

**LABOR MARKET REFORMS IN LATIN AMERICA:**  
**CONSEQUENCES AND COSTS\***

By

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## **I. Introduction**

During the last few years Latin America has reluctantly begun a process of markets integration into the global economy. This process is likely to deepen in years to come, and workers in the region must have access to the opportunities that this global market place offers. While it is certainly a fact that global labor markets threaten individuals with the possibility of being replaced by other, perhaps cheaper or more productive workers in other countries, the same phenomenon brings about the opportunity to obtain a better job in a broader set of labor market offers. Globalization can potentially benefit all workers by changing the division of labor across countries. Yet, this new division of labor requires a fair degree of adaptability. The challenge is to seize the benefits from globalization, cognizant of the difficulties imposed by the need to adjust. To this end, policies should seek to improve the functional role of the labor market, encourage an effective response of the education and training markets, and ensure that minimum wage policies (geared towards improving the conditions of the working poor) do not discourage employment creation.

There has been a substantial body of work measuring the detrimental impact of current labor market regulation on employment creation, the extent of informality, and productivity (see for example Heckman and Pages, 2004). Yet, labor market reforms seeking gains in efficiency have not been popular in Latin America, particularly because the original motivation for establishing these laws was to alter the distribution of labor incomes.

In a recent paper, Botero et al (2004) seek to explain differences in labor market regulations across countries. They examine labor market regulations in 85 countries through the lens of three broad theories of government regulation of labor. Efficiency theories hold that regulations evolve to address the problems of market failure. Political theories contend that political leaders put in place regulations that benefit themselves and their allies. Legal theories hold that the patterns of regulation are the result of legal tradition, which is largely determined by transplantation of a few legal systems across countries. The evidence provided is broadly consistent with the legal theory, according to which patterns of regulation across countries are shaped largely by transplanted legal

structures. The fact is that in Latin America, most countries had a Labor Code by the 1930s and 1940s, motivated by the perceived need to protect the welfare of workers against the excessive power of employers and to insure workers against the risk of job loss and income security (Lindauer, 1999).

We now have data that clearly points out at the detrimental effects of current labor laws.<sup>1</sup> These labor laws can be revised to move them towards more efficient rules. Therefore, a way to respond to the challenges of employment creation and social security in Latin America is to re-regulate the labor market.

This paper examines more efficient forms of regulating the labor market in Latin America. To that aim, I first provide a simple framework for analyzing the effects of labor market re-regulation on wages, employment, earnings and the return to capital. Second, I analyze, from a comparative perspective, the extent to which labor markets have been distorted and regulated in Latin America. In particular, I use recent indexes constructed by various organizations and scholars to evaluate whether the Latin American countries have a higher degree of labor market distortions than other regions and groups of countries. And third, I use existing models and estimates on labor markets' behavior to provide computations of the costs and benefits of three specific (potential) labor market reforms in Latin America: (a) a *pension reform* that reduces the labor tax component of pay-as-you go regimes; (b) the elimination of restrictions on short-term contracts and the *replacement of current dismissal regulations* with an unemployment insurance account (UIA) system, and (c) the introduction of an Earned Income Tax Credit (Devolución de Impuestos a los Pobres- DIP) *as an alternative to a high minimum wage and as an instrument to formalize labor contracts and compensate the poor for the obligation to make contributions towards unemployment and pension benefits*. While this paper will mainly address the cost and benefits of each solution, insights on the distributional impact of reforms become an important component in any attempts to make these solutions politically acceptable.

The rest of the paper is organized as follows: In Section II I present a model that captures some of the most salient features of labor markets in emerging economies such as the Latin America region markets. The framework assumes an open economy that

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<sup>1</sup> See for example, Heckman and Pages (2004).

produces two types of goods -- internationally tradable and non-tradable goods. There are labor market distortions – minimum wage, payroll taxes, costs of dismissal – that affects one of the sectors only; this sector is called the “formal” (or “protected”) sector. Initially there is unemployment and labor market informality. In Section III I summarize the existent data on labor market regulations and distortions in Latin America. In order to put things in perspective, I compare labor market policies in Latin America to four groups of countries: the Asian nations as a group; the so-called Asian Tiger countries; a group of Southern Mediterranean countries (Greece, Portugal, and Spain); and three advanced commodity exporting countries (Canada, Australia and New Zealand).<sup>2</sup> In Section IV I use the model to examine how the relaxation of distortions affects labor-market outcomes. In spite of its simplicity this model is very powerful, and illustrates the fact that labor market reforms imply significant redistributions of income. This, in turn, helps explain why there is so much resistance to labor reform: those groups whose income is reduced by the reforms –in particular those employed in the “protected” sector – strongly oppose any change of legislation and regulations. I provide estimates of the costs and benefits of three types of labor market reform: (a) a pension reform; (b) a replacement of the minimum wage legislation with a program of public transfers to the working poor, and (c) a reform to the job security legislation. Section V contains conclusions. There is also an Appendix where I present some data used to obtain the parameters used in the calculations in Section IV.

Before proceeding a clarification is required: the computations presented in this paper do not capture *all* the effects of a comprehensive and all encompassing labor market reform. On the contrary, following the guidelines of the Copenhagen Consensus Project I have dealt with only three components of a potential labor market modernization reform. Readers interested in other elements of reform – including, for example, collective bargaining systems or public financing of workers’ training systems, or the use of active labor market intermediation systems should consult some of the works listed in the bibliography to this paper.

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<sup>2</sup> I am aware, of course, that Portugal does not have a Mediterranean Sea coast.

## **II. Labor Markets Regulation: A Conceptual Framework**

Labor markets in emerging economies in general – and in Latin America, in particular – have a number of institutional features that set them apart from labor markets in industrial nations. The most important among these features are:

- In emerging countries labor markets are usually characterized by a rather large “informal” segment. This segment is, de facto, not directly affected by labor market regulations, such as minimum wages, job security legislation, or social security contributions. The informal sector coexists with a “modern” sector, where labor market regulations are fully in effect.
- Labor market regulations take various forms, including payroll taxes, firing restrictions, limitations on the use of temporary contracts, and minimum wages, among others. Payroll taxes are typically earmarked to finance programs that benefit workers (pensions, health services, training, death and disability insurance), with rather weak links between individual contributions and benefits. The percentage of the contribution that is actually considered a pure tax depends on the nature of the social security system and, more specifically, on the perceived connection between contributions and benefits (Diamond and Valdes-Prieto, 1994).

In this Section I develop a model of the labor market in an economy open to international trade and is characterized by the existence of a “formal” and “informal” labor markets. Those employed in the formal sector are subject to social security contributions; those in the informal sector do not contribute to the social security system.<sup>3</sup> I also assume that the social security system is of a pay-as-you-go type. Although the model is stylized and does not incorporate every form of labor market intervention, it is quite powerful. In particular it captures the most important effects of reforms on key variables, such as wages, earnings of capital, employment and unemployment. More important, perhaps, the model clearly illustrates that a key consequence of labor market reform is to redistribute income across different economic actors.<sup>4</sup>

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<sup>3</sup> Indeed, whether workers contribute to social security is often used as a way of defining labor market informality.

<sup>4</sup> The model is partially based on Edwards and Cox Edwards (2002).

Formally, assume that, as is the case in many developing and transitional economies, the labor market is segmented. There is a “*modern*” or “*covered*” sector subject to a minimum wage and to social security coverage, and an “*informal*” or “*unprotected*” sector with no social security coverage, and competitively determined wages. With other things equal, workers will rather be employed in the “protected” sector. The problem, however, is that there are not enough jobs in that sector; individuals that apply for a job in the modern sector face a probability ( $p$ ) of obtaining it, and a probability ( $1 - p$ ) of being unemployed. In equilibrium, and under the assumption of risk neutrality, the wage rate obtained in the *informal* segment is equal to the expected (take home) wage rate in the *protected* sector. I further assume that every period employment in the modern sector turns over fully, so that the probability of getting a job in that sector is equal to the ratio of openings to applicants.<sup>5</sup>

I also assume that prior workers in the *protected* sector are subject to a payroll tax – whose purpose is to fund the social security system (that is, to fund pension payments to the elderly) -- equal to  $T_1$ . I assume there is a no connection between social security contributions and individual benefits. More specifically, and as is usually the case in pay-as-you-go system, I assume that social security contributions are considered by individuals to be fully a tax. Notice, however, that the analysis that follows would not be affected by the assumption that only a fraction of the contribution was considered to be a tax. Workers employed in the modern sector receive a “take home” wage rate equal to the minimum wage ( $W_{\min}$ ). The cost of labor to firms operating in this sector is equal to the minimum wage plus the payroll tax.

A social security reform that replaces the pay-as-you-go system with an individual accounts-based system can lead to a reduction of the payroll tax as perceived by workers. There are two sources for this reduction: first, the reform itself may entail a reduction in the contribution (this, for instance, was the case in Chile’s pension reform). Second, the replacement of the old pay-as-you-go system by individual retirement accounts increases the link between contributions and benefits, transforming the contribution towards pensions, or at least a portion of it, into a deferred compensation.

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<sup>5</sup> This mechanism is similar to the one consider in migration models of the Harris-Todaro type. In our model, however, there is no migration. The assumption of risk neutrality is not essential; all the results will follow if individuals have a constant degree of risk aversion.

Equations (1) - (4) describe the wage determination process in this economy. Equation (1) establishes that in equilibrium the wage rate in the informal sector ( $W_I$ ) is equal to the expected (net of taxes) wage rate in the modern sector  $E(W_M^N)$ . According to equation (2), and following the Harris-Todaro well-known model, the probability of finding a job in the modern sector is equal to the ratio of openings – that is employment in that sector ( $L_M$ ) – to applicants. The latter is given by the sum of openings ( $L_M$ ) plus the total number of unemployed ( $U$ ). It is assumed, for simplicity, that the unemployed received an income equal to  $S$ . Equation (3) says that the cost of labor in the modern sector is equal to the minimum wage inclusive of the payroll tax ( $T_1$ ). In equations (4a) and (4b) I present the demand for labor equations in the modern and informal sectors.  $P_M$  and  $P_I$  are good prices in each sector,  $f(\dots)$  and  $g(\dots)$  are physical marginal productivity of labor functions, and  $K_M$  and  $K_I$  are the stock of capital used in the modern and informal sector, respectively.

$$(1) \quad W_I = E(W_M^N) = pW_{\min} + (1-p)S$$

$$(2) \quad p = \left( \frac{L_M}{L_M + U} \right)$$

$$(3) \quad W_M = W_{\min} (1 + T_1)$$

$$(4a) \quad W_M = P_M f(L_M, K_M)$$

$$(4b) \quad W_I = P_I g(L_I, K_I).$$

Equation (5) is the resource constraint in the labor market, and establishes that employment in the modern sector, plus employment in the informal sector plus unemployment has to be equal to total labor supply ( $L_S$ ). According to equation (6), labor supply is a positive function of real wages;  $O$  represents “other” factors affecting the supply of labor.<sup>6</sup> Equation (7) defines the aggregate price index and the aggregate wage rate, as geometric means of sectoral prices and wages, respectively. In order to simplify the analysis, in equation (8) I have assumed that the modern sector corresponds

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<sup>6</sup> I abstracted from intertemporal issues. Although the results will still go through in an explicit intertemporal context, the computations would become significantly more complex.

to tradable goods and that, as a consequence,  $P_M$  is given by international prices ( $P_M^*$ ).<sup>7</sup> Equation (9) establishes that product prices in the informal sector are a positive function of wages in that sector. We further assume that an increase in  $W_I$ , will have a less than proportional effect on prices of goods produced in the informal sector:

$$(5) \quad L_M + L_I + U = L_S$$

$$(6) \quad L_S = h\left(\frac{W}{P}, O\right); h' > 0$$

$$(7) \quad P = P_I^\beta P_M^{(1-\beta)}; W = W_I^\theta W_M^{(1-\theta)}$$

$$(8) \quad P_M = P_M^*$$

$$(9) \quad P_I = z(W_I); z' > 0; d \log P_I < d \log W_I.$$

Equation (10) is the resource constraint for capital, and says that the sum of capital used in each sector has to equal the total stock of capital. Equation (11) says that the allocation of the capital stock across sectors will depend on the relative product prices. Notice that in order to simplify the computations, and to focus on the issues at hand, I have assumed that there is no net investment.

$$(10) \quad K_M + K_I = K$$

$$(11) \quad K_M = j\left(\frac{P_M}{P_I}\right); K_I = v\left(\frac{P_M}{P_I}\right)$$

The initial (pre reform) labor market is depicted in Figure 1, under the simplifying assumption that the unemployed get no assistance ( $S = 0$ ). The distance  $O_M - O_I$  is total labor supply, the lines  $L_M$  and  $L_I$  represent demand for labor schedules in the two sectors, and  $yy$  is a rectangular hyperbola, that satisfies the equilibrium condition in equation (1). The wage rate and the level of employment in the informal sector are

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<sup>7</sup> This simplification allows us to maintain product prices in the modern sector constant. An alternative assumption, and one that would not affect the basic aspect of the analysis, is that the modern sector is comprised of both tradable and non-tradable goods. In this case, we would need a product market clearing condition for modern sector goods.

determined by the intersection of the  $yy$  and  $L_I$  schedules.  $W_{\min}$  is the minimum wage which, as stated above, is assumed to be set in net take-home bases.  $T_1$  is the payroll tax, and  $W_M$  is the cost of labor in the modern sector.  $W_I$  is the wage rate in the informal sector. The initial level of employment in the modern sector is given by distance  $O_M - L_M^1$ ; distance  $O_I - L_I^1$  depicts initial employment in the informal sector. The total number of unemployed is equal to distance  $L_M^1 - L_I^1$ .

[FIGURE 1 AROUND HERE]

### **III. Labor Markets Regulations and Distortions in Latin America**

Labor market distortions in Latin America can be divided in two groups: (a) High payroll taxes and binding minimum wage, and (b) high costs of adjustment (via restrictions to short-term contracts, high costs of dismissal, or variations in work schedule). While the two types of distortions represent an ultimate increase in labor costs, leading firms to substitute away from labor, the second type of distortion becomes particularly detrimental in an environment of change. Several researchers have examined the relative weight of labor regulations across regions and their overall assessment can be summarized as follows:

(i) A comparison of Latin America with OECD countries tells us that payroll taxes are higher in the OECD, but costs of adjustment are higher in Latin America. (ii) Latin American countries regulations compare to those of Southern European and some Scandinavian countries. (iii) Anglo-Saxon countries have lighter labor regulations. (iv) Asian tigers share with Latin America the high dismissal costs, but they do not restrict short-term contracts nor do they over regulate working hours leading to significantly lower costs of adjustment. (See Tables 1A, 1B, and 1C, which capture comparative analyses by Heckman and Pages (2004), Botero et al (2004) and World Bank (Doing Business, 2007).

[Tables 1A, 1B and 1C around here]

Social security programs in Latin America typically combine old-age, disability and death, sickness and maternity, work injury, family allowances and unemployment insurance benefits and are funded by payroll taxation. The programs vary in terms of coverage and generosity of benefits, but in most countries there is a weak link between tax payments and value of program benefits. Estimates reported in Heckman and Pages (2004) place average social security taxes at 20% of wages in the LAC region.

Job security regulations limit short-term contracts, mandate minimum advance notice periods, specify just cause for dismissal, and mandate severance pay in case of dismissal. The cost of job security is estimated to be one fifth of that of social security when calculated as an up-front expected present value (Heckman and Pages (2004)). Using this approximation, the combined impact of job security and social security taxation adds to 25% of wages for the Latin America region. This estimate does not include the effects of current job-security legislation on the dynamics of the labor market. These effects are more difficult to isolate, although a number of recent papers provide evidence of detrimental effects of job-security legislation on employment. See for example, Caballero et al (2004), Micco and Pages (2004).

Minimum wages are binding in Latin American countries and have substantial effects on employment and wage distributions. Data on wage distributions examined by Maloney and Nunez (2004) suggest that minimum wages are binding. Both formal and informal sectors respond to the minimum wage through some market mechanism. One possible mechanism is captured in the model presented in section II, where in equilibrium, the wage rate in the informal sector is equal to the expected (net of taxes) wage rate in the modern sector or the minimum wage. After a detailed examination of wage distributions and their patterns around the minimum wage, Maloney and Nunez (2004) use Colombia data to examine the effect of an increase in the minimum wage on “wages around the minimum” and on “employment for those earning around the minimum.” They find that about 90% of the increase in the minimum wage is communicated to wages, with the effect continuing to be significant up to 4 minimum

wages, although much smaller.<sup>8</sup> On the other hand, an increase in the minimum wage has a significant impact on the probability of becoming unemployed for those earning around the minimum. The authors conclude that the minimum wage induces far-reaching rigidities in the labor market, and suggest that the region is paying a high price in reduced flexibility for possible small effects on poverty alleviation.

### ***Re-regulating Labor Markets: Benefits***

The papers published in the Heckman and Pages (2004) volume suggest that mandated benefits reduce employment and that job security regulations have a substantial impact on the distribution of employment and on turnover rates. Insiders and entrenched workers gain from regulation but outsiders suffer. As a consequence, job security regulations promote inequality among demographic groups, with the most adverse impact of regulation falling on youth, women, and unskilled workers. Most of the individual country studies demonstrate that regulations promoting job security reduce covered worker exit rates out of employment and out of unemployment, and on net reduce employment.

The challenge of labor market reform is to increase efficiency. As indicated before, payroll taxation provides funding for a number of programs with weak links between contributions and benefits. One of the great contradictions of labor market intervention in Latin America is that they fail to help the poor. Thus, in rethinking these interventions it is reasonable to look for mechanisms whereby the beneficiaries of these programs pay for their costs, and those that are unlikely to receive any benefits are simply not taxed. Programs need to be *unbundled* and better designed in an effort to *reduce the effective tax component of each program*.

Policy makers willing to reform legislation to improve labor market efficiency must aim at reducing effective taxation. This requires designing a system of payments and benefits that is as actuarially fair as possible, and that offers benefits that are truly valued by the majority of the population.

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<sup>8</sup> Their methodology parallels that of a study conducted for US data. While in the case of the US, the estimated effect at four minimum wages is of an increase of 0.06 times the change in the minimum, in the case of Colombia, at four minimum wages the effect was estimated at 0.38 times the change in the minimum.

### 3.1 *Alternative Regulations to address Old-Age Pensions*

An alternative approach towards provision of old-age pensions is for governments to mandate individuals to save towards old age in a “defined contributions-DC” program. The key advantage of a DC program is that it can be designed to be actuarially fair, and thus significantly reduce the labor tax component, with its detrimental effect on employment. A number of countries in the region have moved in this direction and there is evidence that these pension reforms have “removed distortions in the labor market improving workers’ incentives to seek to participate in formal pension systems” (Gill et al, 2004).<sup>9</sup>

A system of contributions and benefits is actuarially fair if (1) upon retirement, the expected present value of payouts equals all contributions compounded by the market rate of return; (2) incremental contributions yield equivalent expected incremental lifetime benefits; and (3) expected incremental benefits from delaying the start of the pension equal the present value of the early benefits foregone. (For a more precise delineation of these and other dimensions of actuarial fairness see Disney, Queisser and Whitehouse 2006). Present value calculations implicit in these actuarially fair calculations are made using the market interest rate appropriate to the degree of investment risk for the system during the accumulation stage, a less-risky rate during the payout stage, and survival rates for the average member of the covered cohort. Viewed from a systemic perspective, the Chilean reformed system of old-age pensions satisfies these criteria for actuarial fairness.<sup>10</sup>

However, policies that mandate a change in behavior relative to individuals’ preferences will continue to be considered taxing from the individual point of view, even if they are actuarially fair. In the case of a pension program, an individual worker uses his own subjective discount rate, risk preference, expected survival rate and labor-leisure trade-off when evaluating the actuarial fairness of the system to him. To that extent, even

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<sup>9</sup> I do not discuss here the use of other policy instruments to address policy objectives such as poverty in old age.

<sup>10</sup> In a recent paper, Disney (2004) calculates the effective tax component of pension programs across a number of OECD countries and time periods. He then uses the measures in a cross-country panel analysis of the determinants of age and gender-specific effects on labor force participation. He finds that when public pension program contributions are broken down into a tax component and a savings component, the tax component of the payroll contribution reduces labor force participation among women.

when the Chilean system satisfies the actuarial fairness criteria, many Chilean workers do not perceive the system as actuarially fair at the individual level. This might occur because:

- A worker is forced by the mandate to save at a higher rate than he would prefer.
- She wishes to start her pension sooner than the eligibility rules permit, because she has achieved her desired lifetime retirement accumulation.
- She wishes to use his saving to cover emergency or other lumpy needs in the early years of retirement.
- He prefers to invest in a different way than is permitted by the regulations.
- Some workers might be in ill-health, so the mortality table specified by the regulator does not apply to them and their own personal expected value is less than the market's estimate of expected value.
- The pension program is bundled together with other government programs and regulations, and individuals are forced into an all-or-nothing choice.

Mandatory DC social security systems inevitably include restrictions on minimum saving rate, eligibility conditions for pensioning, investments and payouts. Yet, heterogeneity among workers implies varying willingness to save, risk-return preferences, tastes regarding mode and timing of pensions, and health conditions. Credit-constrained individuals who have little voluntary saving cannot make adjustments outside the system to compensate for deviations from optimality inside the system. A substantial tax component remains for this group, despite the actuarial fairness of the system as a whole.

Edwards and Cox Edwards (2002) assessed the labor market impact of mandated payroll contributions to individual saving accounts towards pensions, as opposed to traditional payroll contributions towards social security benefits. They hypothesize that under the new Chilean regime contributions would be seen (at least partially) as a deferred compensation scheme. For an individual employed in the formal sector, total labor compensation would be equal to his take-home (cash) salary plus a proportion of his contribution to the retirement system. If contributions are seen fully as deferred compensation, that proportion will be equal to one. If on the other hand, contributions are seen fully as taxes, that proportion will be equal to zero, and the total compensation will

be only equal to the take-home salary. Their estimates suggest that individuals consider little over one-half of their contribution to be a tax.

### 3.2. *Alternative Regulations on Job Security*

The traditional labor market analysis placed a lot of emphasis on stock variables such as the labor force, total employment, total unemployment, and some key ratios such as labor force participation or the rate of unemployment. In the last decade, a lot more emphasis has been placed on the examination of the dynamics of the labor market, the number of jobs created and/or destroyed in a given period of time, and we currently have data on employment flows from a number of countries. The evidence points out to a remarkable degree of similarity in gross job flows --the sum of job created plus the number of jobs destroyed as a percentage of total employment -- measured by year. Annual gross job flows are between 20 and 30% in most countries (see for example OIT (2004), OECD Employment Outlook 1996, Davis et al (1996), Kaplan, González and Robertson (2003), Menezes-Filho et al (2003), Micco and Pagés (2004)). Job flows are an integral part of the normal operation of labor markets, and they are relatively more important in some sectors (retail and construction for example). Restrictions to job flows distort the normal function of the labor market and lead to

Consider a world in which employers and workers understand that labor contracts are likely to come to an end for multiple possible reasons. A regulation that establishes the obligation of employers to set aside a fund to be given to the employee in case of separation is likely to be appreciated by workers and employers. This fund will be built with monthly contributions, proportional to the employee's salary, and thus grow with tenure and productivity of employment. This mandated transfer from employers to workers in case of separation (severance payment) is likely to be internalized in the labor contract, rendering no real effects except for requiring the parties to agree on it. Lazear (1990) argued that if dismissal costs were paid in all separation cases, and if payments took the form of lump-sum or deferred payments, severance payments would have a well-defined counterpart in current salaries, and the contract could fully internalize the severance.

In contrast, most Latin American and Caribbean countries have established severance payments that (a) are a multiple of the last salary, or the salary at the time of dismissal; (b) depend on the existence of just cause; (c) do not apply in the case of voluntary quits; and (d) apply to long-term contracts by default because of limitations on the use of short-term contracts. Therefore, the capacity to internalize the cost of severance is generally low. In addition, at the time of dismissal, firms may delay payments or may go bankrupt, leading to actual transfers to workers that can be significantly smaller than the ones established by law.

In recent years, some countries have moved closer to the Lazear conditions or are considering reforms along those lines. For example, Bolivia and Brazil established severance in all separations, and Colombia replaced the traditional cost of dismissal with severance based on individual accounts. Prior to the 1990 labor market reform, the system of severance payments in Colombia resembled the traditional system in many countries, requiring employers to pay a multiple of the last wage at the time of dismissal. The reform established a monthly employer contribution rate of 8.3% (or 1/12 of the salary) to an individual account, to be used in the event of unemployment. The idea is similar to the system of unemployment insurance savings accounts proposed by Feldstein and Altman (1998) to reduce the distortionary effects of unemployment insurance. In the case of Colombia, however, these new account replaced the system of severance pay. Firm's implicit liability was replaced by an explicit obligation to make monthly deposits to the worker's account. Kugler (2005) hypothesizes that in the context of savings accounts that guarantee severance payments and eliminate uncertainty; workers should be more willing to accept wage cuts to assume part of the costs of severance payments. In addition, the severance payment saving accounts (SPSA) should reduce labor market distortions by partially neutralizing government-mandated severance with private transfers between firms and workers. Her empirical analysis suggests that the introduction of SPSAs shifted between 60% and 80% of firms' contributions into the accounts towards workers as lower wages. This shifting of severance payments towards workers suggests that the reform facilitated an internalization of the cost by workers, who

ultimately benefit from the transfers, reduce costs for employers as well as the job-security policy distortion to hiring and firing.<sup>11</sup>

### 3.3 *Alternative Regulations to meet the objectives of the Minimum Wage*

While the goal of minimum wage legislation is to raise the labor incomes of the working poor, the reality is that it ultimately leaves the least skilled out of work. There are other policy instruments to help the working poor that are more effective than the minimum wage.<sup>12</sup> The United States federal **Earned Income Tax Credit** (EITC) is a refundable tax credit that reduces or eliminates the taxes that low-income working people pay (such as payroll taxes) and also frequently operates as a wage subsidy for low-income workers. Enacted in 1975, the then very small EITC was expanded in 1986, 1990, 1993, and 2001 with each major tax bill. Today, the EITC is one of the largest anti-poverty tools in the United States (despite the fact that income measures, including the poverty rate, generally do not account for the credit), and enjoys broad bipartisan support. Almost 21 million American families received more than \$36 billion in refunds through the EITC in 2004. In addition to the federal EITC, as of 2006, 20 states (including Washington, D.C.) have their own EITCs. These state plans primarily mimic the federal EITC's structure on a smaller scale, as individuals receive a state credit equal to a fixed percentage – between 15 and 30 percent depending on the state – of what they received from the IRS. Furthermore, small local EITC's have been enacted in New York City, Montgomery County in Maryland, and San Francisco.

Other countries with EITCs include Great Britain, Canada, Ireland, New Zealand, Finland, Belgium, France, the Netherlands and Denmark. In some cases, these are small

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<sup>11</sup> Anderson and Meyer (2000) studied the impact of a change in the UI system in the state of Washington in the mid 1980s. At that time, the state moved from a flat UI tax rate to an experienced rated system where the cost of UI for each employer would be linked to the payment of UI benefits associated to that employer. This meant a sharp change in the cost of UI to many employers. Some firms saw an immediate increase in their tax rate and others saw a decrease. Changes in subsequent years led tax rates to range from 0.36 to 5.40 percent. Employers of course, noted these changes in both the cost of employing workers and of laying them off. It altered the way they dealt with layoffs and UI claims, just as economic theory would anticipate. Using UI data from Washington and some comparisons with similar data from Oregon and Idaho, the authors reach several conclusions. One is that employers passed on the higher tax to their workers in the form of lower wages. However, since a single firm faces price and wage competition in its specific market, it may not be able to pass on the extra tax cost fully to its workers through smaller pay raises.

<sup>12</sup> See Chapter 8 in Perry et al (2007) *Informality: Exit and Exclusion* for further discussion.

(the maximum EITC in Finland is 290 Euros), but others are even larger than the US EITC (the UK EITC is worth up to 6150 Euros).

The size of the earned income credit, as its name suggests, is a function of how much earned income the individual claimant has accumulated, where "earned income" is a technical term defined by the Internal Revenue Service under guidance of the tax code. The main sources of income that count are wages, salaries, tips, and other taxable employee pay, net earnings from self-employment, and gross income received as a statutory employee.

The credit is also characterized by a unique three-stage structure that consists of a phase-in range in which the credit increases as earnings increase, a plateau range in which the maximum credit has been reached and further earnings do not affect it, and a phase-out range in which the credit decreases as earnings increase. With a positive credit along a wide range of labor incomes, the program is attractive to a large fraction of the working poor. Table 2 describes the way in which the credit is calculated for a given family.

[TABLE2 around HERE]

Consider a family with two dependent children in tax year 2006. The credit is equal to 40 percent of the first \$11,340 earned, plateaus at a maximum credit of \$4,536, begins to phase-out when earnings increase beyond \$14,810, and reaches zero when earnings pass \$36,348. For filers using the Married Filing Jointly status, the phase-out thresholds are increased by \$2000. For a family with one dependent child, the structure is similar but has a phase-in rate of 34 percent and a maximum credit of \$2,747.

For those filing without dependents, there is a small credit of 7.65 percent of earnings with a maximum of \$412, which covers the employee's portion of the social security and medicare payroll taxes. Note how nicely this policy tool can be linked to an incentive to formalize employment for those that do not want to save for pensions. Workers without dependents must satisfy all of three additional rules in order to qualify for the credit: (1) be at least age 25 but under 65 at the end of the year, (2) live in the

United States for more than half the year, and (3) not qualify as a dependent of another person. All dollar amounts are indexed to inflation.<sup>13</sup>

Due to its structure, the EITC is effective at targeting assistance to low-income families. By contrast, only 30% of minimum wage workers live in families near or below the federal poverty line, as most are teenagers, young adults, students, or spouses supplementing their studies or family income. The EITC relies on a functioning tax system, and even in the US is open to abuse through fraudulent tax credit claims. However, research shows that the EITC has boosted labor force participation, particularly by low-educated single mothers (see Hotz, Mullin, and Scholz, 2006).

Skeptics may argue that such program cannot be implemented in Latin America, a region plagued by informality. The answer to them is that a “Devolucion de Impuestos a los Pobres – DIP” program can be designed precisely to entice the informal into the system. The goal of the program is to make gainful formal employment the key mechanism to gain access to government programs.

#### **IV. Cost and Benefits of labor market reform**

We consider three possible reforms. (1) A reduction in effective payroll taxes via redesign of the pension system; (2) a reduction in labor costs via redesign of job security legislation; and (3) a replacement of binding minimum wages for an Earned Income Tax Credit (Devolucion de Impuestos para los Pobres - DIP)

Consider the case where reforms reduce the tax component of social security programs. That is, assume that as a result of reforms,  $T_1$  is reduced to some lower level. If all programs currently bundled with pensions are transformed into defined contribution programs, the perceived tax would fall relatively more, and if, in addition, they are made optional, the tax may fall to zero. This would unleash a series of effects, including a higher demand for labor in the modern sector, a change in aggregate labor supply, and changes in wages and in employment in the informal sector.

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<sup>13</sup> Many types of income that the IRS recognizes as such for other purposes do not count as "earned income". Things that do not count include (but are certainly not limited to) investment income, unemployment, and social security. In addition, not everyone whose income is in the range described below is eligible for the credit. For instance, if a person's earned income is in the one of the qualifying ranges described below but her investment income is large enough (\$2,800 for tax year 2006), then she cannot claim the credit.

#### 4.1 Social Security Reform

A social security reform that reduces the payroll tax will reduce labor costs and increase employment along the formal sector demand for labor. As a result there will be an increase in the wage rate in the informal sector I, the sector that is not covered by the by the social security system, and that prior to the reform had the lowest wage rate. Notice that, by construction, net (take home) wages in the modern sector are not affected by the reform. This is because we have assumed that the minimum wage is set in take-home basis, and that the reform does not affect it. However, the reform will change the composition of the net wage, substituting part of it into a savings account.

Formally, the model given by equations (1) - (11) can be solved to obtain the effects of this type of social security reform, on a number of variables, including informal sector wages ( $W_I$ ), the volume of unemployment ( $U$ ), and product prices in the informal sector ( $P_I$ ). In order to simplify the exposition, we follow a long tradition in international trade theory – the Ricardo-Viner approach – and we assume that capital is fixed in its sector of origin. We begin with the effects of changes in the tax component of the social security contribution ( $d \log T$ ) on informal sector wages ( $d \log W_I$ ):

(12)

$$d \log W_I = \Delta^{-1} \left\{ - \left[ \alpha_U \left( \frac{U}{L_M + U} \right) \left( \frac{1}{\eta_M} \right) \right] - \left[ \left( \frac{U}{L_M + U} \right) \alpha_M \left( \frac{1}{\eta_M} \right) \right] \right\} \left( \frac{T_1}{1 + T_1} \right) d \log T$$

Where,

$$(13) \quad \Delta = -\alpha_U - \left[ \alpha_I \left( \frac{U}{L_M + U} \right) \left( \frac{1}{\eta_I} \right) (\mu - 1) \right] - \left[ \left( \frac{U}{L_M + U} \right) \phi (\alpha_I + \mu \beta) \right]$$

$\alpha_I$ ,  $\alpha_M$  and  $\alpha_U$  are the shares of employment in the informal sector, employment in the modern sector, and unemployment in the labor resources constraint (5).  $\eta_I$  and  $\eta_M$  are the inverse of the elasticities of the demand for labor with respect to wages in the I and M

sectors, respectively, and are negative.<sup>14</sup>  $\phi$  is the supply elasticity of labor, and is positive.  $\mu$  is the elasticity of the price of informal sector goods ( $P_I$ ) with respect to the wage rate in that sector, and is greater than zero and smaller than one. It follows from equation (13), then, that  $\Delta$  is negative. Consequently, according to equation (12), the following result holds:

$$\frac{d \log W_I}{d \log T} < 0.$$

The effect of the reform on aggregate unemployment ( $U$ ), is given by:

(14)

$$d \log U = \Delta^{-1} \left\{ \left( \frac{\alpha_I}{\eta_I} \right) - \left[ \alpha_I \left( \frac{U}{L_M + U} \right) \left( \frac{1}{\eta_I} \right) \left( \frac{1}{\eta_M} \right) (\mu - 1) \right] - \left[ \left( \frac{U}{L_M + U} \right) \phi (\alpha_I + \mu \beta) \left( \frac{1}{\eta_M} \right) \right] \right\} \left( \frac{T_1}{1 + T_1} \right) d \log T$$

The sign of equation (14) is undetermined. It follows from this that within the framework developed in this paper, a reduction in the payroll tax in the modern sector will have an ambiguous effect on the number of unemployed. Whether the level of unemployment will increase or decline will depend on two basic factors: the supply elasticity of labor in the economy -- parameter  $\phi$  in equation (14) --; and the elasticity of labor demand in the informal sector. The more elastic is the supply for labor and the more inelastic is the demand for labor in the informal sector, the more likely it is that the reform will result in an *increase* in the level of unemployment.

Equation (15) gives the effect of the reform on product prices in the informal sector, and is positive:

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<sup>14</sup> That is,  $\eta_I = \frac{d \log W_I}{d \log L_I}$ .

$$(15) \quad d \log P_I = \Delta^{-1} \left\{ - \left[ \left( \frac{U}{L_M + U} \right) \left( \frac{\alpha_M}{\eta_M} \right) \right] - \left[ \alpha_U \left( \frac{U}{L_M + U} \right) \left( \frac{1}{\eta_M} \right) \right] \right\} \left( \frac{T_1}{1 + T_1} \right) d \log T$$

The working of the model is illustrated in Figure (2), where it is assumed that the reform reduces the social security tax from  $T_1$  to  $T_2$ . The new cost of labor in the modern sector is  $W_M^2$ . Distance  $O_I - O_I'$  is assumed to be equal to the increase in the amount of labor supplied to the economy. Because of this increase in aggregate labor supply, the original demand for labor in the informal sector has to be redrawn as  $L_I'$ . Since the product price of I has increased, the demand for labor in the informal sector shifts up, and is represented in Figure 2 by  $L_I' (P_I')$ . The wage rate in the informal sector is now determined by the intersection of a new rectangular hyperbola  $y'y'$  and a new demand for labor in sector I, and is given by  $W_I^2$ . Employment in the informal sector has changed from distance  $O_I - L_I^1$  to distance  $O_I^1 - L_I^2$ . Because of the reduction in  $W_M$ , employment in the modern sector has increased from  $L_M^1$  to  $L_M^2$ . The new level of unemployment, which as indicated by equation (13), could be either higher or lower than the initial level of unemployment, is given by distance  $L_M^2 - L_I^2$ .

[FIGURE 2 AROUND HERE]

The results in equations (12) – (15) assume that there is no change in the take-home wage in the modern sector.

Although the model developed here is simple, and has some limitations, it has enough structure to provide insights into some of the most important effects of a pension reform on labor markets.<sup>15</sup>

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<sup>15</sup> Some of the limitations of the model include the fact that it does not consider all the channels through which the reforms will feedback to the rest of the economy. Also, it does not consider explicitly the (possible) effect on the labor supply of the elimination of the expected future benefits of the entitlement component of the old system. This effect, however, is likely to be small and could be easily incorporated into the system by amending equation (6).

### *Benefits*

As indicated in section III, social security taxes add up to an average 20% of wages in the region. This 20% is earmarked to finance pension benefits and other programs. In addition as Heckman and Pages (2004) estimate, job security legislation adds an additional 5% to labor costs on average, making the total tax increase go up to 25% of the net wage. In what follows, I consider a reform that does not change the nominal payroll tax, but isolates 10% of this tax and redirects it to individual saving accounts, transforming pension programs into DC systems in each country.

The key change introduced by reform is that workers see part of this 10% contribution as deferred compensation. If workers valued the full 10% contribution towards their individual account as net compensation, the cost of labor in the formal sector would fall to  $W_{\min} (1.25 - .10)$ . Based on evidence from Edwards and Edwards (2002) I assume that workers value half of the 10% contribution towards pensions as a deferred payment, and that the reform will lead to a reduction of  $W_M$  from  $W_{\min} (1.25)$  to  $W_{\min} (1.20)$ , a reduction of the overall distortion to the modern sector labor market from an average 25% to a 20%. Implicitly, I assume that the workers in the modern sector accept part of their pre-established net wage  $W_{\min}$  in the form of a deferred compensation towards pension benefits, or that they see half of the 10% contribution as part of their net wage.

The reduced dead weight loss in the modern can be measured by the triangle  $\frac{1}{2} * .05 * dL_m$  per year. In addition, the reduction in labor costs will lead to an increase in formal employment. The change in employment in the formal sector can be calculated as  $d \log L_M = \eta_M (-0.041)$ , where  $\eta_M$  is the elasticity of demand for labor in the modern sector and -0.041 represents the reduction in labor costs in the modern sector.<sup>16</sup> Informal employment, on the other hand, will fall as follows:  $d \log L_i = \eta_i d \log W_i$  where  $W_i$  is the wage in the informal sector. Since part of the newly employed in the formal sector will come from informal employment, the informal sector wage will increase. This change in the informal sector wage may be calculated using equation (12) above. If we denote by

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<sup>16</sup>  $-0.041 = \log(1.20) - \log(1.25)$

$\gamma$  the proportion of employment in the formal sector, then the *change in total employment* will be:

$$(16) \quad d \log L = \gamma d \log L_M + (1 - \gamma) d \log L_i$$

As shown in Table 4, and given the assumptions regarding key parameters listed in Table 3, employment is estimated to increase by 1% -- in response to a 5% reduction in costs in the formal sector. This employment response estimate is consistent with results from a time-series analysis based on the case of Chile.<sup>17</sup> From the calculation above we compute the effect of reform on growth and output. A simple Cobb-Douglas aggregate production function:

$$Y = AL^\alpha K^{(1-\alpha)}$$

tells that a reduction of payroll taxes that increases employment by a certain fraction relative to the baseline, will lead to a higher output every year relative to what would have been attained had the labor market distortion remained intact. The difference in output relative to the baseline output can be calculated as

$$d \log Y = \alpha * d \log L \quad (\text{with } \alpha = 2/3)^{18}$$

The present value of that effect is  $B = \frac{GDP_0}{r - g} * d \log Y$

where  $GDP_0$  is the level of GDP before the labor tax is reduced,  $r$  is the discount rate and  $g$  is the rate of GDP growth that can be sustained in the long run.

### *Costs*

In Defined Benefits (DB) programs, the current generation of workers makes contributions to the program in the form of a tax taken out of every paycheck. In exchange for this tax, the government promises to pay the taxpayer an amount of benefits specified in the law when he or she retires. These programs are referred to as pay-as-you-go because governments “borrow” the payroll contributions of current workers to pay for benefits of current retirees, without acknowledging the financial transaction in the

<sup>17</sup> See Edwards, Alejandra Cox (2005).

<sup>18</sup> The share of national income earned by workers is based on Bermanke and Gökaynak (2002). The average share for their sample is 2/3. However, it is easy to note that this number tends to be smaller, and with more variation around the mean for developing countries. Calculations net benefits of reforms are sensitive to this number. For example, if the share of labor is reduced to 1/2, the estimated net benefits fall by 25 to 30%.

budget. In some countries, the systems are in deficit, and the governments must find other budgetary sources including debt to pay for current retirees. Reforming the system from a DB to a DC program will reduce the government's future role in this financial operation as new generations open individual savings accounts, use the financial system to earn interest on their savings, and eventually cash on their benefits – which will depend on contributions plus interest -- at retirement. However, for the *transition generation* –that is the generation that will receive DB pensions while active workers save into their own individual accounts -- the government must use other budgetary sources to pay for the promised benefits to the current retirees, since active workers will not pay contributions to the treasury.

A system based on individual accounts will introduce a cost of managing the funds. These costs include capital costs incurred in the early years of a new system, record keeping and communication costs, investment costs and marketing costs (see James, Smalhout and Vittas (2001)) and they are sensitive to the system's design. Current costs in Latin America are driven by start up costs in several new systems, and marketing costs of competition in decentralized systems. Data published by AIOS (International Association of Pension Fund Supervisor Organizations) indicates administrative costs based on data for 10 Latin America countries have fluctuated between 10.5 and 10.9% of contributions, and they have typically fallen through time within individual countries. I used an estimate of 10% of contributions as the cost of administrating individual accounts.

A number of researchers have discussed and estimated the “cost of transition.” For example, Edwards (1998) referring to the case of Chile states: “From a fiscal point of view, the reform generated two major sources of public expenditures: (a) the servicing and payment of recognition bonds (to those that move to the new system), and (b) the payment of retirees in the old system.” Feldstein and Samwick (1998) discuss alternative paths to move from an unfounded DB system to a DC system using US data. Kotlikoff (1998) uses a model to simulate the changes in taxation required to move from a DB to a DC system. These authors, however, ignore the fact that the liabilities of the public sector with contributors to the DB system exist with or without reform. In fact, a reform of a pension system from DB to DC does not create new sources of public expenditure; instead, it eliminates a source of funding for the already existing public

liability—namely the payroll contributions to the DB system. From the point of view of the economy as a whole, the resources that contributors would have paid to the government under the DB system are channeled to the financial system under the DC system. This redirection of financial resources is not an added cost of transition but rather a financial challenge for governments, who would have to borrow or find other sources to fund the pension benefits of the transition generation. The argument that makes the cost of transition a function of the financial cost of paying for the benefits of the transition generation is flawed because the alleged financial cost is inversely proportional to the system’s deficit at the time of reform. Note that if the system has significant tax evasion, or if the ratio of pensioners to active contributors is high, the pre-reform system will show a relative high deficit, the public finance crunch created by reform will be relatively smaller, and by this measure, the transition cost will be relatively small. For this reason, I will not attempt to estimate transition costs to be subtracted from the benefits of pension reform.

[Tables 3 and 4 around here]

#### 4.2 *Reform to Job Security Regulation and its effect on the labor market*

##### *Benefits*

The reform to Job Security Regulation transforms the extra labor cost associated to dismissals on a contribution towards an Unemployment Insurance Account -UIA. Recall that, according to Heckman and Pages (2004) the effect of current job security is approximated to be equivalent to a 5% payroll tax. I assume a reform that eliminates costs of dismissals and establishes a system whereby 5% of wages go to a UIA account. Labor costs fall under the assumption that workers value 80% of these UIA deposits as deferred compensation, leading the cost of labor to fall from  $W_M(1.25)$  to  $W_M(1.21)$ . The change in employment in the formal sector can be calculated as  $d \log L_M = \eta_M (-0.033)$ .<sup>19</sup> The impact of this reform is parallel to the one calculated in the previous section. If the reforms to pensions and job security are implemented at the

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<sup>19</sup>  $-0.033 = \log(1.21) - \log(1.25)$

same time, the tax reduction would be the combination of the two and the change in employment in the formal sector can be calculated as  $d \log L_M = \eta_M (-0.075)$ .<sup>20</sup>

### *Costs*

The economy will assume additional costs associated to the management of the UI accounts. An estimate of this cost can be taken from the current experience in Chile where management is financed with a 0.6% commission over deposits.<sup>21</sup>

### *4.3. Reform to Minimum Wage Policy and its effect on the labor market*

Consider a reform that lowers the minimum wage to the point it no longer is binding, and introduces a transfer (DIP) to low income workers so that the overall labor supply remains unaltered. A reduction of the minimum wage in this model, would lead to a decline in the formal sector net wage, an increase in formal employment, the *elimination of the unemployment caused by the minimum wage*, and an equalization of the net wage in the formal sector and the informal sector wage. At the same time, labor supply would tend to fall. However, if low-income workers in the formal sector were given a transfer to increase their net labor incomes, labor supply could be reinstated to the original level.<sup>22</sup>

From equation (6)  $L_S = h\left(\frac{W}{P}, O\right); h' > 0$

labor supply is a positive function of real wages, and  $O$  represents “other” factors affecting the supply of labor. A tax credit program targeted to the working poor will increase the value of the parameter  $O$ , and it is possible to find a value of  $O$  that offsets

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<sup>20</sup>  $-0.075 = \log(1.16) - \log(1.25)$

<sup>21</sup> Superintendencia de AFP. This is the regulatory agency that oversees the operation of private administrators of pension funds.

<sup>22</sup> Hotz, Mullin, and Scholz (2002) report that average annual disposable income for single-parent welfare cases in their four-county California sample in 1998 was around \$10,000. The average EITC differential for families with one and two or more children in their sample was \$439 in 1998. Hence, the EITC increased disposable income by roughly 4.4 percent. Employment rates for families with two or more children in 1998 were around 60 percent, and the EITC expansion increased employment of families with two or more children by 3.2 percentage points, or 5.6 percent ( $3.2/(60-3.2)$ ). This implies an employment-elasticity with respect to disposable income of 1.3, which is at the upper end of the range of such estimates for the previous studies of the employment effects of the EITC discussed in Hotz and Scholz (2003).

the effect of the reduction in  $W/P$ , keeping labor supply constant. The equilibrium condition in the market becomes:

$$(17) \quad W_i(1 + T) = W_m$$

Equation (17) replaces equations (1), (2) and (3) and indicates that after the removal of the minimum wage, the labor market will be characterized by the equalization of net wages across the two sectors and a differential in labor costs across sectors driven solely by  $T$ . In the presence of a binding minimum wage, the wage differential across sectors is driven by  $\frac{(1 + T)}{p}$ .

While a labor market distortion remains, the elimination of “equilibrium unemployment” changes  $p$  to 1 and reduces the distortion proportionally. If one assumes that half of the unemployment in the region is explained by wage rigidities originated with the minimum wage, and given that we set  $p = \frac{L_M}{L_M + U}$ , the starting value of  $p$  is .926, this reform will increase efficiency as a reduction in the payroll tax equivalent to:

$$\log(1 + T) - \log((1 + T) / .926) = -0.077$$

As a result of this policy reform, there is going to be an increase in output proportional to the increase in employment  $d \log Y = \alpha * d \log L$  where the change in  $L$  corresponds to the expansion of employment around the initial minimum wage level as result of the reduction of the minimum wage. The present value of that effect is, as before,  $B = \frac{GDP_0}{r - g} * d \log Y$ . Where again,  $GDP_0$  is the level of GDP before the labor tax is reduced,  $r$  is the discount rate and  $g$  is the rate of GDP growth that can be sustained in the long run.

### *Costs*

It is difficult to measure the cost of this type of program. For example, in the case of the EITC program in the United States, the cost of to the Federal Government

measured by direct tax transfers to beneficiaries was more than \$36 billion in 2004.<sup>23</sup> At the same time, however, this cost may be at least partially offset by several factors such as: new taxes (such as payroll taxes paid by employers) generated by new workers drawn by the EITC into the labor force; reductions in entitlement spending that result from individuals being lifted out of poverty by the EITC; taxes generated on additional spending done by families receiving earned income tax credit; a potential reduction in crime and other more indirect factors.

I make a very rough assumption using a mean annual transfer of \$600 per poor worker. I assume that 10% of workers (26 million) qualify for this average transfer, generating a total annual transfer of \$15.6 billion.<sup>24</sup>

#### 4.4 Results

The baseline parameters used to calculate costs and benefits are indicated on Table 3 and a summary of benefits and costs associated to each of these solutions is shown in Table 4. The reforms proposed in this paper are designed so that beneficiaries of programs pay for their costs and those unlikely to receive any benefits are not taxed. Each of these reforms would increase employment by 1 to 2 percent per year relative to current levels – that is 2.4 to 5 million jobs, generating an expansion in output of the order of ½ to 1 point relative to the baseline. These can yield high benefits and healthy benefit-cost ratios, and these are summarized below.

- *Option 1: Redesign of pension programs to make them actuarially fair (effective payroll tax falls from 25 to 20%).* Present value of benefits is \$647.5 billion; PV of costs is \$266.7bn. Cost-benefit ratio is 2.4. I should also add here that the B/C ratio estimated for the social security reform is very sensitive to the assumption made regarding the individual valuation of contributions. In particular, the B/C ratio increases by .5 points for every additional .01 of valuation assigned to the .10 contribution to social security.

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<sup>23</sup> U.S. GDP was approximately 12 trillion. (Us Department of Commerce)

<sup>24</sup> Based on the US\$ 36b figure, the US program costs about 120 US\$ per capita per year. The LAC program would cost about US\$ 2.7 per capita per year. On a per-capita income basis, the LAC program is about ¼ of the US program.

- *Option 2: Redesign of job security legislation into unemployment insurance account (effective payroll tax falls from 25 to 21%).* PV of benefits is \$515.8bn; PV of costs is \$80bn. Cost-benefit ratio is 6.4.
- *Combine options 2 and 3 (effective payroll tax falls from 25 to 16%).* PV of benefits is \$1,185bn; PV of costs is \$346.7bn. Cost-benefit ratio is 3.4.
- *Reduction of the minimum wage to make it not binding and introduction of EITC type transfers to the working poor.* PV of benefits is \$1,221bn; PV of costs is \$312bn. Benefit-cost ratio is 3.9.

All these proposals have benefits much greater than the costs. Redesigning social security legislation comes last in quantitative terms, but would also bring other economic benefits, particularly bringing solvency to the pensions system.

## V Summary and Conclusions

The key challenge for Latin American policy makers is to implement labor market reforms that reduce payroll taxes, ease job security regulations, and revise mandated benefits in an effort to improve the labor markets capacity to generate employment and improve workers' compensation. Currently, payroll taxation provides funding for a number of programs with weak links between contributions and benefits. One of the great contradictions of labor market intervention in Latin America is that they fail to help the poor.

In rethinking these interventions it is reasonable to look for mechanisms whereby the beneficiaries of these programs pay for their costs, and those that are unlikely to receive any benefits are simply not taxed. Programs need to be *unbundled* and better designed in an effort to *reduce the effective tax component of each program*. This requires designing programs that offers benefits that are truly valued by the majority of the population, and a system of payments that is as actuarially fair as possible.

I use existing models and estimates on labor markets' behavior to provide computations of the costs and benefits of three specific (potential) labor market reforms in Latin America: (a) a *pension reform* that reduces the labor tax component of pay-as-you go regimes; (b) the elimination of restrictions on short-term contracts and the

*replacement of current dismissal regulations* with an unemployment insurance account (UIA) system, and (c) the introduction of an Earned Income Tax Credit (Devolucion de Impuestos a los Pobres- DIP) *as an alternative to a high minimum wage and as an instrument to formalize labor contracts and compensate the poor for the obligation to make contributions towards unemployment and pension benefits.*

Calculations are based on relatively conservative assumptions regarding the welfare benefits of reforms by assuming that even actuarially fair programs create effective taxation. In other words, reforms towards efficiency do not remove labor market distortions, but they reduce them. In particular, it is assumed that a DC pension system based mandated savings, is seen by workers as partial deferred compensation and partial tax. Similarly, in the case of a reform to job security legislation, it is assumed that part of the contributions to the UI account is considered a tax, although the tax component in this case is assumed to be smaller than in the case of contributions towards pensions. This is consistent with empirical evidence and is also consistent with the fact that valuing savings towards pensions are more sensitive to individual discount rates than the valuation of savings towards job transitions. From the resulting cost benefit analysis of the individual programs, the most effective of the proposed efforts is that of replacing minimum wage legislation with direct transfers. This program would lead to net benefits of the order on  $\frac{1}{2}$  current GNI in the region. Efforts to redesign pension programs or job security legislation would lead to net benefits of the order of  $\frac{1}{4}$  current GNI.

[Table 5 around here]

The benefit-cost ratios place the redesign of job security legislation solution at the top of the list with 6.4 dollars of benefit for each dollar of costs. This is a relatively low cost solution that would greatly reduce labor market distortions in the region. The reform to the minimum wage solution ranks second, with a cost benefit ratio of 3.9. The benefit cost ratio of the social security reform solution is a close third with a 2.4 ratio. This solution however, brings about other benefits to the economic systems that were not taken into account here, namely, solvency to the pension programs and its implication to macroeconomic stability and a deepening of financial intermediation.

## *Tables*

Table 1A: Labor Regulation in Latin America relative to other regions according to Heckman and Pages (2003)

|                              | Advance<br>Notice | Indemnities<br>for Dismissal | Seniority<br>Pay | Social<br>Security | Share of<br>Soc.<br>Sec. on<br>Total<br>Cost | Social<br>Security<br>Contrib.<br>(% wage) |
|------------------------------|-------------------|------------------------------|------------------|--------------------|--|--|
| Latin America                | 0.78              | 2.69                         | 5.84             | 33.00              | 0.79   | 0.25                                       |
| Selected Latin<br>America    | 0.64              | 2.64                         | 3.50             | 27.82              | 0.81   | 0.22                                       |
| Industrial                   | 0.84              | 0.68                         | 0.00             | 39.01              | 0.89   | 0.30                                       |
| AU, NZ, CAN                  | 0.52              | 0.39                         | 0.00             | 6.84               | 0.50   | 0.05                                       |
| Tigers                       | ..                | ..                           | ..               | ..                 | ..   | ..   |
| Scandinavian                 | 1.43              | 0.00                         | 0.00             | 30.97              | 0.96   | 0.24                                       |
| East Europe                  | ..                | ..                           | ..               | ..                 | ..   | ..   |
| South Europe                 | 0.59              | 2.41                         | 0.00             | 48.33              | 0.94   | 0.37                                       |
| Latin America &<br>Caribbean | 0.64              | 2.64                         | 3.50             | 27.82              | 0.81   | 0.22                                       |

Table 1B: Labor Regulation in Latin America relative to other regions according to  
The World Bank Doing Business 2007  
(Index values vary between 0 (low cost) and 100 (high cost))

|                              | <b>Rank</b>   | <b>Nonwage labor<br/>cost (% of<br/>salary)</b> | <b>Firing costs<br/>(weeks of<br/>wages)</b> | <b>Rigidity of<br/>Employment<br/>Index</b> | <b>Difficulty of<br/>Hiring Index</b> | <b>Rigidity of<br/>Hours Index</b> | <b>Difficulty of<br/>Firing Index</b> |
|------------------------------|---------------|---|--|---|---------------------------------------|------------------------------------|---------------------------------------|
| Latin America                | <b>104.61</b> | <b>15.83</b>                                    | <b>63.71</b>                                 | <b>41.94</b>                                | 46.28                                 | 46.67                              | 32.78                                 |
| Selected Latin<br>America    | <b>95.33</b>  | <b>22.32</b>                                    | <b>50.72</b>                                 | <b>39.83</b>                                | 46.33                                 | 43.33                              | 30.00                                 |
| Industrial                   | <b>73.73</b>  | <b>21.60</b>                                    | <b>28.61</b>                                 | <b>33.23</b>                                | 27.73                                 | 44.55                              | 27.27                                 |
| AU, NZ, CAN                  | <b>10.67</b>  | <b>11.97</b>                                    | <b>10.67</b>                                 | <b>4.67</b>                                 | 7.33                                  | 0.00                               | 6.67                                  |
| Asian Tigers                 | <b>55.17</b>  | <b>10.33</b>                                    | <b>65.07</b>                                 | <b>16.83</b>                                | 16.67                                 | 23.33                              | 10.00                                 |
| Scandinavian                 | <b>89.00</b>  | <b>20.80</b>                                    | <b>19.50</b>                                 | <b>44.00</b>                                | 41.50                                 | 60.00                              | 30.00                                 |
| East Europe                  | <b>86.23</b>  | <b>28.50</b>                                    | <b>22.91</b>                                 | <b>41.41</b>                                | 30.68                                 | 56.36                              | 36.82                                 |
| South Europe                 | <b>160.67</b> | <b>28.37</b>                                    | <b>74.77</b>                                 | <b>57.33</b>                                | 51.67                                 | 66.67                              | 53.33                                 |
| Latin America &<br>Caribbean | <b>80.18</b>  | <b>12.40</b>                                    | <b>58.47</b>                                 | <b>32.18</b>                                | 33.68                                 | 35.71                              | 27.14                                 |
| Caribbean                    | <b>36.20</b>  | <b>6.23</b>                                     | <b>49.03</b>                                 | <b>14.60</b>                                | 11.00                                 | 16.00                              | 17.00                                 |

Source: [http://www.doingbusiness.org/documents/DoingBusiness2007\\_FullReport.pdf](http://www.doingbusiness.org/documents/DoingBusiness2007_FullReport.pdf)

Table 1C: Labor Regulation in Latin America relative to other regions by Botero et al  
(Index values vary between 0 (low cost) and 1 (high cost))

|                           | <b>Employment laws index</b>           | Cost of increasing hours worked        | Cost of firing workers       | Alternative employment contracts | Dismissal procedures |
|---------------------------|--|--|------------------------------|----------------------------------|----------------------|
| Latin America             | <b>0.50</b>                            | 0.24                                   | 0.56                         | 0.80                             | 0.38                 |
| Selected Latin America    | <b>0.48</b>                            | 0.26                                   | 0.53                         | 0.71                             | 0.39                 |
| Industrial                | <b>0.52</b>                            | 0.67                                   | 0.38                         | 0.63                             | 0.39                 |
| AU, NZ, CAN               | <b>0.26</b>                            | 0.15                                   | 0.19                         | 0.50                             | 0.19                 |
| Tigers                    | <b>0.33</b>                            | 0.07                                   | 0.47                         | 0.60                             | 0.19                 |
| Scan                      | <b>0.72</b>                            | 1.00                                   | 0.53                         | 0.69                             | 0.67                 |
| East Europe               | <b>0.60</b>                            | 0.76                                   | 0.55                         | 0.58                             | 0.53                 |
| South Europe              | <b>0.69</b>                            | 0.77                                   | 0.51                         | 0.91                             | 0.57                 |
| Latin America & Caribbean | <b>0.45</b>                            | 0.24                                   | 0.50                         | 0.70                             | 0.36                 |
| Caribbean                 | <b>0.16</b>                            | 0.00                                   | 0.15                         | 0.50                             | 0.00                 |
|                           | <b>Collective relations laws index</b> | Labor union power                      | Collective disputes          |                                  |                      |
| Latin America             | <b>0.49</b>                            | 0.49                                   | 0.49                         |                                  |                      |
| Selected Latin America    | <b>0.49</b>                            | 0.46                                   | 0.51                         |                                  |                      |
| Industrial                | <b>0.46</b>                            | 0.45                                   | 0.46                         |                                  |                      |
| AU, NZ, CAN               | <b>0.27</b>                            | 0.14                                   | 0.40                         |                                  |                      |
| Tigers                    | <b>0.40</b>                            | 0.35                                   | 0.45                         |                                  |                      |
| Scan                      | <b>0.50</b>                            | 0.59                                   | 0.42                         |                                  |                      |
| East Europe               | <b>0.50</b>                            | 0.48                                   | 0.52                         |                                  |                      |
| South Europe              | <b>0.57</b>                            | 0.62                                   | 0.53                         |                                  |                      |
| Latin America & Caribbean | <b>0.47</b>                            | 0.45                                   | 0.48                         |                                  |                      |
| Caribbean                 | <b>0.23</b>                            | 0.29                                   | 0.17                         |                                  |                      |
|                           | <b>Social security laws index</b>      | Old age, disability and death benefits | Sickness and health benefits | Unemployment benefits            |                      |
| Latin America             | <b>0.67</b>                            | 0.57                                   | 0.79                         | 0.65                             |                      |
| Selected Latin America    | <b>0.61</b>                            | 0.54                                   | 0.81                         | 0.49                             |                      |
| Industrial                | <b>0.74</b>                            | 0.70                                   | 0.75                         | 0.78                             |                      |
| AU, NZ, CAN               | <b>0.76</b>                            | 0.80                                   | 0.79                         | 0.70                             |                      |
| Tigers                    | <b>0.52</b>                            | 0.64                                   | 0.68                         | 0.24                             |                      |
| Scan                      | <b>0.82</b>                            | 0.77                                   | 0.87                         | 0.82                             |                      |
| East Europe               | <b>0.69</b>                            | 0.55                                   | 0.76                         | 0.75                             |                      |
| South Europe              | <b>0.75</b>                            | 0.68                                   | 0.75                         | 0.82                             |                      |
| Latin America & Caribbean | <b>0.58</b>                            | 0.54                                   | 0.74                         | 0.45                             |                      |
| Caribbean                 | <b>0.17</b>                            | 0.50                                   | 0.00                         | 0.00                             |                      |

**Table 1C: (continuation)**

|  |   |
|--|---|
| <i>Alternative employment contracts</i>        | Measures the existence and cost of alternatives to the standard employment contract, computed as the average of (1) a dummy variable equal to one if part-time workers enjoy the mandatory benefits of full-time workers, (2) a dummy variable equal to one if terminating part-time workers is at least as costly as terminating full-time workers, (3) a dummy variable equal to one if fixed-term contracts are only allowed for fixed-term tasks, and (4) the normalized maximum duration of fixed-term contracts.  |
| <i>Cost of increasing hours worked</i>         | Measures the cost of increasing the number of hours worked. We start by calculating the maximum number of "normal" hours of work per year in each country (excluding overtime, vacations, holidays, etc.). Normal hours range from 1,758 in Denmark to 2,418 in Kenya. Then we assume that firms need to increase the hours worked by their employees from 1,758 to 2,418 hours during one year. A firm first increases the number of hours worked until it reaches the country's maximum normal hours of work, and then uses overtime. If existing employees are not allowed to increase the hours worked to 2,418 hours in a year, perhaps because overtime is capped, we assume that the firm doubles its workforce and each worker is paid 1,758 hours, doubling the wage bill of the firm. The cost of increasing hours worked is computed as the ratio of the final wage bill to the initial one. |
| <i>Cost of firing workers</i>                  | Measures the cost of firing 20 percent of the firm's workers (10 percent are fired for redundancy and 10 percent without cause). The cost of firing a worker is calculated as the sum of the notice period, severance pay, and any mandatory penalties established by law or mandatory collective agreements for a worker with three years of tenure with the firm. If dismissal is illegal, we set the cost of firing equal to the annual wage. The new wage bill incorporates the normal wage of the remaining workers and the cost of firing workers. The cost of firing workers is computed as the ratio of the new wage bill to the old one.   |
| <i>Dismissal procedures</i>                    | Measures worker protection granted by law or mandatory collective agreements against dismissal. It is the average of the following seven dummy variables which equal one: (1) if the employer must notify a third party before dismissing more than one worker, (2) if the employer needs the approval of a third party prior to dismissing more than one worker, (3) if the employer must notify a third party before dismissing one redundant worker, (4) if the employer needs the approval of a third party to dismiss one redundant worker, (5) if the employer must provide relocation or retraining alternatives for redundant employees prior to dismissal, (6) if there are priority rules applying to dismissal or layoffs, and (7) if there are priority rules applying to reemployment.   |
| <i>Employment laws index</i>                   | Measures the protection of labor and employment laws as the average of (1) Alternative employment contracts, (2) Cost of increasing hours worked, (3) Cost of firing workers, and (4) Dismissal procedures.   |
| <i>Labor union power</i>                       | Measures the statutory protection and power of unions as the average of the following seven dummy variables which equal one: (1) if employees have the right to unionize, (2) if employees have the right to collective bargaining, (3) if employees have the legal duty to bargain with unions, (4) if collective contracts are extended to third parties by law, (5) if the law allows closed shops, (6) if workers, or unions, or both have a right to appoint members to the Boards of Directors, and (7) if workers' councils are mandated by law.   |
| <i>Collective disputes</i>                     | Measures the protection of workers during collective disputes as the average of the following eight dummy variables which equal one: (1) if employer lockouts are illegal, (2) if workers have the right to industrial action, (3) if wildcat, political, and sympathy/solidarity/secondary strikes are legal, (4) if there is no mandatory waiting period or notification requirement before strikes can occur, (5) if striking is legal even if there is a collective agreement in force, (6) if laws do not mandate conciliation procedures before a strike, (7) if third-party arbitration during a labor dispute is mandated by law, and (8) if it is illegal to fire or replace striking workers.   |
| <i>Collective relations laws index</i>         | Measures the protection of collective relations laws as the average of (1) Labor union power and (2) Collective disputes.   |
| <i>Old-age, disability, and death benefits</i> | Measures the level of old-age, disability, and death benefits as the average of the following four normalized variables: (1) the difference between retirement age and life expectancy at birth, (2) the number of months of contributions or employment required for normal retirement by law, (3) the percentage of the worker's monthly salary deducted by law to cover old-age, disability, and death benefits, and (4) the percentage of the net preretirement salary covered by the net old-age cash-benefit pension.   |
| <i>Sickness and health benefits</i>            | Measures the level of sickness and health benefit as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for sickness benefits by law, (2) the percentage of the worker's monthly salary deducted by law to cover sickness and health benefits, (3) the waiting period for sickness benefits, and (4) the percentage of the net salary covered by the net sickness cash benefit for a two-month sickness spell.   |
| <i>Unemployment benefits</i>                   | Measures the level of unemployment benefits as the average of the following four normalized variables: (1) the number of months of contributions or employment required to qualify for unemployment benefits by law, (2) the percentage of the worker's monthly salary deducted by law to cover unemployment benefits, (3) the waiting period for unemployment benefits, and (4) the percentage of the net salary covered by the net unemployment benefits in case of a one-year unemployment spell.  |
| <i>Social security laws index</i>              | Measures social security benefits as the average of (1) Old-age, disability, and death benefits, (2) Sickness and health benefits, and (3) Unemployment benefits.   |

Table 2: United States EITC (tax year 2006)

| <b>Earned income (x)</b> | <b>Stage</b> | <b>Credit (2+ children)</b>       |
|--------------------------|--------------|-----------------------------------|
| \$0-\$11,340             | phase in     | 40% * x                           |
| \$11,340-\$14,810        | plateau      | \$4,536                           |
| \$14,810-\$36,348        | phase out    | \$4,536 - 21.06% * (x - \$14,810) |
| >= \$36,348              | no credit    | \$0                               |
| <b>Earned income (x)</b> | <b>Stage</b> | <b>Credit (1 child)</b>           |
| \$0-\$8,080              | phase in     | 34% * x                           |
| \$8,080-\$14,810         | plateau      | \$2,747                           |
| \$14,810-\$32,001        | phase out    | \$2,747 - 15.98% * (x - \$14,810) |
| >= \$32,001              | no credit    | \$0                               |
| <b>Earned income (x)</b> | <b>Stage</b> | <b>Credit (no children)</b>       |
| \$0-\$5,380              | phase in     | 7.65% * x                         |
| \$5,380-\$6,740          | plateau      | \$412                             |
| \$6,740-\$12,120         | phase out    | \$412 - 7.65% * (x - \$6,740)     |
| >= \$12,121              | no credit    | \$0                               |

- The no credit thresholds are above the poverty line. In 2006, the poverty line for a four persons family with two children was \$20,444; three persons family with one child was \$13,89; one-person family with no children was \$10,488.
- (In 2005, the mean income of the first quintile of the hhd income distribution was \$10,655; \$36,000 was the upper bound of the second quintile of income distribution among hhds).

Source: Urban Institute. US Census Bureau

Table 3: Parameters

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|  |                  | % of LF |
|--|------------------|---------|
| Labor Force                                | 270 mill         | 100%    |
| Modern Sector Employment                   | 170 mill         | 63%     |
| Informal Employment                        | 73 mill          | 27%     |
| Unemployment                               | 27 mill          | 10%     |
| Initial Payroll Tax (% of W)               | 20%              |         |
| Initial Cost of Job Security (% of W)      | 5%               |         |
| Elasticity of Labor Demand Modern Sector   | 0.4              |         |
| Elasticity of Labor Demand Informal Sector | 0.5              |         |
| Sustainable GDP growth rate                | 3%               |         |
| Discount rate                              | 5%               |         |
| Average Wage /year                         | \$5,400          |         |
| GNI (USAID)                                | US\$ 2,000,000 m |         |
| Population                                 | 570 mill         |         |

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Sources:

Population and Employment data : Cepal Anuario Estadistico

GNI number: USAID LAC Databook

([http://pdf.usaid.gov/pdf\\_docs/PNADG900.pdf](http://pdf.usaid.gov/pdf_docs/PNADG900.pdf))

Table 4: Estimated Net Benefits

| Policy Option   | BENEFIT 1<br>(reduced<br>DWL) | Estimated<br>Effect on<br>Labor Costs | Estimated<br>Change in<br>Employment | BENEFIT 2:<br>Estimated<br>Effect on GNI<br>baseline | Estimated<br>Cost | Net<br>Present<br>Value<br>(B1+B2-C) |
|---|-------------------------------|---------------------------------------|--------------------------------------|--|-------------------|--------------------------------------|
|   | US\$ m / year                 | dlogT                                 | dlogL                                | dlogY  | US\$ m/ year      | US\$ m                               |
| Redesign of Pension Programs to make them actuarially fair (payroll tax falls from 25% to 20%)                          | \$625                         | -0.041                                | 0.010                                | 0.006  | \$13,333          | \$380,834                            |
| Redesign of Job Security Legislation into an UI Account (payroll tax falls from 25% to 21%)                             | \$498                         | -0.033                                | 0.008                                | 0.005  | \$4,000           | \$435,868                            |
| Combine Options 1 and 2 (payroll tax falls from 25% to 16%)   | \$1,143                       | -0.075                                | 0.017                                | 0.012  | \$17,333          | \$838,565                            |
| Reduction of the Minimum Wage to make it not binding; and introduction of EITC-type transfers to the working poor (DIP) | \$1,178                       | -0.077                                | 0.018                                | 0.012  | \$15,600          | \$909,340                            |

Table 5: Benefit-Cost ratios

| Policy Option   | Estimated PV of Benefits | Estimated PV of Costs | Benefit/Cost Ratio |
|---|--------------------------|-----------------------|--------------------|
| #1  | US\$ m                   | US\$ m                | B/C                |
| Redesign of Pension Programs to make them actuarially fair (effective payroll tax falls from 25% to 20%)                | \$647,500                | \$266,667             | 2.4                |
| #2  |                          |                       |                    |
| Redesign of Job Security Legislation into an UI Account (effective payroll tax falls from 25% to 21%)                   | \$515,868                | \$80,000              | 6.4                |
| #3  |                          |                       |                    |
| Combine Options 1 and 2 (effective payroll tax falls from 25% to 16%)   | \$1,185,232              | \$346,667             | 3.4                |
| #4  |                          |                       |                    |
| Reduction of the Minimum Wage to make it not binding; and introduction of EITC-type transfers to the working poor (DIP) | \$1,221,340              | \$312,000             | 3.9                |



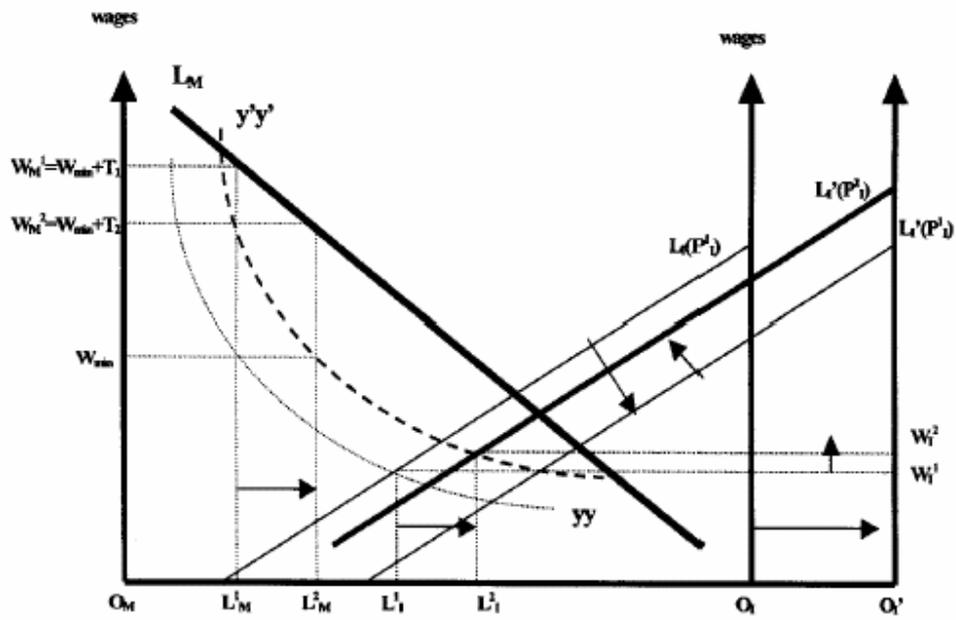


FIG. 2

**FIGURE 2: A reduction in the payroll tax increases employment in the modern sector, reduces informality, and improves wages in the informal sector.**

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