the Yale School of Management's International Institute for Corporate Governance (available at iicg.som.yale.edu/data/datasets/labor_dataset_4_01_03.xls). Experimentation with the index of unionization rights gives rather different results; in particular, it yields no association with low-employment outcomes. This may indicate that the quality of the data is poor or that unions foster efficiency in the face of both market and government imperfections, along the lines of Checchi and Lucifora (2002).

in the company of such OECD countries as Germany and Spain, while Anglo-Saxon countries are found in the opposite quadrant. Finally, the covariation between these conceptually different indicators is not perfect, and this can be exploited, in principle, to disentangle their different theoretical effects.

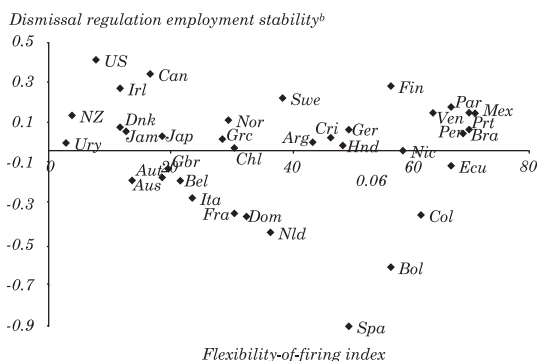
Empirical work on such data may provide indications of the data's quality and the fit of theoretical implications. Over and above the quality of the data, however, empirical investigation is constrained by their scarcity. Unlike the simple bivariate diagrams of the previous section, which illustrate empirical relations whose robustness could be assessed in light of multivariate results in other work, those that follow illustrate methodological issues rather than offer empirically sound results.

To see whether labor market outcomes across these countries are consistent with available institutional information, consider first the theoretical association between dismissal costs and employment stability. Figure 14 reports the cross-country association between the available index of dismissal regulation and a simple measure of employment stability (namely, the deviation of country-specific coefficients from their cross-country average in a regression of changes of employment rates on the growth rate of output per worker). This coefficient should be more positive when employment reacts strongly to changes in productivity and demand, that is, when labor hoarding is less pervasive. The regression also includes country-specific intercepts. These may, to some extent, control for the underlying productivity and employment rate trends. The results, however, can certainly be polluted by regime changes in such trends, as may occur on transition out of agriculture and on changes in demographic employment patterns across genders and age groups. Employment does react more strongly to production changes in countries with more rigid employment relationships, but the relation is far from clear-cut. A linear regression of employment-rate changes on GDP growth rates and on the interaction of GDP growth with the index of employment protection yields the expected negative sign for the latter's coefficient, but the t statistic is only 0.67. Different cyclicity of wages in different countries could be an important source of bias and noise in the estimated relationship. The evidence from OECD countries indicates that the cyclical behavior of wages is very shallow in all countries. The evidence for Latin American countries may be different, but comparable wage data are not as readily available.

The assumption that economic structures and shock intensities are similar when assessing the implications of institutions is clearly

less appropriate in for Latin America than for the OECD, where all countries experienced broadly similar fiscal and monetary policies and energy cost shocks. An extensive study of OECD countries could collect observable shock indicators of the type considered by Blanchard and Wolfers (2000). In the absence of such information, however, one can infer the typical strength of labor demand and other shocks in the relevant countries from the volatility of production. That volatility is, itself, affected by movements in both labor demand labor supply, or more generally by the cyclical character of wage fluctuations (which, as mentioned, are not easily measured for OECD countries). Volatility is also affected by the stringency of constraints on employer's ability to hire and fire labor: if employment patterns are smoothed by firing restrictions, then total production should be less variable, and production per worker more variable, than would otherwise be the case in the face of similar driving processes. For a given value of the firing rules index in figure 15, and with presumably similar incentives to engage in labor hoarding behavior, Latin American countries tend to display higher volatility of production. Those countries' labor demand thus appears to be less stable than that of OECD countries—and their employment dynamics, while more pronounced than those of more industrialized and less regulated labor markets, are substantially smoothed by binding institutional restrictions.

Figure 14. Employment Protection and Employment Stability^a

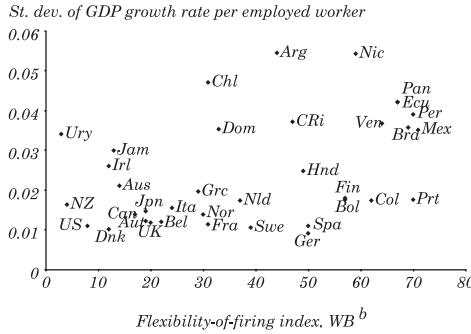


Source: Author's calculations, based on data from World Bank, Rapid Response website (rru.worldbank.org/DoingBusiness) and *World Development Indicators*.

a. The horizontal axis is the World Bank's flexibility-of-firing index from 0 (most flexible) to 100 (least flexible); the vertical axis is the deviation from the overall average of the country-specific slope coefficient in a regression of employment rate changes on real output growth rates, with country-specific intercepts (1980–2000, although the sample period stops earlier for some countries). See the notes to figure 13 for a definition of the country codes.

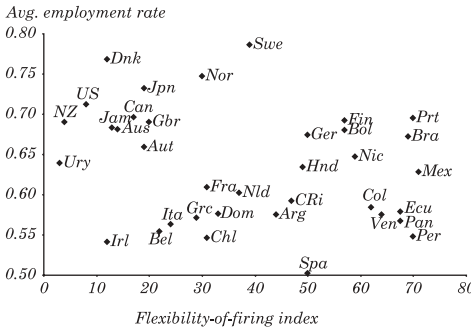
b. The horizontal line depicts the average effect of worker output growth rate on employment changes.

Figure 15. Firing Rules and Volatility of Production per Worker^a



a. The horizontal axis is the World Bank's flexibility-of-firing index from 0 (most flexible") to 100 (least flexible); (see previous figures); the vertical axis is the standard deviation of the GDP growth rate per employed worker (computed for 1980–2000 based on data from World Bank, *World Development Indicators*). See the notes to figure 13 for a definition of the country codes.

Figure 16. Firing Rules and Average Employment Rates^a



a. The horizontal axis is the World Bank's flexibility-of-firing index from 0 (most flexible") to 100 (least flexible); (see previous figures); the vertical axis is the employment rate (computed for 1980–2000 based on data from World Bank, *World Development Indicators*). See the notes to figure 13 for a definition of the country codes.

Turning next to the impact of regulation on employment and un-employment rates, it is instructive to first consider the bivariate association of dismissal restrictions and average employment rates in the 1980–2000 period (the shorter period of data availability). Figure 16 displays a mild negative association: employment rates are higher in countries (such as the Anglo-Saxon members of the OECD) that do not regulate dismissals extensively than in countries (such as Latin American ones) where employment protection legislation is stringent.

This association does not necessarily imply that rigid labor market relations damage employment. It is possible, in principle, to control for the structure and evolution of the labor force, for other observable development indicators, and for unobservable country-specific and time-varying institutional indicators (see Bertola, Blau, and Kahn, 2002b). In practice, however, suitable data are not available for Latin American and other non-OECD countries. Nevertheless, available indicators of firing costs and collective bargaining are imperfectly correlated, as shown in figure 13. This offers a useful opportunity to disentangle the effects of institutions such as employment protection, which are meant to protect workers against uninsurable shocks, from those of institutions such as collective bargaining rights, which are aimed at decreasing employment and increasing wages.¹¹

To this end, table 1 reports the results of regressing unemployment and employment rates on the two institutional indicators displayed in figure 13, both for the whole sample and allowing Latin American coefficients to differ from OECD ones. The indicators are constant within each country, and the fit of these equations is poor.¹² In the pooled regressions reported in the first and fourth columns of the table, however, collective bargaining rights tend to increase unemployment and decrease employment rates, which is consistent with theoretical predictions. Theory has no clear prediction regarding the impact of firing restrictions on overall employment or unemployment. In regressions that control for wage-setting institutions, firing restrictions tend to be insignificantly (and negatively) associated with unemployment and insignificantly (and positively) associated with employment, which is contrary to the impression conveyed by the bivariate plot of figure 16. This simple evidence offers some support to the theoretical distinction between labor market policies affecting wage setting versus mobility. It casts doubt on the view that all labor market regulation has adverse employment and welfare effects, and it may suggest useful methodological venues for further data gathering and econometric work.

The evidence is rough, however, and far from clear-cut. The second and fifth columns report regressions with a simple Latin American dummy, which turns out to be more economically and statistically significant than the institutional indicators. When the latter are interacted

11. Of course, unemployment insurance and payroll taxation with nonemployment subsidies also have related effects, but better information is required to disentangle them.

12. Specifications with year dummies, which may capture employment developments that are common across countries within the period, yield similar estimates for the coefficients of interest.

with the Latin American dummy, the Latin American coefficients are significantly different as a group from the OECD coefficients in the case of unemployment, but the differences of individual coefficients are large, insignificant, and unbelievable. If these regressions are taken at face value, collective bargaining rights would tend to increase unemployment less in Latin America than in the OECD; firing restrictions would have no impact on OECD unemployment but a somewhat negative impact on Latin American unemployment; and the different unemployment outcomes would be accounted for by other features specific to Latin America. This evidence fails to support simplistic views of labor market institutions, but it clearly does not offer precise insights. Given the lack of appropriate controls and the poor quality of institutional information, it is impossible to tell whether similar institutions have structurally different implications in different countries.

Table 1. Regressions of Unemployment and Employment Rates on Institutional Indicators^a

<i>Explanatory variable</i>	<i>Unemployment rate</i>			<i>Employment rate</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
Flexibility of firing ^b	-0.019 (0.45)	-0.041 (0.89)	0.015 (0.25)	-0.0004 (0.54)	-0.0001 (0.07)	0.0002 (0.14)
Interaction with Latin America dummy			-0.097 (1.19)			-0.0003 (0.25)
Collective bargaining rights ^c	1.694 (0.53)	1.135 (0.34)	1.344 (0.37)	-0.075 (1.35)	-0.065 (1.17)	-0.056 (0.80)
Interaction with Latin America dummy			-10.135 (1.52)			-0.106 (0.96)
Latin America dummy		2.474 (1.11)	13.067 (2.54)		-0.040 (1.36)	0.043 (0.77)
Constant	8.543 (6.66)	8.794 (6.63)	7.137 (5.56)	0.694 (34.39)	0.690 (32.88)	0.679 (25.17)
R^2	0.01	0.06	0.17	0.12	0.17	0.19
Test of coefficient equality across Latin America and OECD (p value)			0.052			0.618

Source: Author's calculations, based on data from World Bank, *World Development Indicators* and Rapid Response website (rru.worldbank.org/DoingBusiness); and International Institute for Corporate Governance, 2003 labor database (icg.som.yale.edu/data/datasets/labor_dataset_4_01_03.xls).

a. The dependent variable is the unemployment rate (in percent) in regressions 1 through 3 and the employment rate (as a fraction of the total labor force) in regressions 4 through 6. Unreported results for specifications with year dummies are very similar. The sample covers 593 country*year observations, clustered by country. Robust t statistics in parentheses.

b. Flexibility of firing is indexed from 0 (most flexible) to 100 (least flexible).

c. Collective bargaining rights are indexed from 0 (weakest) to 1 (strongest).

5. THE STATE AND FUTURE OF LATIN AMERICAN LABOR MARKET RESEARCH

The quality of the data—and thus of the empirical results—on labor market institutions and outcomes currently available for Latin America is perhaps comparable to that available for OECD countries fifteen years ago (see, for example, Bertola, 1990). The aggregate data broadly conform to basic theoretical implications based on the very simple indicators and regressions examined in section 4 above. Collective bargaining may well tend to decrease employment and increase unemployment, because lower employment and higher wages are attractive for workers aiming to improve their own (and not a representative individual's) welfare. The effects of more general forms of labor market regulation are less clear-cut, and the evidence does not refute the theoretical prediction that employment protection legislation stabilizes employment without decreasing its average level below that implied by the wage-setting process.

Little information is available for assessing more subtle channels of interaction, but the available evidence appears to be consistent with the insights gained by the literature's analysis of OECD data. For example, Kugler's (2004) difference-in-differences analysis of a Colombian employment protection reform finds that its effect on unemployment was small (a reduction of 0.15 percent) and of doubtful significance. And the cross-national evidence analyzed by Heckman and Pagés (2004) finds little evidence of a meaningful association between their employment protection indicator and unemployment outcomes.¹³ Both of these studies report important effects of labor market regulation on the stability of employment relations and on the composition of employment across demographic groups. These disaggregate findings are consistent with the OECD evidence discussed in section 3 above, and they are readily interpreted in terms of the distributional implications emphasized above and the desirability of labor income stability and disemployment (especially of secondary labor force groups, as in Bertola, Blau, and Kahn, 2002b).

The comparable labor-income inequality and stability data that would make it possible to extend the discussion of section 3 to

13. Earlier versions of both Kugler's and Heckman and Pagés's research reported larger unemployment effects, which were reduced (respectively) by more careful computation of steady-state relations and by the inclusion of Chile in the sample.

Latin American countries are not yet available. When extrapolating theoretical and empirical work from OECD countries to the Latin American reality, it is important to account for differences between these two groups of countries in terms of within-country inequality of resources and levels of market development, on the one hand, and the time-series instability of macroeconomic and institutional conditions, on the other.

Inequality is a serious matter in Latin American and other industrializing countries. The Gini coefficients reported in the World Bank's *World Development Indicators* database range from 24.7 (Denmark, 1992) to 40.8 (United States, 1997) among OECD countries, and from 36.4 (Jamaica, 1996) to 60.7 (Brazil, 1998) among Latin American ones. The simple average of the twenty OECD Gini coefficients is 30.9; that of the twenty-three Latin American Ginis is 49.4. If, as argued above, labor market institutions often trade production efficiency and profits for the protection of workers with limited access to financial markets, then conflicts of interests between capitalists and workers may well be more relevant in Latin America than conflicts between employed and unemployed workers (and other categories), as studied by Saint-Paul (2000) in an industrialized context. Furthermore, mobility in Latin America is probably more limited by a strong class structure and limited education and training opportunities than in most of the developed countries depicted in figure 11. Thus, if labor market institutions are endogenous to political processes in which workers have some weight, then institutional interference should be more intrusive in Latin America than in OECD countries. Furthermore, to the extent that income stabilization for workers with limited or no access to international financial markets destabilizes other agents' (capital) income, capital flows in that region should be highly volatile (Bertola and Drazen, 1994).

As regards the dynamics of macroeconomic and institutional developments, the relevance of forward-looking considerations in labor market behavior and the strong reform tensions in Latin American labor markets imply that measurement issues should, in principle, be addressed by using some measure of expected (rather than current) institutional rules in constructing forward-looking indicators. An example is the simple, but potentially insightful measurement approach of Heckman and Pagés (2004), in contrast with the purely cross-sectional indicators used above for illustrative purposes. The relevant empirical issues are complex because

suitable reform instruments are difficult to identify in a setting where not only outcomes, but also institutions may be viewed as endogenous variables. Still, detailed country-specific studies of the type collected and discussed by Heckman and Pagés (2004) offer intriguing indications of sensible covariation between reform features and economic circumstances, and they suggest that the starkness of Latin American developments should offer fertile grounds for interpretation of similar, if slower, developments in European countries. For example, Cassoni, Allen, and Labadie (2004) report that Uruguay experienced a dramatic regime change from a so-called command economy to unionization and from near-autarky to Mercosur integration. The large increase in the economy's openness, which presumably resulted in more elastic labor demand, had theoretical and empirical implications for labor market interactions that appear similar to and much more dramatic than those relevant to industrialized countries experiencing globalization and European integration: the 49 percent real wage decrease in the decade after 1973 in Uruguay certainly dwarfs wage-moderation trends in Europe in the 1990s.

Inequality and reforms interact importantly. If labor market institutions are a partial substitute for inefficient financial contract enforcement (Bertola and Koeniger, 2004), and if increased flexibility in the labor market makes limited access to consumption smoothing all the more painful for workers, then labor market liberalization will face heavy resistance in industrialized countries with poor financial markets. Labor and financial market reforms should therefore be packaged together, as was the case in the United Kingdom in the 1980s (Koeniger, forthcoming). As both the redistributive political appeal and the efficiency costs of labor market regulation are enhanced by Latin America's inequality and instability, much more dramatic reforms may occur there than in OECD countries. From this perspective, Latin American countries offer a rich set of reform experiences: several have pioneered the use of notional benefit accounts, which may indeed target the financial market failures emphasized above as possible rationales for observed collective interference with labor market outcomes. If the rate of return on notional benefit accounts suitably reflects that of investment opportunities available at the level of the aggregate economy but unavailable to individual workers, they can ease the liquidity-constraint problems studied by Bertola and Koeniger (2004), at least if withdrawals are allowed in the relevant contingencies. The dramatic variability of macroeconomic

and institutional dynamics in most Latin American countries offers empirical opportunities to gain further insights into theoretical mechanisms. The equally dramatic heterogeneity of personal circumstances in less developed countries makes it important to take into account the intended benefits of institutional interference with the workings of labor markets when discussing their actual shortcomings.

APPENDIX

Let the relationship between the marginal worker's revenue product and the wage be

$$A_i L_i^{-\beta} = W_i, \quad (\text{A1})$$

that is, labor demand has constant elasticity $0 < \beta < 1$ and is subject to multiplicative exogenous shocks. The level of that shock, A , and the employment, L , and wage, W , are all indexed by i . They may refer to a specific firm, sector, or region within an aggregate economy. To make the points of interest, it is sufficient to consider only two possible values of that index: $i = g$, for good employment opportunities and $i = b$ for bad ones. The wage-equivalent income of workers who are not employed in either kind of job also plays a role in what follows; let it be denoted W_u and, for simplicity, let it be the same for all individuals in a population of total size \bar{L} .

The number of nonemployed labor units are denoted U , while P represents the proportion of employment at high-productivity sites. This yields

$$L_g = (\bar{L} - U)P \text{ and } L_b = (\bar{L} - U)(1 - P).$$

Equality of marginal productivity at the two sites is obtained if

$$P = A_g^{1/\beta} / (A_g^{1/\beta} + A_b^{1/\beta}), \quad (\text{A2})$$

which, since $A_g > A_b$, implies that the fraction of employment in jobs with higher-than-average productivity is intuitively larger than the fraction in jobs with lower-than-average productivity. The overall level of employment must equate wages to the outside opportunity, W_u . The condition,

$$A_b \left[(1 - P)(\bar{L} - U) \right]^{-\beta} = A_g \left[P(\bar{L} - U) \right]^{-\beta} = W_u, \quad (\text{A3})$$

is solved by

$$U = \bar{L} - (A_g^{1/\beta} + A_b^{1/\beta}) W_u^{-1/\beta}.$$

If this is positive, then overall employment falls short of total available labor, \bar{L} . Otherwise, all individuals are employed, and their income equals or exceeds W_u .

Let the utility accruing to workers be a power $0 < \alpha < 1$ of their labor income, and consider a simple-minded measure of labor's collective welfare—namely, the sum total of all workers' utility:

$$\bar{V} = P(\bar{L} - U)(W_g)^\alpha + (1 - P)(\bar{L} - U)(W_b)^\alpha + (W_u)^\alpha U.$$

When $W_g = W_b = W_u$ as in equation (3), workers' welfare is simply given by $(W_u)^\alpha \bar{L}$: all workers are indifferent between working or simply enjoying their nonemployment opportunities. Lower employment increases aggregate worker welfare by increasing wages along sloped demand curves in the form of equation (1). If the proportions of employment allocated to the two types of jobs are kept fixed at the expressions in equation (2), then

$$W_g = W_b = \left(A_g^{1/\beta} + A_b^{1/\beta} \right)^\beta (\bar{L} - U)^{-\beta},$$

and thus

$$\bar{V} = (\bar{L} - U)^{1-\beta\alpha} \left(A_g^{1/\beta} + A_b^{1/\beta} \right)^{\beta\alpha} + (W_u)^\alpha U \tag{A4}$$

is increasing in U at the point where $W_g = W_b = W_u$: as long as $\beta\alpha < 1$, workers' welfare is maximized when the ratio of wages to nonemployment income equals $(1 - \alpha\beta)^{-1/\alpha}$. In the $\alpha = 1$ case of risk neutrality, this is a familiar markup in the form $(1 - \beta)^{-1}$. The markup can be shown to be smaller when $\alpha < 1$ and utility is not only increasing, but also strictly concave in labor income. Intuitively, higher unemployment increases both the mean and the variance of workers' incomes, and this is less attractive when the utility function is more concave.

Let p denote the probability of a shock that causes productivity to fall from A_g to A_b , and also of the opposite transition. While workers who are not relocating earn W_b or W_g , workers who move from a bad to a good job earn XW_g , with $X \leq 1$. Again supposing that workers' utility flows are a concave function of their labor income, consider the undiscounted expected values of utility accruing over an infinite horizon to workers holding each type of job. If V_g denotes that value from the point of view of a worker who holds a good job and has no reason to move, then

$$V_g = (W_g)^\alpha + \left[(1 - p)V_g + pV_b \right], \tag{A5}$$

since the job may remain good with probability $1 - p$ but may also turn bad. Symmetrically, a worker holding a bad job and remaining there can hope that a positive labor demand shock will be realized, which occurs with probability p . Thus,

$$V_b = (W_b)^\alpha + [pV_g + (1-p)V_b]. \quad (\text{A6})$$

Subtracting equation (6) from equation (5) yields

$$2p(V_g - V_b) = (W_g)^\alpha - (W_b)^\alpha. \quad (\text{A7})$$

A worker holding a bad job, however, can move to a good job. The value of doing so is

$$(XW_g)^\alpha + [(1-p)V_g + pV_b].$$

If workers are individually indifferent to mobility, it must be the case that this is the same V_b in equation (6), which implies that

$$(W_b)^\alpha - (XW_g)^\alpha = [(1-2p)(V_g - V_b)].$$

This equation and equation (7) yield a relationship between the wages paid by the two types of jobs, which differ in terms of both their current productivity and possible future developments:

$$(W_g)^\alpha = (W_b)^\alpha + [(W_g)^\alpha - (XW_g)^\alpha]2p. \quad (\text{A8})$$

Solving for the wage configuration that makes mobility optimal for workers, labor allocation must be such as to yield

$$\frac{W_g}{W_b} = [1 - (1 - X^\alpha)2p]^{-1/\alpha}.$$

In equilibrium, the proportional wage premium paid by good jobs is positive, since $0 < 1 - (1 - X^\alpha)2p < 1$ for $\{2p, X, \alpha\} \in (0, 1)$, and decreasing in X , since mobility becomes costless (and equalizes wages) as X approaches unity. This premium is also increasing in p , the probability of a change in labor demand conditions: as labor demand becomes less stable, larger wage premiums are needed to compensate mobility investments by workers who have an option to stay put and hope for an improvement of their current job's conditions. As p approaches one-half, the proportional wage premium approaches $1/X$.

In the $p = 0.5$ case, in which the future outlook is the same at all jobs, wages must be such as to compensate workers for their mobility costs within the same period when mobility occurs.

Conversely, if $p < 0.5$, in which case the labor income of workers who change jobs is lower than W_b , mobility is still optimal, but only because workers can look forward to persistently high wages once they reach a good job. The relevance of forward-looking considerations implies that their utility's degree of concavity plays an important role in determining equilibrium wage differentials and the intensity of mobility. In fact, the equilibrium ratio of good to bad wages is decreasing in α as long as $p < 0.5$: it is lowest at the upper boundary of the $\alpha \in (0, 1]$ range, and it increases as α declines toward zero, making the utility function increasingly inelastic.

With P again representing the proportion of employment at good firms, in equilibrium it must be the case that

$$\frac{A_g P^{-\beta}}{A_b (1-P)^{-\beta}} = \frac{W_g}{W_b},$$

so

$$P = \frac{\left[(W_g/W_b) A_b \right]^{-1/\beta}}{\left(A_g \right)^{-1/\beta} + \left[(W_g/W_b) A_b \right]^{-1/\beta}}. \quad (\text{A9})$$

As a fraction, p , of high-productivity jobs experiences a negative shock, and the same fraction of bad jobs experiences a positive one, $p(2P - 1)$ units of labor are relocated each period. Each moving worker earns only a fraction, X , of the good wage to which he or she is moving. Consequently, in the aggregate, mobility dissipates $(1 - X)W_g = (1 - X)A_g P^{-\beta}$ units of output in flow terms. Total production net of such costs is

$$\left[\frac{A_g}{1-\beta} (P)^{1-\beta} + \frac{A_b}{1-\beta} (1-P)^{1-\beta} - p(2P-1)(1-X)A_g (P)^{-\beta} \right] (\bar{L} - U)^{1-\beta} \quad (\text{A10})$$

The labor allocation delivered by this simple labor market's decentralized equilibrium does not maximize this expression. That is, it does not satisfy the first-order condition,

$$\begin{aligned}
& A_g(P)^{-\beta} - A_b(1-P)^{-\beta} - (1-X)2pA_g(P)^{-\beta} \\
& + p(1-X)A_g\beta P^{-\beta} \left(2 - \frac{1}{P}\right) = 0.
\end{aligned} \tag{A11}$$

The first three terms of condition (A11) add up to zero in equilibrium only if mobility decisions are taken on a risk-neutral basis ($\alpha = 1$); otherwise, they exceed zero, since mobility by uninsured workers calls for larger wage differentials. Even under risk neutrality, the last positive term would call for even higher P and even lower wage differentials, because the proportional specification implies that external effects reduce the cost of mobility as mobility becomes more intense and reduces good wages.

The average utility generated for workers by each unit of employment is

$$\bar{V} = A_g^\alpha(P)^{-\beta\alpha} - A_b^\alpha(1-P)^{-\beta\alpha}. \tag{A12}$$

To simplify the notation, let the tax-and-subsidy rate be the same fraction, τ of pre-tax wages (and labor marginal productivities). The after-tax mobility condition for uninsured workers is then

$$\begin{aligned}
& [(1-\tau)W_g]^\alpha = [(1+\sigma)W_b]^\alpha + \\
& 2P\left\{[(1-\tau)W_g]^\alpha - [X(1-\tau)W_g(1+\nu)]^\alpha\right\},
\end{aligned} \tag{A13}$$

where the proportional mobility subsidy, ν , must obey the policy's budget constraint: $\nu X(1-\tau)W_g$ is paid to each of the $p(2P-1)$ units of labor reallocated in a typical period, and the revenue of payroll taxes net of low-wage subsidies is $[\tau A_g(P)^{1-\beta} - \tau A_b(1-P)^{1-\beta}]$, but only a fraction, λ , of this is available to finance mobility. The shortfall of λ below unity represents administration costs and the deadweight costs of distorted economic behavior. Hence,

$$\nu = \frac{\tau A_g(P)^{1-\beta} - \tau A_b(1-P)^{1-\beta}}{p(2P-1)X(1-\tau)W_g} \lambda$$

is the mobility subsidy rate. If equation (13) is rewritten inserting this expression and expressions for gross wages in terms of P , the

equilibrium fraction of high-productivity jobs, then the latter is determined in equilibrium by the condition,

$$(1 - 2p) \left[(1 - \tau) A_g P^{-\beta} \right]^\alpha = \left[(1 + \tau) A_b (1 - P)^{-\beta} \right]^\alpha$$

$$-2p \left\{ \frac{p(2P-1)X(1-\tau)A_gP^{-\beta} + \tau\lambda \left[A_g(P)^{1-\beta} - A_b(1-P)^{1-\beta} \right]}{p(2P-1)} \right\}^\alpha,$$

which can be solved numerically.

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