

# Models of Modern-Sector Labor Market Institutions in Developing Countries

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**Summary.** — The paper argues that policy conclusions derived from existing theories of economic development may be seriously flawed because the theories do not model correctly the modern-sector labor market. The paper first presents evidence that trade unions and governments frequently exert positive influence not only on firms' wages but also on their employment levels. It then presents models that capture this phenomenon and permit one to determine whether the observed levels of employment are insufficient, optimal, or excessive from the private and social standpoints. The paper concludes with a discussion of how the analysis could be implemented in empirical studies and in practical policy work.

## 1. INTRODUCTION

While the issues of structural adjustment have recently been the focus of public policy in many developing countries, the labor market aspects of these issues have been treated in an *ad hoc* and elementary fashion. Indeed, the policies of the World Bank in the 1980s have been geared primarily toward export growth, trade liberalization, decentralized restructuring of industries (sectors), and resource allocation based on scarcity-reflecting prices. Within the labor market, the World Bank policy has been one of noninvolvement or of arguing the case for lower wage increases in the modern sector and the elimination of redundant labor in specific enterprises. Similarly, apart from assisting in various legislative initiatives, the International Labor Organization (ILO) has not pursued a well-defined labor market strategy since its World Employment Program withered away in the 1970s.

This paper builds on institutional insights from a number of developing countries to provide a framework for evaluating the allocative performance of their modern-sector labor markets. A careful analysis of the modern-sector labor market is useful because this market is frequently subject to heavy regulation. As a result, its institutions are often important and inefficiencies can in principle be substantial.

In the next section we examine the main labor market models used for analyzing developing economies. Section 3 presents institutional evi-

dence which contradicts the basic assumptions of these models, while Section 4 outlines a theoretical framework which takes this evidence into account and allows for empirical testing of the various models. Section 5 briefly discusses empirical and policy implications.

## 2. ISSUES OF ALLOCATIVE EFFICIENCY

The basic question that needs to be answered before one can formulate a meaningful labor market policy is how are wages (labor cost) and employment set. It is fair to say that wage and employment determination in the modern sector of developing countries is one of the least understood areas of development economics. The traditional approach is to assume that institutional forces (the government or trade unions) somehow set the modern-sector wage above its counterpart(s) in the rest of the economy. Since the traditional concept of allocative efficiency requires that, except for compensating differentials, the wage paid to a common labor type be equalized across uses, the "abstract" institutional forces are the prime causes of allocative inefficiencies.

Arthur Lewis (1954), for instance, postulated

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that modern-sector wages are somehow set higher than the average income in the traditional sector (e.g., 20–30% higher) and claimed not to know how these wages are set. Since labor availability at the institutionally set wage, rather than its determination, was crucial to the models in the 1950s and 1960s, Lewis (1954), Ranis and Fei (1961) and Jorgenson (1964) never spun off an analytical literature that would examine the wage setting process and/or outcome.

The Todaro (1969) and Harris and Todaro (1970) papers marked the next generation of theoretical models, and their extensions have dominated the labor market literature on less developed countries (LDCs) to date. They have advanced the conceptual framework by stressing that expectations of variables such as wages, rather than their actual realizations, motivate workers and determine intersectoral migration of labor. Yet, the basic assumption of these models is again that the modern-sector (urban) wage is somehow set too high — a phenomenon that yields their predictions about migration, unemployment and relative labor use across sectors. These models hence say little about how the modern-sector wages are set. Moreover, instead of searching for policy solutions in the labor market, the vast literature has searched for other ways to address the problem of inefficient resource allocation — mostly through public finance (taxes and subsidies) or quantity rationing (limits on migration, etc.). Paradoxically, within the modern-sector labor market *per se*, the literature invokes the simple traditional model

which fully dictates the conclusions about allocative efficiency.<sup>1</sup>

In particular, the labor market framework which is used in the development literature assumes that the wage-employment outcome always lies on the marginal revenue product curve of labor  $R_L$  and that, in the absence of institutional factors, the economy would be characterized by full employment and a single market clearing wage  $W_c$  for all workers of a given skill. The modern-sector institutions (e.g., the trade unions or the Ministry of Labor) are then seen as either unilaterally setting the modern-sector wage  $W_M$  above the competitive level ( $W_M > W_c$ ), or as achieving this result by bargaining with employers. The crucial implicit assumption which drives the results of this model is that either these institutions try to raise wages but do not care about employment, or that the employer has complete power to adjust employment unilaterally so as to maximize profit or minimize cost. As Figure 1 shows, the outcome is a situation where the modern-sector wage exceeds its competitive counterpart ( $\bar{W}_M > W_c$ ) and employment in the modern sector  $\bar{L}$  falls short of the competitive level  $L^*$ , which is characterized by the equality of the marginal revenue product of labor  $R_L$  and  $W_c$ . Allocative inefficiency results because  $R_L > W_c$  in the modern sector and the wage elsewhere  $W_e$  is depressed below the competitive level ( $W_e < W_c$ ) due to the spillover of  $L^* - \bar{L}$  workers from the modern into the traditional sector.

The more recent models of labor markets in

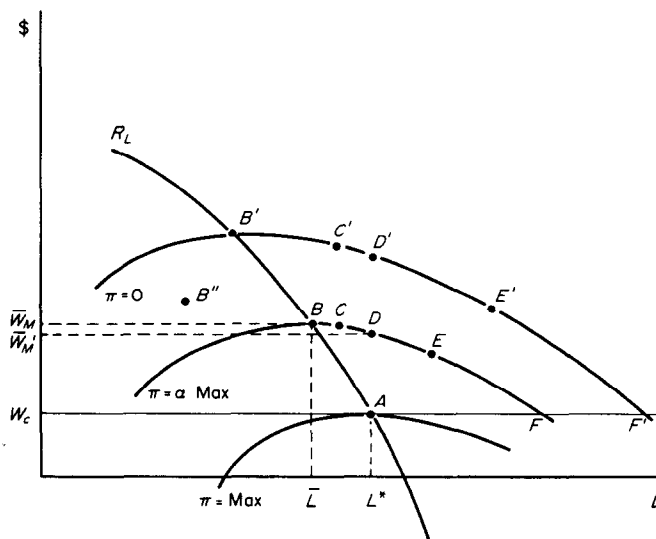


Figure 1.

developing economies attempt to explain the high modern-sector wage endogenously in terms of a profit-maximizing employer responding to a labor turnover cost<sup>2</sup> or to a positive wage-labor productivity nexus (the efficiency wage hypothesis).<sup>3</sup> In these models, the modern-sector wage is set unilaterally by the employer, with the unions or government playing no role. The prediction of the efficiency wage model is that the marginal revenue product of (the efficiency unit of) labor equals the wage (per efficiency unit), while in the labor turnover model the wage actually falls short of the labor's marginal revenue product. The efficiency wage model is hence traditional in that it equates labor's cost with its marginal product, while the labor turnover model is nontraditional in that the employer selects a wage-employment pair which lies to the left of the marginal revenue product curve of labor (point *B'* in Figure 1).

The main thesis of this paper is that the assumptions that (a) employers can unilaterally set employment and/or (b) trade unions or governments do not influence positively the level of modern-sector employment is a serious misrepresentation of the situation in many developing countries. In particular, it is claimed that the theoretical prediction, derived from a model based on the institutional frameworks of many developing countries, implies that the wage-employment outcome lies to the right of the marginal revenue product curve of labor (points *C-F* in Figure 1). The next section describes some of the relevant institutional features in a number of developing countries.

### 3. SOME INSTITUTIONAL ASPECTS

An examination of legal regulations and the actual wage and employment setting practices in the labor markets of developing countries shows that the government and trade unions frequently influence not only wages but also employment levels. A related observation is that managers often report that regulations and social pressure induce them to maintain employment at levels which are excessive from the standpoint of enterprise profitability. Relatively systematic evidence on this issue now exists with respect to public or parapublic enterprises. Information is less readily available for private firms, although for several countries it is possible to show that private firms have been significantly affected as well.

#### (a) *Public enterprises*

The public sector frequently accounts for 30-

60% of modern-sector employment, and in some countries it also serves as the wage setter. The laws often permit unionization in public enterprises and both the unions and governments have been under social pressure to increase employment in the presence of open and disguised unemployment. The issue of featherbedding in (para) public enterprises has become a focal point of virtually all structural adjustment exercises and a growing literature has highlighted the idea that (para) public enterprise employment usually exceeds the point of equality between labor's marginal product and wage.<sup>4</sup>

#### (b) *Private sector*

Labor legislation enacted in many countries also ensures that wages and labor utilization are both subject to collective bargaining and the government has in some cases entered the industrial relations arena as a third (social) partner.

The Francophone West African countries have, for instance, based their labor legislation on the 1952 French Overseas Labor Code, and many of them set strict limits on the employer's ability to adjust wages and employment unilaterally. The Senegalese Labor Code is known to be one of the most restrictive ones and it literally reduces managerial discretion in the labor market to a minimum.<sup>5</sup> In English-speaking African countries, one also finds numerous examples of government intervention. For instance, the three Kenyan tripartite agreements have aimed at increasing employment beyond the levels desired by employers and at least the last (1978) agreement (a presidential directive to increase employment by 10%) reportedly did have a significant effect.<sup>6</sup>

Latin American evidence also points to examples of effective government intervention in the labor market. Spinanger's (1984) study of the Panamanian labor market, for instance, indicates that since 1972 it has been subject to very strict regulations. In fact, the 1972 Panamanian Labor Code contains over 1,000 provisions which minutely lay down the rights and obligations of employers and employees, and which are enforced by the Ministry of Labor and Social Welfare.<sup>7</sup>

As the above examples indicate, the institutional evidence suggests that in many labor markets both wages and employment are set jointly by employers, trade unions and often also the government. The possible allocative implications of this process are examined next.

#### 4. "MODERN" MODELS OF THE LABOR MARKET

The models that take into account the possibility of a joint determination of employment and wages by the bargainers originate with Leontief's (1946) seminal piece. They were further developed by Fellner (1947) and Cartter (1959) and they received considerable attention in the 1980s.<sup>8</sup>

In terms of Figure 1, these models consider the zone of bargaining which lies anywhere between the threat points of the bargainers rather than just on the marginal revenue product curve of labor  $R_L$ . In particular, let the trade union and/or government be one bargainer whose threat point is the competitive (market clearing) wage  $W_c$ .<sup>9</sup> The employer is the other party and his threat point can be identified with some minimum level of profit, say  $\pi = 0$ . In Figure 1 the bargaining range hence covers the area between the horizontal line  $W_c$  and the concave isoprofit curve  $\pi = 0$ .

The maximum profit that the employer can obtain corresponds to the isoprofit curve  $\pi = \text{Max}$  in Figure 1. Since  $W_c$  is the lowest acceptable wage to the unions and/or government, point  $A$  is the only feasible point corresponding to  $\pi = \text{Max}$ . The corresponding employment level  $L^*$  is socially efficient as  $R_L = W_c$  at  $A$  and one cannot increase the economy's output by moving a worker from one job to another.

In an ideal, long-run world the competitive forces depress the isoprofit curve  $\pi = 0$  to the level of  $\pi = \text{Max}$  ( $\pi = 0 = \text{Max}$ ) and the bargaining range collapses into point  $A$ . In that world, all firms operate at  $A$  in the long run or go under. In reality, one observes bargaining even in the relatively competitive, more developed countries. The bargaining range hence exists and is brought about by either lack of competition or firm-specific (e.g., human capital) rents. Given that one may safely assume that such a range exists in many industries of the developing countries, the relevant question is what the wage-employment combination in a given industrial labor market looks like.

##### (a) *The trade unions care only about wages*

In this case, the union objective function  $U$  is an increasing function of  $W$ ;  $U = U(W)$ , with  $U' > 0$ . The indifference curves corresponding to  $U$  would be horizontal lines and the points of tangency between these indifference curves and the employer's isoprofit curves would trace out the contract curve  $ABB'$  in Figure 1. While

outcomes along this contract curve are Pareto efficient from the private standpoint of the bargainers, except for  $A$  they are all socially inefficient since  $R_L > W_c$  and total product could hence be increased if labor were reallocated into this sector.

An outcome of this kind could, for instance, arise if layoffs were instituted in the inverse order of seniority and the unions were controlled by senior workers who did not face any personal danger of layoffs. This "elite union model" hence gives the same results as the traditional model of the labor market used in the development literature.

##### (b) *The unions and/or government care about both wages and employment*

In this case, the union-government objective function is of the form  $U = U(W, L)$ , with  $U_W, U_L > 0$ , and  $U_{LL}, U_{WW} < 0$ . Such a function could correspond to a case where greater employment is directly yielding utility to the policy makers. Alternatively, if the pool  $\bar{L}$  of workers "represented" by the union (government) is larger than the number employed ( $\bar{L} > L$ ), then a utility function  $\bar{U} = \bar{U}(W)$  yields an expected utility function of the form  $U = U(W, L)$ . Scenario (b) can then be viewed as one of expected utility maximization by the union.

The indifference curves corresponding to  $U = U(W, L)$  are downward sloping and convex in the  $(W, L)$  plane in Figure 1. Since the isoprofit curves are concave and downward sloping to the right of the marginal revenue product curve of labor  $R_L$ , the contract curve (points of tangency between the indifference curves and the isoprofit curves) lies to the right of the  $R_L$  curve. Contract curves  $ACC'$ ,  $ADD'$ , and  $AEE'$  represent various cases that may arise in this context.

For any given division rule, contract curve  $ACC'$  generates a lower wage and higher employment than curve  $ABB'$  of scenario (a). Nevertheless, resource allocation is still inefficient along  $ACC'$  and  $R_L > W_c$  everywhere except at  $A$ .

Contract curve  $ADD'$  represents the "socially efficient" contract.<sup>10</sup> Resources are allocated in a socially efficient way everywhere along  $ADD'$  ( $R_L = W_c$ ) and the union-government intervention in the labor market is a purely distributive exercise determining how the rent (profit) is split. Within the expected utility framework, contract curve  $ADD'$  corresponds to risk neutrality (expected income maximization) on the part of the union-government party.<sup>11</sup> However, within a dynamic framework the social efficiency

result may have to be modified if the two parties have different savings (investment) propensities and different divisions of the rent hence yield different growth paths.

Contract curve  $AEE'$  is socially inefficient because, for  $W_M > W_c$ , it generates too much employment in the modern sector. In this case, the marginal revenue product of labor falls short of not only  $W_M$  ( $R_L < W_M$ ) but also  $W_c$  ( $R_L < W_c$ ). Within the expected utility framework, contract curve  $AEE'$  corresponds to risk aversion in the absence of an insurance (compensation) scheme for the  $L$ - $L$  workers. Within the utility framework it constitutes the case of relatively high marginal utility of employment. Contract curve  $AEE'$ , for instance, provides an appropriate characterization of those (para) public enterprises that are seen as having excessive employment and paying above market wages.

### (c) *The government cares only about employment*

The utility function in this scenario is  $U = U(L)$ , with  $U' > 0$ . The corresponding indifference map is composed of vertical curves and the contract curve is the horizontal line  $AFF'$  in Figure 1. The inefficiency of this contract curve is similar to but more pronounced than that of  $AEE'$ . This case is clearly extreme, but it captures well the situation in public enterprises or civil service units that do not pay high wages and suffer from an extremely low or negative marginal product of labor. To the extent that the solution actually lies to the right of point  $F'$  in Figure 1, one observes a (public) enterprise where the emphasis on employment creation has been extreme and subsidies are required to keep the firm in business.

## 5. EMPIRICAL AND POLICY IMPLICATIONS

Scenarios (a) and (c) are of course special (nested) cases of scenario (b), which in turn conceptually spans all the aforementioned labor market models except for the labor turnover one, where  $W_M < R_L$ . The latter can, however, be easily incorporated into a common hypothesis testing framework. Empirically, the issue of allocative efficiency in the modern sector can, therefore, be treated as one of a set of nested hypotheses. An examination of the nature of allocative inefficiencies and hence a test of the various models can be performed within a simple two- or three-party optimization framework with data on employment, output, prices,  $W_M$  and  $W_c$ . A test of the corresponding distributive rules

requires, in addition, data on profit (rent).<sup>12</sup> Interestingly, a recent test of allocative behavior of Tunisian public and private firms, performed within the above framework, suggests that the two sets of firms behave similarly and select outcomes between contact curves  $ABB'$  and  $ADD'$ .<sup>13</sup>

In policy-oriented field work, the ability to distinguish between cases  $ABB'$  or  $ACC'$  on the one hand and  $AEE'$  or  $AFF'$  on the other hand is of course crucial. Yet, note that using the usual source of information, namely the claim of managers or bankers that wages and employment are too high, is not a valid approach. While such a claim is correct from a profit-maximizing standpoint of the firm (i.e., indicating that the outcome is to the right of  $ABB'$  in Figure 1), it does not constitute a valid proof that employment is too large from the social standpoint (i.e., corresponding to an outcome such as  $AEE'$  or  $AFF'$ ). The claim is consistent with an outcome on a curve such as  $ACC'$  which warrants an increase of modern-sector employment from the social standpoint.

Rather than relying solely on claims of various parties, it is preferable to undertake comparisons of the marginal revenue product of labor with zero and  $W_c$ , respectively. The first comparison ( $R_L \leq 0$ ) is relatively easy and in the case  $R_L < 0$  it is very informative.<sup>14</sup> The second comparison is more difficult, since  $W_c$  is generally unobserved because of all the existing distortions. Nevertheless, since for any given skill  $W_c$  is a weighted average of wages (incomes) in the various sectors, a usable estimate of  $W_c$  could in many cases be constructed.

The policy prescription then derives directly from whether  $R_L \leq W_c$ . The fact that  $W_M$  is or is not greater than  $W_c$  is in many respects irrelevant.

A final point that is worth making with respect to the policy use of these types of models in developing countries is that the Harris and Todaro-type unemployment problem may exist even if  $R_L \leq W_c$  in the modern sector. In particular, so long as  $W_M$  exceeds workers' compensation in other sectors, there may be an incentive for workers from these other sectors to look for modern-sector jobs. The level of  $W_c$  (and, depending on the bargaining process, also  $W_M$ ) reflects and directly affects this activity, but it does not prevent its existence. In particular, if the economy is characterized by on-the-job search, then the welfare implications discussed in this paper are valid. However, if workers become unemployed in order to look for modern-sector jobs, then welfare losses may result, even if  $R_L \leq W_c$  in the modern sector.

## NOTES

1. Calvo's (1978) model is a notable exception.
2. See, e.g., Stiglitz (1974).
3. See, e.g., Mirrlees (1975), Rodgers (1975), Stiglitz (1976), and Bliss and Stern (1978).
4. See, e.g., Collier (1986) and Macedo (1986) for recent evidence with respect to these public enterprise issues in Nigeria and Brazil respectively, and Ayub and Hegstad (1986) for evidence on public enterprises in, e.g., Ghana, India, Tunisia, Zambia, Israel and Mexico. Galenson and Terrell (1988) provide evidence on transport (railway, port, airline, and bus) enterprises in Latin America, Africa and Asia.
5. The three main actors on the Senegalese labor scene are the government (Ministry of Public Affairs & Labor), the cooperating trade union federation (CNTS), and the employers' association (CNES). These three "social partners" form the so-called Tripartite Commission which determines the rate of increase in basic wages of various professional (skill) categories. An "Extension Decree" effectively guarantees that the government extends the terms of the accords of the Tripartite Commission to other sectors as well. Governmental policies and regulations also control hiring, employment contracts, layoffs, and hours of work. In particular, weekly hours of work are set by the Labor Code and cannot be altered unilaterally by employers. The government also exercises monopoly control over the hiring of workers by enterprises, ensures that permanent contract is the principal form of employment relationship, and it carefully scrutinizes (and often turns down) employer requests for a permission to lay off workers. The stated position of the entrepreneurs is that the system too often leads to a prohibition of layoffs when they are needed for the survival and efficient functioning of the firm. See Terrell and Svejnar (1989) for a more detailed description of the Senegalese system.
6. See, e.g., Fallon (1986).
7. From the standpoint of this paper, the most important areas covered by the Panamanian Labor Code are job security (no discretionary layoffs), hours of work, minimum and contractually set wages, the formation of trade unions, and collective bargaining. Spinanger's (1984) survey of 54 Panamanian firms subject to the legislation *inter alia* indicates that relatively few felt they would be able to adjust employment in response to a *ceteris paribus* minimum wage increase. Indeed, 75% of the firms indicated that a 10% increase in the minimum wage would result in no change in their employment levels. When confronted with a hypothetical 50% minimum wage increase, one-third of the firms still indicated that employment would not be adjusted, while one-third stated that they would be forced out of business. The majority of the firms also identified the constraints on hiring and firing as the most problematic feature of the Labor Code.
8. See, for instance, Aoki (1980, 1982), McDonald and Solow (1981), Svejnar (1982, 1986), Miyazaki (1984), MaCurdy and Pencavel (1986) and Brown and Ashenfelter (1986).
9. The interpretation and identification of  $W_c$  is not always simple. An alternative interpretation of  $W_c$  is that it represents a summary of alternative wages which the modern sector workers can obtain with different probabilities. In this second interpretation,  $W_c$  may not equal the market clearing (competitive) wage and some of the conclusions of this paper would have to be modified.
10. This is the outcome analyzed in the Harris-Todaro framework by Calvo (1978).
11. See Svejnar (1982).
12. See, e.g., McDonald and Solow (1981) and Svejnar (1986).
13. See Svejnar and Hariga (1988).
14. This might be the case for instance in Mauritius and Argentine ports as well as Costa Rican and Pakistani railways, where it is estimated that over 80% of the workforce is redundant. See Galenson and Terrell (1988).

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