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The Labor Market and Economic Adjustment

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Abstract

This paper examines the role of the labor market in the transmission process of adjustment policies in developing countries. It begins by reviewing the recent evidence regarding the functioning of these markets. It then studies the implications of wage inertia, nominal contracts, labor market segmentation, and impediments to labor mobility for stabilization policies. The effect of labor market reforms on economic flexibility and the channels through which labor market imperfections alter the effects of structural adjustment measures are discussed next. The last part of the paper identifies a variety of issues that may require further investigation, such as the link between changes in relative wages and the distributional effects of adjustment policies.

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Contents

Summary

This paper provides a comprehensive review of issues related to the labor market in the process of adjustment in developing countries. The analysis emphasizes the effects of labor market segmentation and relative wage rigidity across sectors on the transmission of stabilization and structural adjustment policies to output, wages, employment, and unemployment.

The first part of the paper reviews the recent evidence regarding the main structural and institutional features of labor markets in developing countries. The structure of the labor market is first described, and the evidence related to the composition of employment (notably the size of the informal labor market and the importance of public sector employment) as well as the level of unemployment is examined. Institutional features of the labor market (such as hiring and firing regulations, minimum wage laws, non-wage labor costs and unemployment benefits, wage indexation provisions, and bargaining structures) and the behavior of public and private sector wages are then examined.

The second part of the paper focuses on the effect of wage inertia, labor market segmentation, and imperfect labor mobility on the transmission of macroeconomic policy shocks. It begins by reviewing the evidence related to the degree of wage inertia in developing countries and the behavior of real wages in the course of some of the disinflation programs implemented during the 1970s and 1980s. A formal framework that captures some of the salient features of the labor market in developing countries is described, and the aggregate effects of a cut in the level of employment in the public sector are discussed. The analysis emphasizes the importance of accounting for interactions in the process of wage formation across different segments of the labor market and for the role of imperfect labor mobility in assessing the employment and wage effects of stabilization programs.

The third part examines the effects of labor market rigidities on the outcome of structural adjustment policies. It is shown that whether trade reform (a reduction in tariffs coupled with an increase in lump-sum taxes to equilibrate the budget) lowers or raises unemployment in the long run depends crucially on the elasticity of wages in the tradable sector relative to wages in the nontradable sector--a link that may emerge as a result of either efficiency considerations or the existence of trade unions. Finally, the last part of the paper identifies some research topics--such as the need to understand better the net cost of labor market distortions, the role of such distortions on long-run growth, and the distributional effects of adjustment policies in the presence of segmented labor markets.

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I. Introduction

The study of labor markets in development economics has traditionally focused on medium- and long-run issues, such as the determinants of rural to urban migration, the growth in the urban labor force and its implications for unemployment and poverty, and the effects of education on levels of earnings. In recent years much attention has been devoted to understanding the role of labor markets in determining the wage and employment effects of trade reform and other types of structural adjustment policies in developing countries. The role of these markets in the transmission process of short-run macroeconomic policy shocks has also attracted considerable interest. 1/ During the early 1980s development macroeconomists stressed, in particular, the role that real wage resistance may play in determining whether a nominal devaluation has a contractionary effect on output. 2/ More recently, researchers have focused on the implications of alternative sources and forms of labor market segmentation for stabilization and structural adjustment programs.

This paper reviews the recent evidence relative to the functioning of labor markets in developing countries, examines the role of wage flexibility and labor market segmentation in the transmission process of stabilization policies, and discusses the channels through which labor market imperfections alter the sectoral and aggregate effects of structural adjustment programs. The short- and long-run effects of adjustment policies on relative wages, employment allocation, and unemployment are also analyzed. Section II examines the available evidence regarding the main structural and institutional features of labor markets in developing countries. It begins by discussing the structure of these markets and the evidence on the composition of employment--in particular, the importance of public sector employment and the size of the informal labor market--and the level of unemployment. After examining various institutional features of labor markets in the developing world (such as hiring and firing regulations, minimum wage laws, nonwage labor costs and unemployment benefits, wage indexation provisions, and bargaining structures), the behavior of public and private sector wages during the 1970s and 1980s is examined.

Section III focuses on the role of wage flexibility, market segmentation, and impediments to labor mobility in the transmission process of macroeconomic policy shocks in developing countries. It

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1/ The early neglect of labor market policies in the context of macroeconomic management in developing countries may have been related to the widespread perception that the existence of a chronic excess supply of labor would render policies such as those aimed at restraining wage growth largely irrelevant.

2/ See Agénor and Montiel (1994, chapter 7) for an extensive review of the literature in this area.

begins by reviewing the evidence on the degree of wage inertia based, in particular, on the estimation of Phillips curve equations. It then examines the behavior of real wages in the course of some of the disinflation programs implemented during the 1970s and 1980s, and the importance of assessing the degree to which wages are backward- or forward-looking. The discussion then turns to the role of labor market imperfections in the transmission process of macroeconomic policies, and the effects of these policies on labor market performance. A formal framework that captures these imperfections is presented. The functioning of the model is illustrated by considering a cut in the level of employment in the public sector. The analysis illustrates the importance of accounting for interactions in the process of wage formation across segments of the labor market and the speed of intersectoral labor mobility when assessing the employment effects of stabilization policies.

Section IV focuses on the effects of labor market reforms on economic flexibility, and the role of labor market rigidities in the transmission process of structural adjustment policies. It discusses, in particular, the implications of labor market segmentation and imperfect labor mobility for the effects of trade reform (a reduction in tariffs coupled with an increase in lump-sum taxes to equilibrate the budget) on output, wages, and unemployment. Section V identifies a variety of issues that have not received sufficient attention in the existing literature--such as the real cost of employment security regulations, the link between relative wages and the distributional effects of adjustment policies, and the effect of labor market distortions on long-run economic growth--and may represent fruitful areas for further investigation. Section VI summarizes the main results and offers some final remarks.

II. Labor Markets in Developing Countries: An Overview

This section provides an overview of the economic, institutional, and regulatory features of labor markets in developing countries. The focus here is on those characteristics that are most relevant for understanding the role of these markets in the process of economic adjustment. The discussion begins by describing some of the most salient structural features of the labor market, and by reviewing the available evidence on the composition of employment and unemployment. Attention then turns to labor market institutions and regulations, in particular hiring and firing regulations, minimum wage laws, nonwage labor costs and unemployment benefit schemes, indexation practices, and wage bargaining mechanisms. A key aspect of the analysis is the influence of government regulations regarding pay and other employment conditions--such as regulations related to job security and nonwage labor costs--on different segments of the labor market. Finally, the behavior of private and public sector wages during the 1970s and 1980s is examined, as well as linkages between wage formation in both sectors--such as "contagion effects" of public sector pay and employment policies.

1. Structure of the labor market

Labor markets in developing countries differ in important ways from those operating in industrial countries. Key structural differences are the importance of the agricultural sector in economic activity (which tends to impart a marked seasonal pattern to employment in some countries or regions), the importance of self-employment, and irregular work activities. These differences imply that standard labor market concepts used in the industrial world (such as employment and unemployment) do not necessarily have the same meaning and must be interpreted with care.

Development economists typically distinguish three sectors in the labor market in developing countries (see Rosenzweig, 1988). The first is the rural sector, which is characterized by a large share of self-employed persons and unpaid family workers. The second is the informal urban sector, which emerged largely as a result of accelerated rural-urban migration and the labor surplus that it generated in the cities. The informal sector is characterized by self-employed individuals (such as small traders, street vendors, taxi-drivers, tailors, carpenters, and bricklayers) or small privately owned enterprises producing mainly services and other nontradables. 1/ Activities in this sector rely mostly on the provision of labor services by owners and their families, but occasionally also on paid labor without formal employment contracts. Job insecurity is pervasive, underemployment (as a result of low labor productivity) is high, wages are highly flexible, and workers get very few benefits from their employers. Legal minimum wage laws do not apply or are not enforced, and labor unions play a very limited role. 2/

1/ Since the concept of the informal sector appeared in the International Labor Oganization's report on Kenya in the early 1970s, a variety of criteria have been employed in the development literature to define the informal sector--such as establishment size, type of employment (notably the ratio of self-employed workers), technological or capital level of firms, income level and legal status (or the degree of coverage under existing labor regulations). In practice, some of these criteria have tended to overlap (Charmes, 1990). Increasingly, the notion of informality is being used to refer to conditions under which transactions are carried out, that is, to the fact that the activities being encompassed are unregulated. The role of labor legislation in the distinction between formal and informal labor markets was emphasized by Kannappan (1985) and Mazumdar (1983).

2/ A further distinction between an "easy-entry" informal sector, and an "upper-tier" informal sector is proposed by Fields (1990) to account for the heterogeneity of informal activities. Earnings in some of the upper-tier activities may compare very favorably with some low-level occupations in the formal sector. Workers may face, however, barriers to entry in the "upper-tier" segment of the informal sector, as a result for instance of financial capital requirements.

The third segment of the labor market is the formal urban sector, consisting of medium and large enterprises (including state-owned firms) producing both tradable and nontradable goods using skilled and unskilled labor. Firms tend to hire workers (at least the most qualified ones) on the basis of formal contracts. Workers and employers are subject to various labor market regulations; employers, in particular, must provide a variety of benefits (such as pension plan, health insurance, and relative job security) to their workers. 1/ Labor unions and productivity considerations often play an important role in the determination of wages, and legal minimum wage laws exist--albeit enforced with varying intensity across professional occupations and across countries. 2/

The existence of different sectors in the labor market is often associated with labor market segmentation, which can be defined as a situation where observationally identical workers (that is, workers with similar productive abilities) receive different wages depending on their sector of employment. In particular, restrictions on occupational mobility between sectors--resulting from institutional barriers or otherwise--may prevent workers in the "low-wage" segment (the rural or informal sector, for instance) from having full access to a job in the "high-wage" segment (the formal sector) held by workers with similar qualifications--even if wages are fully flexible. Equilibrium of the labor market is thus characterized by the rationing of high-pay jobs, while at the same time workers able and willing to fulfil these jobs at the going wage are "stuck" in low-wage jobs. If there were no barriers, workers in the low-wage sector would enter the high-wage sector and bid wages down, leading to an equalization of sectoral earnings in the long run. While labor market segmentation exists in many developed countries, it appears to be a more pervasive phenomenon in developing countries. As further discussed below, in the presence of a segmented labor market the distinction between voluntary unemployment and involuntary unemployment lacks meaning.

The best-known model of labor market segmentation in developing nations is the migration model of Harris and Todaro (1970). The main objective of the model was to explain the persistence of rural to urban migration, despite the existence of widespread urban

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1/ In some countries, the formal sector is not entirely confined to urban areas; wage earners bound by explicit contracts may also be employed in agriculture. In Kenya, formal sector wage earners are equally divided between rural and urban areas (Riveros, 1989).

2/ In general, the relative size of the informal sector varies across countries as a result of the costs of formality, which can be divided into costs to accessing the formal sector (such as those incurred to register a small firm) and costs to remaining in the formal sector, such as taxes, compliance with labor regulations (nonwage benefits, social security, hiring and firing compensation), and bureaucratic requirements. See Braun and Loayza (1994).

unemployment in developing countries. The explanation proposed by Harris and Todaro was based on the idea that migrants from the rural areas are attracted to the urban formal sector by the expectation of higher wages, even if they are unlikely to find jobs in the formal sector immediately. A key element of the model is the equality of expected (rather than actual) wages as the basic equilibrium condition across the different segments of the labor market. Specifically, Harris and Todaro assumed that rural workers, in deciding to migrate, compare (in present value terms) wages in agriculture w_A to the expected urban wage w_U^a, which is calculated by multiplying the prevailing wage w_U--assumed fixed as a result of the existence of, say, a minimum wage law or trade unions with a rigid target wage--by the urban employment ratio, which measures the probability of being hired. In equilibrium, the Harris-Todaro hypothesis yields:

$$w_A = w_U^a = w_U\left(\frac{L_U}{L_U + N_U}\right), \tag{1}$$

where L_U is urban employment, and N_U the absolute number of unemployed workers in urban areas.

The Harris-Todaro model has been extended in a variety of directions over the years. 1/ A formulation similar to equation (1) has been used to explain movements of labor between the informal urban sector and the formal economy, on the assumption that congestion and relocation costs prevent instantaneous reallocation of the labor force (see Section III). Other important developments have been the explanation of urban wage rigidity as a result of the existence of trade unions and efficiency considerations internal to firms. Calvo (1978) developed one of the first models of urban wage determination based on bargaining between urban firms and a utility-maximizing trade union. 2/ Models of urban wage formation based on efficiency factors were analyzed by a number of authors. According to efficiency wage theories, real wage cuts lower productivity because they reduce directly calorie intakes (Bliss and Stern, 1978), incentives to provide effort (Stiglitz, 1982), raise incentives to shirk (Shapiro and Stiglitz, 1984; Esfahani and Salehi-Isfahani, 1989; Agénor and Aizenman, 1995*b*), and increase quits and turnover costs (Stiglitz, 1974; Agénor and Aizenman, 1995*a*). For instance, workers' effort in

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1/ See Rozensweig (1988) and Bhattacharya (1993). Stark (1991) provides a more critical view. Attempts at extending the Harris-Todaro migration model to an industrial-country setting include Djajic (1985), although various authors have voiced reservations about this approach (see Lindbeck and Snower, 1991).

2/ Calvo's model was subsequently reexamined by Quibria (1988), who showed that the properties of the model depend crucially on the specification of the objective function of the trade union.

the urban formal sector may depend positively on the wage paid in the current sector of employment relative to the wage paid in other production sectors (the informal sector wage or the agricultural wage) or the reservation wage. In such conditions, wage-setting firms will set wages so as to minimize labor costs per efficiency unit, rather than labor costs per worker. The wage that minimizes labor costs per efficiency unit is known as the efficiency wage. Firm hire labor up to the point where the marginal revenue product is equal to the wage they have set. 1/ Thus, efficiency wage theories help explain why urban- or formal-sector firms pay more than the market-clearing wage. They predict the existence of non-competitive wage differentials across segments of the labor market even in the absence of unions or other institutional constraints. If, for instance, efficiency wage considerations apply differentially across sectors (due to, say, differences in specific training costs), then intersectoral wage gaps that cannot be eliminated by market forces will emerge. Section III will examine how relative wage rigidity across skill categories induced by efficiency considerations or trade union activities alter the transmission process of macroeconomic policy shocks.

2. Employment distribution and unemployment

In many developing nations, agriculture still employs a large share of the labor force in rural areas. Over the past three decades the "modern" sector has expanded significantly in many cases (notably in Asia and part of Latin America) but continues to provide limited employment opportunities in others. The share of informal sector employment in total urban employment is sizable in many developing countries--particularly in some parts of Asia, the Middle East, and Sub-Saharan Africa--and may vary between 30 and 60 percent. 2/ The

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1/ In a one-sector economy where all firms pay efficiency wages, involuntary unemployment will thus emerge if the resulting aggregate demand for labor falls short of labor supply. For an overview of the literature that views involuntary unemployment as the result of efficiency wages, see Layard et al. (1991).

2/ See Lubell (1991), Rosenzweig (1988) and Turnham (1993). Most estimates are derived from labor force surveys and, less frequently, general censuses of population. The definition of the informal sector used in arriving at these estimates is generally based on firm size; firms employing (say) five or fewer workers are classified as informal. Workers in certain occupational categories--typically, self-employed workers (excluding professionals or those with higher levels of education) and unpaid family workers--are also classified as informal. For instance, PREALC (ILO's regional program for employment for Latin America) has adopted the following definition: "The informal labor market consists of those persons who develop activities for self-employment, those who work in small firms and those who provide low-productivity personal services." Data across countries are not strictly comparable, as different criteria are used depending on data availability.

share of the informal sector in non-agricultural employment in Latin America rose from 40 percent in 1980 to 47 percent in 1985 and 55 percent in 1993. 1/ At the same time, the share of the "modern sector" (medium and large private enterprises and the public sector) in total employment fell from about 60 percent in the early 1980s to around 45 percent in 1993. In Mexico for instance, about 27 percent of the labor force is employed in agriculture, 16 percent in manufacturing, 10 percent in construction, transport and utilities, and the remainder in trade and services (Revenga, 1994), a large proportion of employment in nonagricultural sectors is found in micro enterprises and small firms, and the informal sector accounted for about 50 percent of urban employment in 1988 (Roberts, 1991). In Uruguay, informal sector activities account for 15 to 30 percent of total employment (Rama, 1994*b*). In India, in the mid-1980s, 70 percent of the labor force was employed in agriculture, and at least 3 out of 5 urban workers were involved in the informal sector. In Morocco, 57 percent of non-agricultural employment consisted in the early 1980s of own-account and unpaid workers, and wage employment in small-scale enterprises (Said, 1994). In 1988, formal sector firms accounted for only 10 percent of all enterprises in manufacturing. 2/ Employment in the modern sector represented about 10 percent in Côte d'Ivoire in the early 1980s (Levy and Newman, 1989). In Tunisia, the Population and Employment Survey estimates the share of the informal sector in total nonagricultural employment at 31 percent in 1989. The data collected by Turnham (1993) suggest the existence of an inverse relationship between income per capita and the size of the informal sector, but even in upper middle-income developing countries the informal sector (at about 30 percent) continues to account for a sizable part of total employment.

As a result of the importance of the rural and urban informal sectors, the proportion of wage earners in total employment in developing countries tends to be much lower than in the industrial world, although large variations exist across countries and regions. Wage employment--which tends to prevail particularly in mining and manufacturing sectors, as well as some urban services--accounts for about 10 percent of total employment in some low-income Sub-Saharan African countries, but as much as 80 percent in some middle-income

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1/ During 1983-89, employment in Latin America increased at an annual rate of about 3 percent (in line with economic growth), but a large proportion (almost 80 percent) of the new jobs created were in the informal sector (own-account workers, unpaid family members and domestic service, and micro-enterprises).

2/ See Currie and Harrison (1994). However, these firms also accounted for 87 percent of total production and 74 percent of total employment in the manufacturing sector. Nevertheless, a recent report by the World Bank suggests that 70 percent of all new jobs created between 1986 and 1990 in urban areas in Morocco resulted from the expansion of self employment, workers at domicile and unpaid family workers (Said, 1994).

Latin American countries. 1/ In Korea, wage workers accounted for about 60 percent of total employment in 1990 and 87 percent in mining and manufacturing, but only 8 percent in agriculture (Kim, 1994).

Public sector employment accounts for a large share of wage employment and the formal sector workforce in many developing countries. The evidence provided by Kraay and Van Rijckeghem (1995) indicates that government employment (central government only) in developing countries as a share of formal sector employment was 23 percent between 1972-80, and 28 percent between 1981-92 (respectively 28 and 35 percent in Sub-Saharan Africa). 2/ The ratio of employment in the consolidated public sector over total formal employment amounted during 1972-87 to 21 percent in Malawi, 63 percent in Gabon, and 68 percent in India. In Egypt, in 1990, 57 percent of all urban wage earners were employed in the public sector, with 37 percent in the government and 20 percent in the public enterprise sector. The public sector is also the dominant employer of educated labor. 74 percent of urban workers holding an intermediate or higher degree were employed in the public sector in the late 1980s (Hollister and Goldstein, 1994, p. 30). In Jordan, 40 percent of the population of formal sector workers are employed by the government (*ibid.*, p. 32). In Tunisia, the public sector (which includes both employment in parastatal enterprises and regular government services) accounts for about 25 percent of total employment (*ibid.*, p. 33). More than 80 percent of educated labor, and 40 percent of all wage earners in rural areas, were employed in the public sector in the late 1980s.

Available information on the distribution of public sector employment across different levels of government is relatively scant. The data compiled by Kraay and Van Rijckeghem (1995) for a group of 9 developing countries indicate that on average central government employment accounts for 44 percent of total public sector employment, local government 29 percent, and public enterprise employment 25 percent. There are, however, substantial variations across countries and regions, which are partly related to the degree of government centralization and the degree of government involvement in "strategic" industries. Said (1994) estimates that employment in public enterprises, measured as a percentage of nonagricultural employment stands at about 14.5 percent in Arab countries in the early 1990s--compared to less than 6 percent for Latin America, 16 percent for Asia, and 19 percent in Africa, in the early 1980s.

1/ Rosenzweig (1988) suggests that the proportion of the labor force in wage employment is positively correlated with the urbanization rate, the size of the public sector, and the share of manufacturing, construction, and mining in aggregate output.

2/ In an earlier study, Lindauer et al. (1998) found that the public sector in sub-Saharan Africa accounted for anywhere between 20 to 80 percent of all wage employment in the formal sector.

During the early parts of the 1980s, employment in the public sector grew faster than in the private sector in many countries of Latin America and especially Africa (Lindauer et al., 1988). The expansion in public sector employment was in part a response to adverse conditions in private labor markets--in addition to growing demand for public services, such as education and health--giving governments sometimes the role of "employer of last resort," especially regarding those with higher education levels. 1/ In recent years, in Algeria, Jordan and Tunisia, government employment played a countercyclical role--rising significantly during periods of weak economic activity (Said, 1994, p. 3). Public sector employment provides a variety of benefits that help attract workers: relative job security and minimal enforcement of performance standards, nonwage entitlements (such as subsidized housing), enhanced social status, and opportunities for moonlighting and rent-earning offered by some government positions. 2/ Stevenson (1992) has argued that during the 1970s, attraction of public sector jobs resulted mostly from relatively higher wages, whereas during the 1980s (a period during which real public sector wages fell in many countries, as discussed below) attraction was related more to job security, fringe benefits, and the possibility of moonlighting. The combination of attractive public sector jobs and government hiring policies may be an important source of "wait" unemployment, as argued for instance by Dickens and Lang (1995) in the case of Sri Lanka. Public sector employment may also be inefficient and unproductive, and the cost in terms of foregone income may be high (Turnham, 1993). 3/

Published data on unemployment in developing countries are not very reliable and often incomplete. They usually include unemployed workers looking for jobs in the formal sector, but not underemployed workers in the informal and rural sectors--what is known as "disguised" unemployment--thus understating the effective excess supply of labor. Very few countries provide information on the duration of unemployment. Nevertheless, available data suggest that open unemployment is concentrated in urban areas and is mostly associated with wage employment, and that under-employment is far more

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1/ In Egypt, for instance, a special job security regulation put in place in the 1960s provided, until the early 1990s, a guarantee of public sector employment for secondary and postsecondary graduates (Said, 1994).

2/ See Gelb et al. (1991) for an analysis of rent-seeking behavior and political economy considerations in the determination of public sector employment decisions.

3/ See for instance Said (1994) for a discussion of overstaffing in the public sector in Egypt. The macroeconomic effects of reductions in public sector employment are discussed in Section III.

pervasive than open unemployment. 1/ In Ghana, for instance, in 1988-89 the officially reported unemployment rate was 1.6 percent of the labor force, but underemployment was 24.1 percent (the World Bank, 1995, p. 28). In some countries, open and disguised unemployment amount to as much as 60 percent of the labor force (Turnham, 1993).

Figure 1 shows the behavior of output growth and the open unemployment rate for several developing countries over the first and second part of the 1980s. The data indicate a very weak relation between the rate of output growth and the unemployment rate. The upper Panel in Figure 2, which shows the evolution of the same variables between the early 1970s and early 1990s in Chile, also suggests that the correlation was at times positive. Several authors have argued that the absence of a stable output-unemployment relationship may be the result of spillover effects across different segments of the labor market and shifts in production activities, which are not properly accounted for in published employment and output data. Turnham (1993) for instance suggests that during the recession of the 1980s, the loss of jobs in the formal or modern sector led to a sharp increase in self-employment in several Latin American countries. In Argentina and Brazil, in particular, the urban informal sector has been a major absorber of the increased labor supply during the 1980s, while the open unemployment rate failed to increase. 2/ During the recession of 1981-83 in Brazil, formal private sector employment declined sharply but employment in the informal sector increased significantly--thus mitigating the increase in open unemployment. As shown in Figure 3, the increase in the rate of output growth between 1983 and 1986 was also accompanied by a reduction in the share of informal sector employment, whereas the slowdown recorded between 1987 and 1988 (following the collapse of the Cruzado Plan) led to an increase in that share. In Africa informal sector employment also expanded sharply during the late 1970s and early 1980s (notably in Kenya, Zambia, and Nigeria), thus moderating increases in open unemployment, as well as the fall in output. We will examine below an analytical framework that captures the interactions between the formal and informal sectors, and the mechanisms through which the adverse output and employment effects of macroeconomic shocks can be mitigated by a shift to informal production activities.

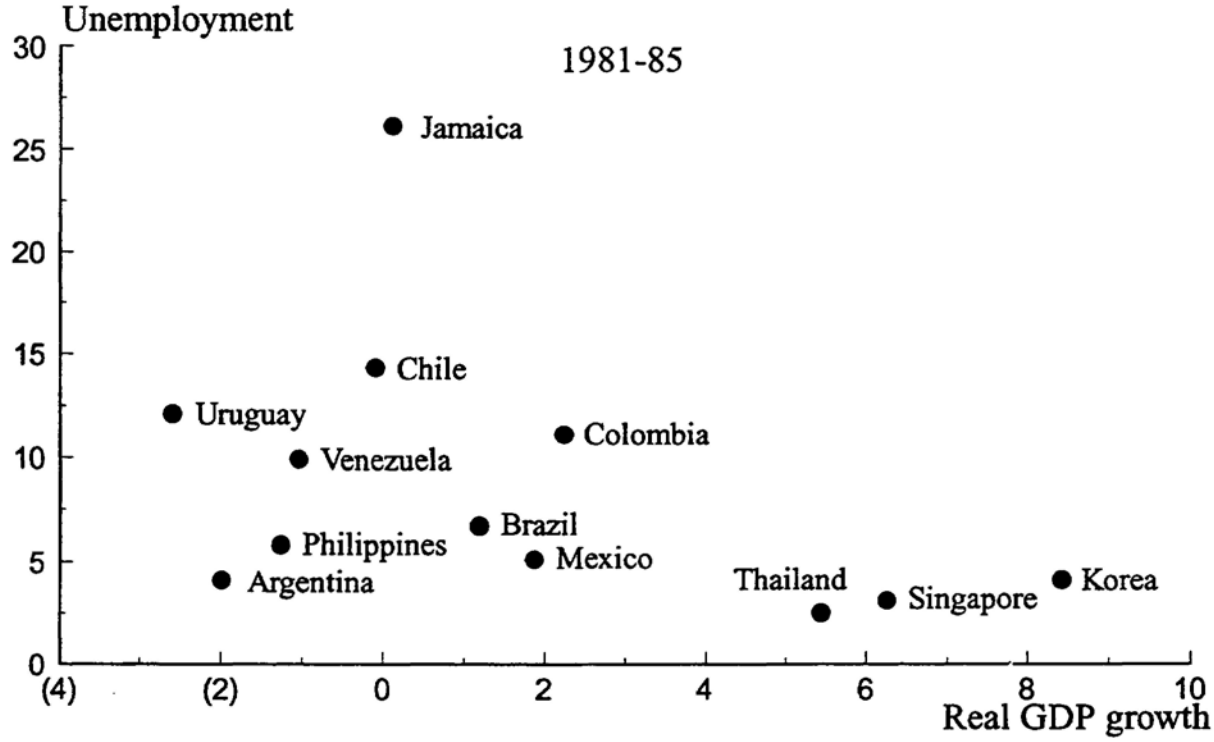
1/ Open unemployment may show a rising trend despite strong and positive employment growth, as industrialization combined with migration from rural to urban sectors frequently means that previously underemployed workers are registered as openly unemployed while they are looking for industrial jobs.

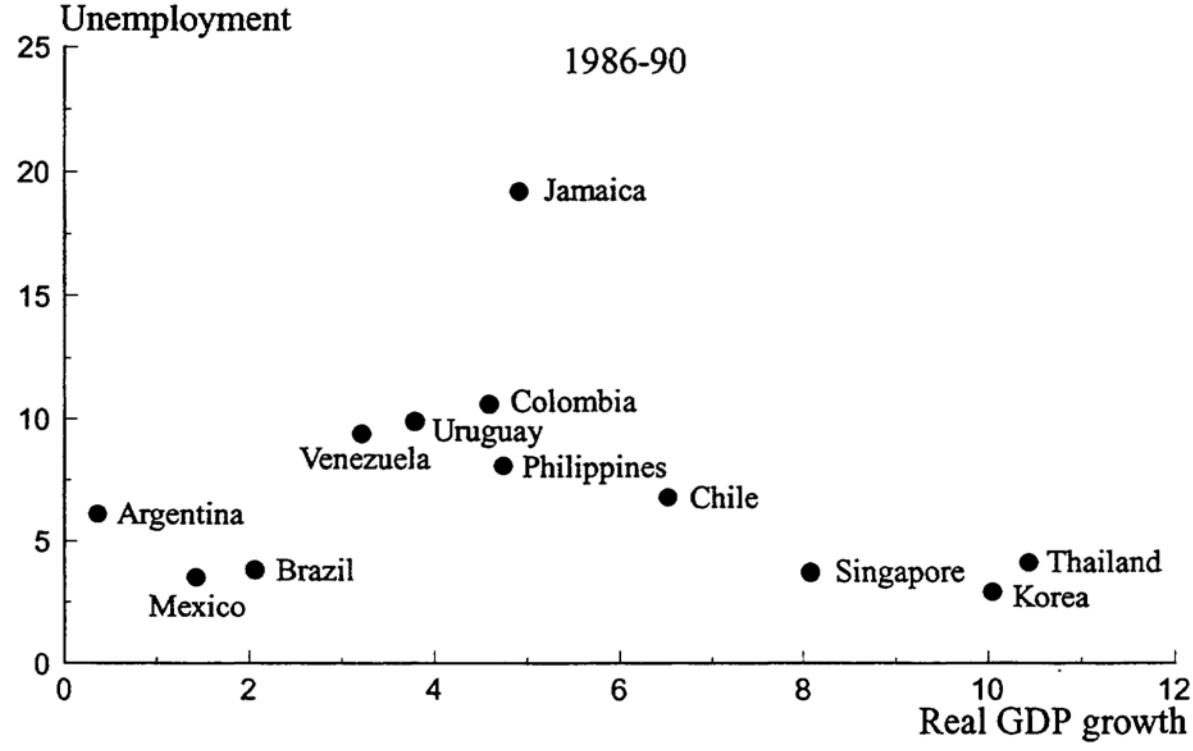
2/ See Fallon and Riveros (1989). They also point out, however, that in Uruguay and Mexico, informal sector employment expanded at the same time that open unemployment increased. In Chile, informal sector employment fell at the beginning of the 1980s--in part as a result of the expansion of public employment programs--while the open unemployment rate nearly doubled (see Figure 2).

Figure 1

Output Growth and Unemployment in Developing Countries

(Period averages, in percent)



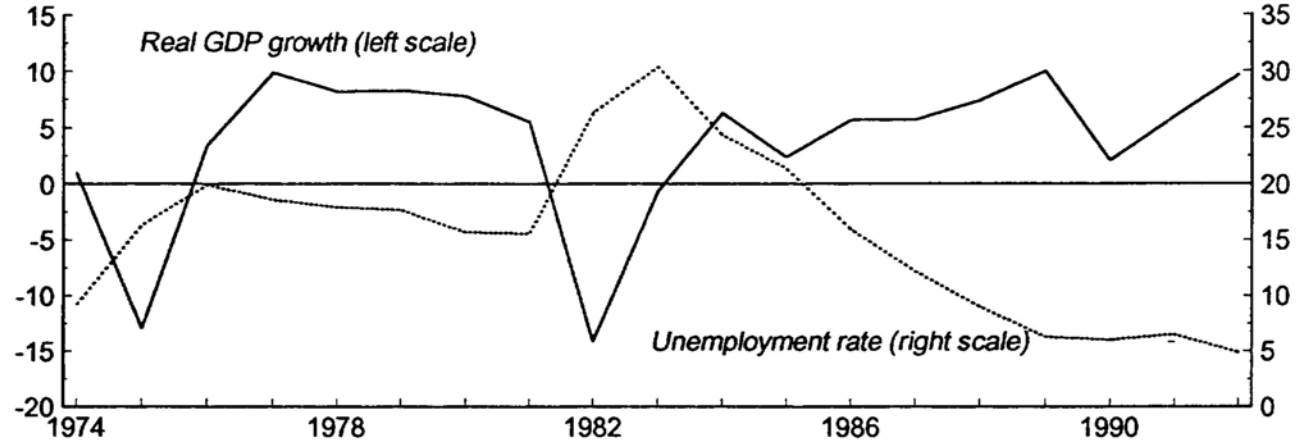


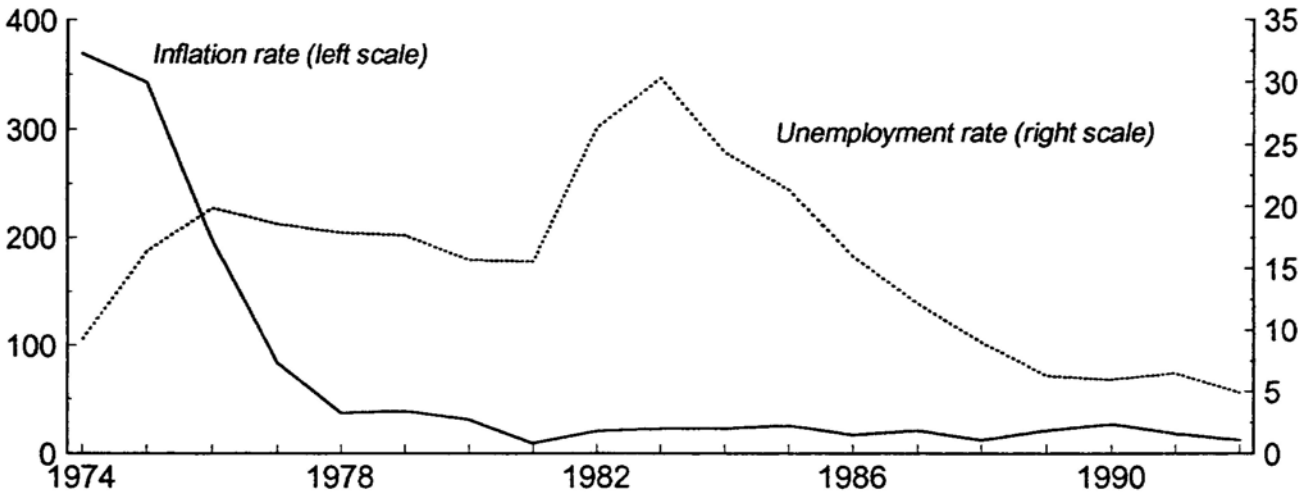
Source: Yearbook of Labor Statistics, International Financial Statistics.

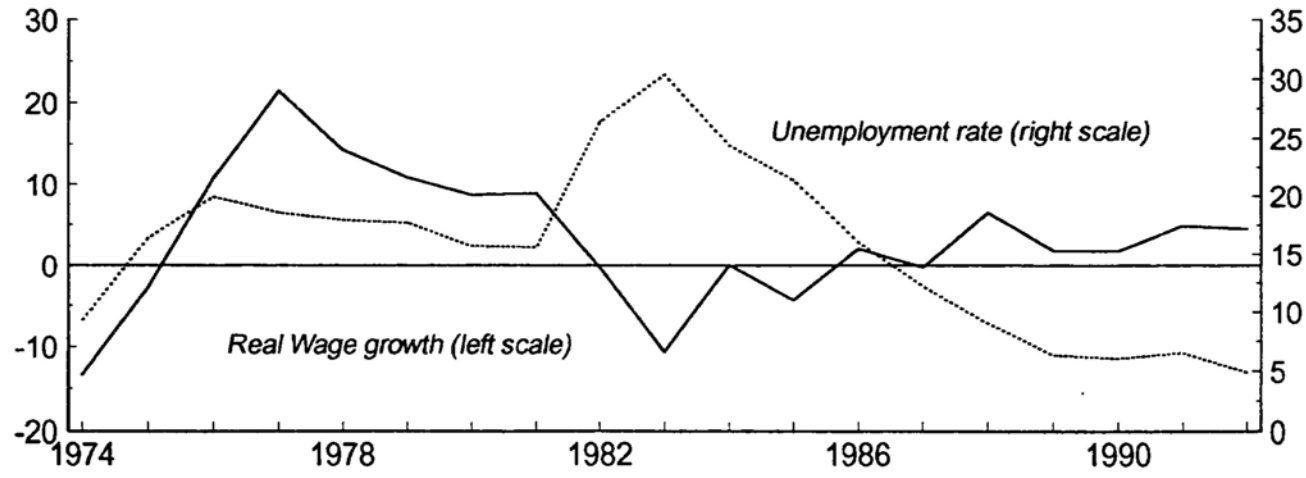
Figure 2

Chile: Macroeconomic and Labor Market Indicators

(in percent)



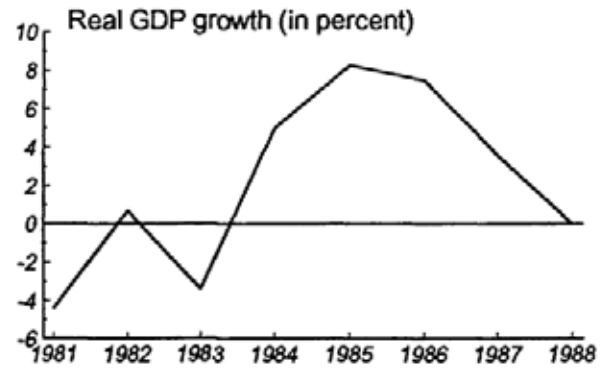


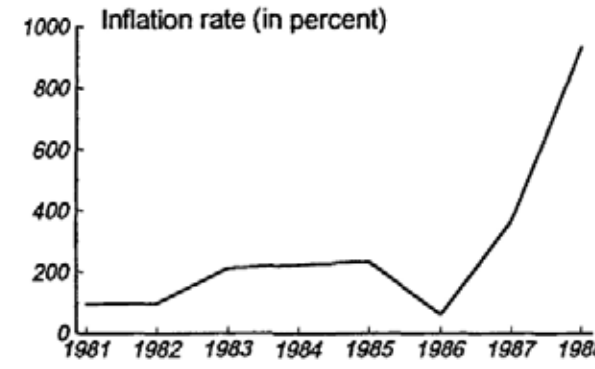


Source: Labán and Larraín (1994, p.118)

Figure 3

Brazil: Macroeconomic and Labor Market Indicators





Source: Urani and Winograd (1994, p. 81).

The composition of unemployment by skill categories varies considerably across countries. As documented by Riveros (1990), In Latin America--particularly Colombia, Uruguay, Argentina, and to a lesser extent Chile and Brazil--a large proportion of the unemployed were skilled workers in the 1980s. Evidence supporting the view that skilled workers often do not work in the informal sector can be found in a detailed study of industrial workers in Brazil by Hirata and Humphrey (1991), who have shown that skilled workers were more likely than other categories to remain in open unemployment, rather than working in the informal sector. In India, the open unemployment rate is higher among the educated (Banerjee and Bucci, 1995). Hollister and Goldstein (1994, p. 65) provide evidence of high levels of skilled labor unemployment in several countries in the Near East--particularly in Egypt, where a large majority of those in open unemployment have secondary or postsecondary degrees. The evidence reviewed by Said (1994) also suggests that unemployment in several Arab countries is quite high for workers with higher levels of education. Skilled workers often choose to remain unemployed, because they do not want to accept low-income jobs in the informal sector. They are thus, in a sense, "quasi-voluntarily" unemployed. This may be because their reservation wage is higher than the going wage in the informal sector, because job search in the formal sector is more efficient while unemployed, and/or because the higher family income of the educated allows them to remain unemployed while searching for a job (Banerjee and Bucci, 1995). 1/ Unskilled workers, by contrast, often cannot "afford" to remain unemployed for long and are often "forced" to enter the informal sector . Unskilled unemployment may nevertheless emerge if (as in the Harris-Todaro framework presented above) workers who expect to be hired at the higher formal sector wage are able to "wait" for the "good" jobs. The macroeconomic model discussed in Section III will integrate both "quasi-voluntary" unemployment of skilled workers and "wait" unemployment of this type.

3. Labor market institutions and regulations

Allocation of the work force and wage formation depend critically on labor market institutions and government regulations. As argued earlier, trade union activity and minimum wage laws may represent important sources of labor market segmentation. These and other institutional features of the labor market--such as wage indexation, labor tenure laws, and (in some countries) restrictions on labor mobility aimed at influencing migration flows--have been blamed for pushing labor costs above market-determined levels, for contributing to larger disparities in the ratios of wages to the marginal product of labor (particularly in urban areas), and for limiting the ability

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1/ To the extent that a large proportion of job seekers are "partly" employed in the informal sector and partly unemployed, changes over time in unemployment and underemployment data may become very difficult to interpret.

of firms to adjust production patterns to changes in relative prices, factor supply, and aggregate demand conditions.

In what follows we describe the main features of labor market institutions and regulations in developing countries, and will analyze in a more detailed manner in Section IV their effects on the functioning of the labor market. We begin by examining hiring and firing regulations, and then turn our attention to minimum wage laws, nonwage labor costs and unemployment benefits, indexation practices, and bargaining structures.

a. Hiring and firing regulations

Legislation on hiring, firing and regulation of working time is aimed at providing protection to workers engaged in a contractual employment relationship. Although regulations prevailing in specific countries vary considerably, many developing nations provide extensive employment protection to workers in the formal sector, such as restrictions on firms' ability to lay off workers without "proper" justification or reason (the definition of "proper" being sometimes very narrow), long notification periods prior to dismissal, generous severance arrangements that must be borne by firms, and administrative procedures that delay or prevent layoffs and plant closures. In Mexico, for instance, employers must pay three months' wages as a minimum severance pay to workers dismissed with "just cause" (major misconduct). In the absence of "just cause", the severance payment rises by 20 days' wages for each year on the job (World Bank, 1995, p. 89). In Ecuador, if a worker quits voluntarily or is dismissed with "just cause", the employer must pay compensation equivalent to 0.25 monthly salaries per year of service. If dismissal is deeemed "without just cause," there is an additional severance payment of three months' salaries if the employee has less than three years of service, or one month per year of service (up to 25 months) if the employee has more than three years of service. 1/

Restrictions on layoffs in the formal sector often make firing redundant (or unproductive) workers difficult, as appears to be the case in countries like Egypt, India, Morocco, Mexico, Venezuela, and Sri Lanka (Revenga, 1994, and Currie and Harrison, 1994). Morocco, for instance, has been characterized as having a highly regulated workplace with severe restrictions on firing and generous severance pay--although in practice enforcement is not uniform across sectors and skill categories (Said, 1994). In Egypt, until recently hiring was required to take place through the employment offices of the

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1/ See Cox Edwards (1993) for recent data on redundancy payments (measured in terms of days' salary for each year worked) that employers are required to make in Latin America.

Ministry of Labour. 1/ Public Law 137-1981 required that proposed dismissals by private sector employers be reviewed by a tripartite committee. Available data indicate that between 1987 and 1989 two thirds of establishments that applied were not allowed to restructure employment. In India, legislation was passed in the mid-1970s making it illegal for a firm with more than 100 employees to lay off workers without the authorization of the state governor. In Sri Lanka, firms employing more than 15 workers cannot lay off their employees on nondisciplinary grounds without their written consent--an operation that usually requires severance payments that are significantly higher than those required by law. Regulations such as these have encouraged the use of casual labor and subcontracting (World Bank, 1995, p. 89). Riveros (1989) has reviewed job security provisions in a large number of developing countries. He identified Argentina, Colombia, Mexico, and India as the countries with the heaviest restrictions, whereas he found the opposite for Korea, Singapore, and Nigeria.

b. Minimum wage laws

The effect of minimum wages on labor market segmentation can be illustrated with a simple graphical analysis, in the presence of perfect and imperfect labor mobility. Consider a small open developing economy in which the formal sector produces a traded good whereas the informal sector produces a nontraded good. Both goods are produced using only homogeneous labor, the total supply of which is given. The determination of wages and employment under four different assumptions regarding labor market adjustment is shown in Figure 4. In all four panels of the figure the horizontal axis measures total labor available in the economy, $O_F O_I$. The vertical axis measures the wage rate in the economy, which is either uniform across sectors or sector specific. The demand for labor in the formal (informal) sector is represented by the downward-sloping curve L_F^d (L_I^d). Consider first Panel *A*, which assumes that wages are perfectly flexible and labor perfectly mobile across sectors. The initial equilibrium position of the labor market obtains at point *E*, where the economy-wide wage rate is equal to w^*, labor employed in the formal sector is $O_F L_F^*$, and labor used in the informal sector is $L_F^* O_I$.

Panels *B*, *C*, and *D* assume that the wage rate in the formal sector is fixed at the minimum level w_F^c (above the economy-wide, market-

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1/ See Hollister and Goldstein (1994 p. 66). Firms were fined for hiring outside this system; but although public inspectors were involved in monitoring hiring practices, the system was not tightly enforced. These restrictions on hiring were recently dismantled.

clearing wage) while wages in the informal sector remain flexible. 1/ However, the panels differ in the underlying assumptions regarding the degree of intersectoral labor mobility. In Panel *B*, labor can move freely across sectors, as in Panel *A*. Perfect labor mobility, together with wage flexibility in the informal sector, prevents the emergence of unemployment. The initial equilibrium obtains at point *A* in the formal sector and corresponds to an employment level of $O_F L_F^c$, and at point E_I in the informal sector, with wages equal to w_I and employment to $L_F^c O_I$. In Panel *C*, labor is completely immobile. The labor force in the formal sector is equal to $O_F \bar{L}_F$, while the supply of labor in the informal sector is measured by $\bar{L}_F O_I$. Since sectoral labor supply is completely inelastic and minimum wages are binding in the formal sector, unemployment will typically emerge in that sector. The situation depicted in Panel *C* indicates that employment in the formal sector is equal to $O_F L_F^c$ and unemployeement to $L_F^c \bar{L}_F$. Finally, Panel *D* illustrates the Harris-Todaro labor allocation mechanism, which assumes that equilibrium obtains when the wage rate in the informal economy is equal to the expected wage in the formal sector. 2/ The downward-sloping locus *QQ* is a rectangular hyperbola along which the above equality holds, and is known as the Harris-Todaro curve (Corden and Findlay, 1975). 3/ The intersection of the L_I^d curve with *QQ* determines the wage rate and the employment level in the informal sector, while the intersection of the L_F^d curve with the horizontal line drawn at w_F^c determines employment in the formal sector. The initial equilibrium is therefore characterized by unemployment, which is equal to $L_F^c L_I$.

Suppose that as a result of a macroeconomic or structural shock--a permament reduction in, say, autonomous demand--the demand

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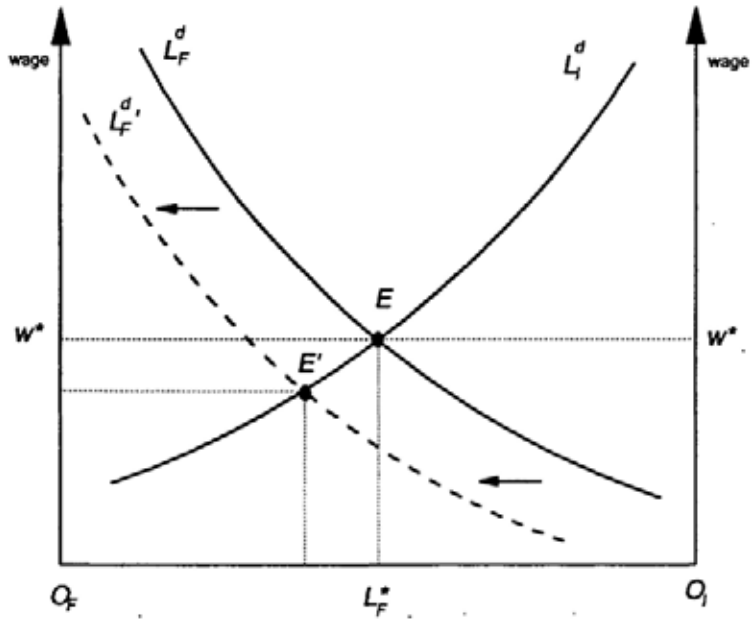
1/ Wage rigidity in the formal sector may also result from wage-setting behavior by firms or trade unions. In these alternative cases, however, formal sector wages will usually be responsive to informal sector wages (see below).

2/ In turn, as discussed above, the expected wage in the formal sector is defined as the product of the actual wage in that sector (that is, the minimum wage) times the probability of being hired, which is measured by the employment ratio.

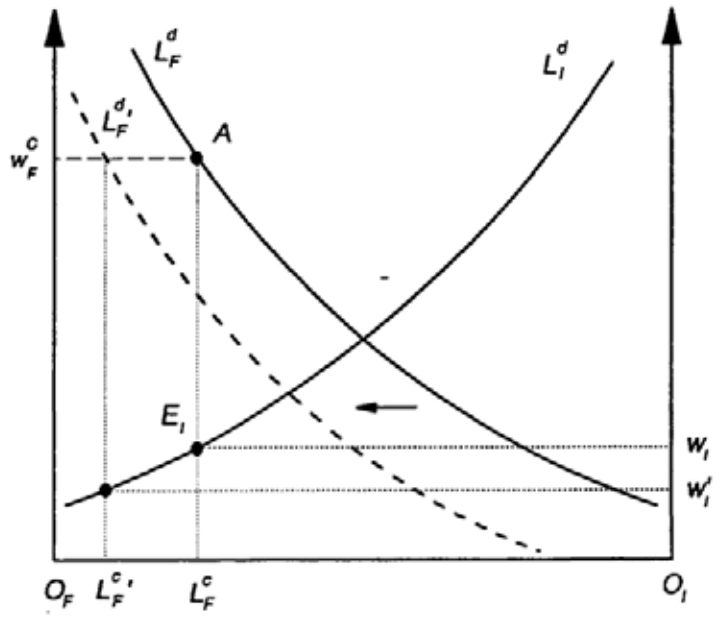
3/ Curve *QQ* has unitary elasticity. In the Figure, the elasticity of labor demand in the formal sector L_F^d is assumed to be less than unity--an assumption that is well-supported by the evidence.

Figure 4

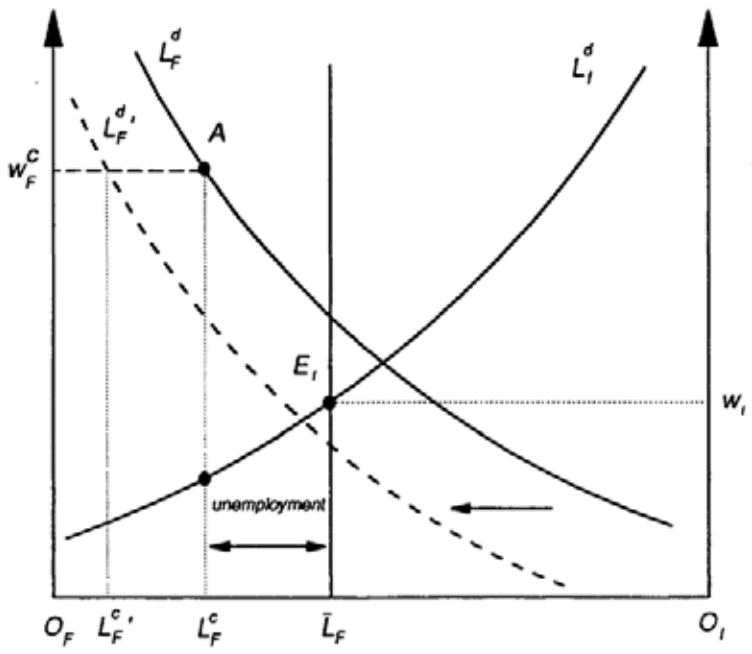
Minimum Wages, Labor Mobility, and Adjustment



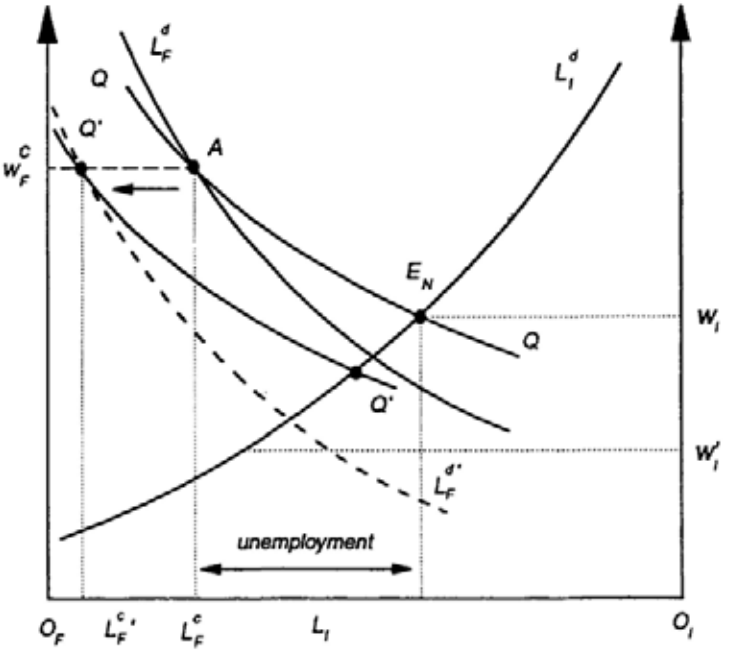
Panel A. Flexible wages and perfect labor mobility



Panel B. Minimum wages and perfect labor mobility



Panel C. Minimum wages and no labor mobility



Panel D. Harris-Todaro migration process

for labor in the formal sector falls, shifting the curve L_F^d to the left. 1/ If wages are perfectly flexible and labor perfectly mobile across sectors, adjustment of the labor market leads to a fall in the overall wage rate in the economy, and a re-allocation of labor across sectors, leading the economy to a new equilibrium (point *E'* in Panel *A*) with full unemployment. Consider now what happens in the presence of binding minimum wages in the formal sector. If labor is perfectly mobile across sectors, the demand shock leads only to a reallocation of the labor force and a fall in wages in the informal sector (Panel *B*). However, if workers cannot move across sectors, the reduction in demand leads to an increase in unemployment in the formal sector, with no effect on wages and employment in the informal economy (Panel *C*). 2/ With a labor allocation mechanism of the Harris-Todaro type, the demand shock reduces employment in the formal sector as in the preceding case. However, the effect on the unemployment rate is now ambiguous. This is because the *QQ* curve shifts to the left following the shift in L_T^d, since the fall in employment reduces the likelihood of being hired and therefore the expected wage in the formal sector. This implies that more workers would elect to seek employment in the informal sector, bidding wages down. Employment therefore increases in the informal sector, while wages fall. However, despite the reallocation of labor across sectors, in equilibrium unemployment may well increase in the formal sector. Thus, depending on the degree of labor mobility, the presence of binding minimum wages in the formal sector alters the effect of exogenous shocks on wages, employment allocation, and unemployment.

In practice, the effects of minimum wages depends on both the frequency at which they are adjusted (often at the government's discretion) and the degree to which the legislation is enforced. In an inflationary environment, the minimum wage can fall to very low levels if it is adjusted only infrequently. In such conditions the minimum wage may not be a "binding" constraint. Excessively high minimum wages (relative to the marginal product of labor) in the presence of lax enforcement provides incentives to evade the law and operate partly illegally, or entirely shift activities to the informal economy--in a manner very similar to a tightening of job security provisions, as discussed earlier.

1/ We abstract from induced effects of the shock on relative prices, income, and wealth (as discussed in Section III), and assume that the position of the demand curve for labor in the informal sector does not change.

2/ The existence of unemployment as depicted in Panel *C* may be only a short-run phenomenon, if labor can adjust over time; the long-run outcome could be similar to the one in Panel *B*.

Low minimum wages and lax enforcement are indeed features of the labor market in many developing countries. 1/ Few countries appear to have effective minimum wage policies, as can be inferred from data on real minimum wages (compared to average wages) and the actual proportion of workers earning the minimum wage or above. In Taiwan, minimum wages are less than half the average wage (Fields, 1994). In Mexico a substantial number of workers--even in large-scale enterprises--still earn below the minimum wage (Fallon and Riveros, 1989). 2/ A minimum wage law exists in Morocco but is not effective (Hollister and Goldstein, 1994, p. 57)--in part because the high unemployement rate has led the authorities to allow employers some flexibility in hiring workers on a temporary and apprenticeship basis at wages below the minimum rate. A study conducted in 1986 indicated that half the firms surveyed were paying their unskilled workers below the legal minimum (World Bank, 1995, p. 75). In Tunisia, only 11 percent of the labor force is subject to the minimum wage (*op. cit.*, p. 60). Nevertheless, there is some evidence suggesting that the role of minimum wages can be significant. In countries like Sri Lanka, most private firms in the regulated sector pay wages near or above the minimum (Rama, 1994*a*). Camargo (1988) provides evidence suggesting that wages of unskilled workers in the formal sector are affected by the minimum wage, which he argued played a key role in determining a "wage floor" in the formal sector labor market in Brazil in the 1970s and early 1980s. 3/ In more recent years, however, the minimum wage in Brazil has become increasingly less important in sectors other than services--particularly in manufacturing. Paldam and Riveros (1989) have used causality tests from minimum wages to average wages for a group of Latin American countries. Their results indicate that the causality is weak for Argentina and Peru, while it is stronger for Chile, Colombia, and Mexico. However, the results of such tests must be interpreted with care, since they are likely to be biased toward rejection of a significant link between minimum wages and average wages--unless minimum wages are adjusted frequently during the estimation period.

1/ Public sector enterprises appear to comply more often with minimum wage lesgislation than private enterprises--often as a result of "soft" budget constraints and/or concern over employment.

2/ Minimum wage legislation was introduced in 1934 in Mexico. Minimum wages are set annually since 1974 by the National Minimum Wages Commission, which can call for interim adjustments if warranted by circumstances (Villarreal and Breach, 1988).

3/ See Camargo (1988) for a description of the institutional features of minimum wage legislation in Brazil, which was introduced in 1940. One of the peculiar features of the system is the constitutional link between welfare benefits and the minimum wage, which ensures that any rise in the minimum wage raises automatically government expenditure.

During the 1980s, minimum wages in most developing nations increased less rapidly than average wages or income per capita, and have declined in real terms in many countries--particularly in Africa and Latin America (Riveros, 1990, and Fiszbein, 1992). In Mexico, the minimum wage fell in real terms by roughly 45 percent in the second half of the 1980s--while average real wages increased sharply in the aftermath of the implementation of the stabilization program in December 1987--whereas in Colombia it fell by a much smaller amount between 1983 and 1987 (see Figure 5). Real minimum wages in Uruguay fell by about 13 percent between 1981 and 1988. In Kenya, real minimum wages fell by more than 40 percent (and the average wage by almost 23 percent) between 1980 and 1986 (World Bank, 1995, p. 76).

In many countries, the decline in real minimum wages has been large enough to erode the distortion induced initially by excessively high minimum wages. However, despite this decline, the ratio of the minimum wage to unskilled labor wages--a more relevant indicator of the effect of minimum wages on the labor market--has not fallen significantly in a number of cases. Bell (1994) for instance estimated the impact of minimum wages on the demand for skilled and unskilled labor in the formal manufacturing sector in Mexico and Colombia. At the end of the 1980s, the minimum wage stood at a level that was just 31 percent of the average unskilled manufacturing wage in Mexico, and roughly 53 percent of the average unskilled wage in Colombia. She found substantial disemployment effects of minimum wages in Colombia, with substantially larger effects for unskilled labor as opposed to skilled labor. She attributed the lack of evidence on disemployment effects in the case of Mexico to the relationship between the legally imposed minimum wage and the distribution of average unskilled wages across firms. She found that the minimum wage is very far to the left in the Mexico distribution and much closer to the mean in the Colombia distribution. Thus, minimum wages appeared ineffective in the formal manufacturing sector in Mexico and effective in Colombia.

c. Nonwage labor costs and unemployment benefits

Nonwage labor costs include social security contributions and nonwage benefits--such as housing, health care, pensions, subsidized transport and meals, and family allowances. Their importance varies substantially across countries in the developing world. According to Rama (1994*a*), in 1991 social security contributions by employers and employees in proportion of wages amounted to 24.6 percent in India, 12 percent in Pakistan, 23 percent in Sri Lanka, 10 percent in Indonesia, 23.3 percent in Malaysia, 11.9 percent in the Phillipines, and 3.2

percent in Thailand. 1/ There is, however, little evidence on the effect of nonwage labor costs on the labor market in developing countries (see Riveros, 1989).

Unemployment benefit schemes exist in only a small number of developing countries, most notably Barbados, Brazil, Chile, Ecuador, Egypt, Ghana, Mauritania, Mauritius and Panama. 2/ Financing of these schemes is usually shared between employers and employees. The relative contribution of employers is often in the form of a flat payroll tax and is usually substantially higher than employees' contribution. Brazil, for instance, has two unemployment benefit schemes--*Fundo de garantia por Tempo de Servico* (established in 1967) and *Fundo de Amparo ao Trabalhador* (set up in 1986). The first one is financed by a payroll tax, and the second by a tax on gross revenues of industrial and commercial enterprises. As noted by Hamermesh (1992), although net replacement rates are about the same between industrial and developing countries, there are several important differences between these schemes. In particular, the potential duration of benefits is generally shorter in programs operated in developing countries, waiting periods are more likely, and government workers are rarely covered.

d. Indexation practices

Indexation clauses normally aim at allowing for adjustment of wages for inflation and productivity changes. The manner in which indexation operates is important for the transmission of exogenous and policy shocks to output, inflation and unemployment. The traditional view of indexation suggests that it helps to insulate output and employment from monetary (demand) shocks, although not from real

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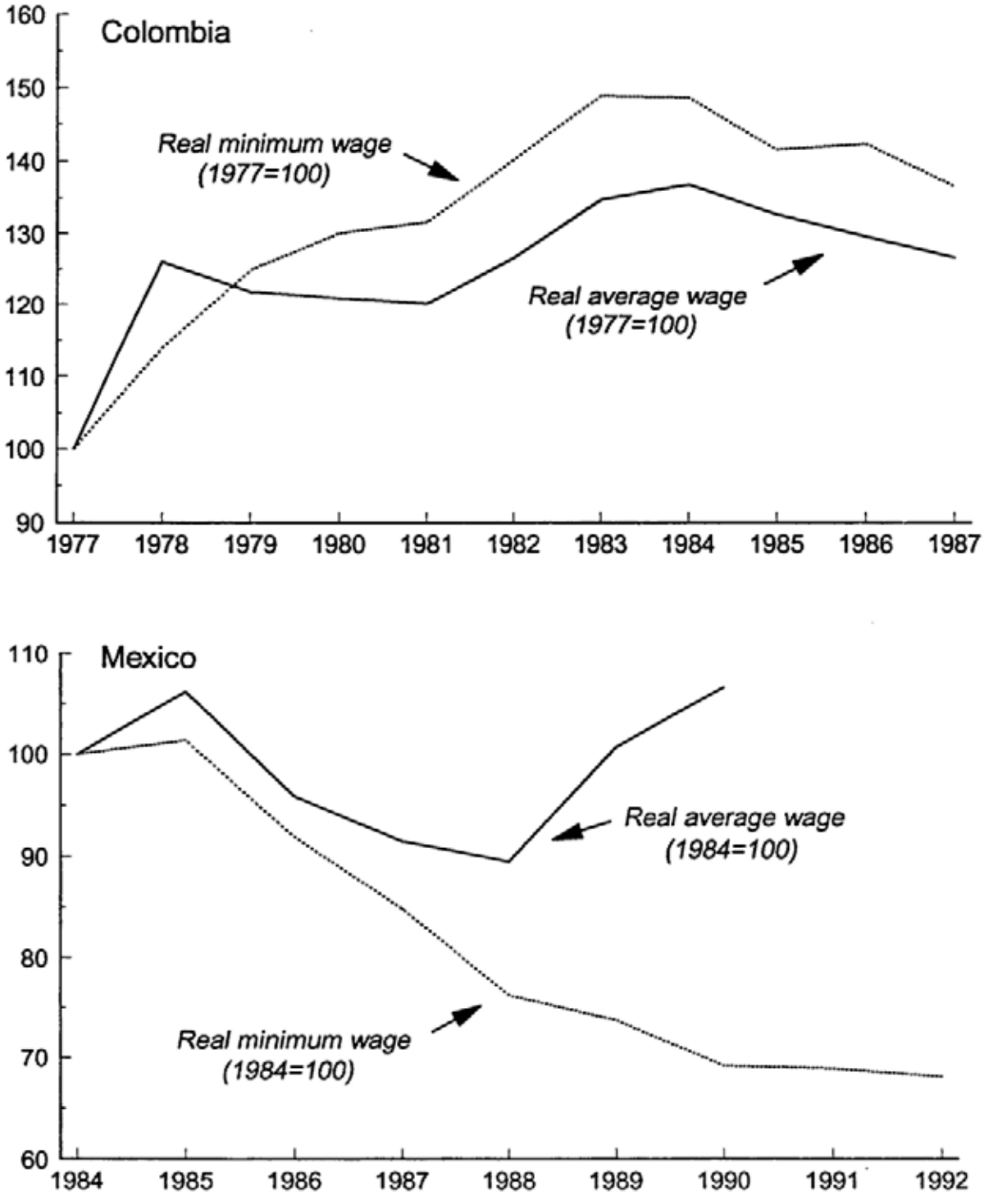
1/ According to recent data produced by the Bureau of Labor Statistics ("International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing," Report 844, April 1993), the evidence on nonwage labor costs for major industrial countries suggests that there has been a continuous increase during the 1970s and 1980s. Between 1980 and 1992, for instance, nonwage labor costs as a percent of hourly compensation costs for production workers in manufacturing rose from 19.1 to 22.6 percent in the United States, 10.6 to 15 percent in Canada, 11.4 to 13.1 percent in Japan, 27.3 to 28.5 percent in France, 21 to 22.8 percent in Germany, 29.3 to 30.6 percent in Italy. They fell only in the United Kingdom, from 18 percent to 16.5 percent.

2/ See Hamermesh (1992). The absence of an unemployment benefit scheme is often viewed as a factor explaining the existence of generous severance pay upon dismissal; see Cox Edwards (1993).

Figure 5

Colombia and Mexico: Minimum and Average Wages



Source: Bell (1994).

(supply) shocks. 1/ A high degree of real wage rigidity would therefore insulate the real sector from aggregate demand shocks. However, a high degree of wage indexing at the sectoral level may also distort the signaling effect of policy-induced changes in relative prices--such as a nominal devaluation--and may hamper the reallocation of resources. Wage contracts indexed on past inflation have been blamed by a variety of authors for creating sticky inflationary expectations and causing inflation persistence, as observed in many Latin American countries in the past two or three decades, 2/ and (by reducing the welfare losses caused by price instability) for weakening the will of governments to fight inflation (Simonsen, 1983). 3/ However, as discussed in the next section, forward-looking wage contracts may speed up disinflation instead of hampering it. 4/

In practice, indexation procedures differ among countries and over time in three main respects: the interval between wage adjustments, the degree of indexation to past or future inflation, and the nature of adjustments for productivity changes. In some countries, the law permits productivity adjustments to be negotiated freely between workers and employers; in others, adjustments are specified by the government. In Brazil, for instance, the frequency of wage adjustments has tended to increase with the rate of inflation; the frequency itself has been viewed as one of the structural elements in

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1/ Carmichael et al. (1985) provide a detailed discussion of wage indexation rules in an open-economy context; see also Van Gompel (1994). Most of the analytical literature focuses on the role of ex ante indexation. In practice, wage indexation is generally ex post, with current wages adjusting to past changes in prices. Fischer (1988) examines the role of ex post wage indexation in the conduct of disinflation programs; see also Section III below.

2/ See for instance the theory of "inertial inflation" developed by New Structuralist economists (Agénor and Montiel, 1994, chapter 9). See Barbosa and McNelis (1989) for evidence on the effects of indexation on wage inertia in Brazil.

3/ The recent literature on time inconsistency has also emphasized that "weak" policymakers (that is, policymakers who attach a relatively low weight to inflation as opposed to output) are more likely to choose wage indexation (see, notably, Crosby, 1995). A general problem with this literature, however, is the assumption that the decision to impose or not indexation is taken solely by the policymaker, in a discretionary fashion. The empirical validity of this assumption appears questionable.

4/ We will also explore below how alternative forms of wage contracts affect the relationship between inflation and real wages, and more generally the effectiveness of macroeconomic management.

the inflationary process. 1/ In some cases, the degree of indexation to inflation is a function of the wage level, with overindexation at certain wage levels and underindexation at others. 2/ Several countries in recent years have either enacted legislation aimed at curbing wage indexation, or at changing the mechanisms through which wages are indexed. For instance, Argentina's Convertibility Law of March 1991 (which entailed fixing the parity of the peso to the U.S. dollar) prohibited all types of indexation, including wage and pension indexation. This measure helped reduce inflation both directly and indirectly, by lowering pressure on public finances.

e. Bargaining structures and trade unions

Wage bargaining mechanisms vary considerably across countries in the developing world. In some countries, collective bargaining is fairly centralized and involves substantial government intervention at both the sectoral and national levels. Such intervention has thus a direct effect on the structure of wages in the formal sector. In Uruguay for instance, where wage bargaining applies mostly to manufacturing, wages are the result of negotiations between labor, employers, and (until 1992) the government. 3/ Bargaining mechanims are set up at the industry level and involve as an essential element the wage councils (*Consejos de salarios*, created in 1943 and re-established with the return to democracy in March 1985), through which representatives from firms, trade unions and (until 1992) the government set minimum wages by sector and labor category. Since

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1/ See Devereux (1994), Dornbusch et al. (1990), Simonsen (1983), and Parkin (1991). More generally, in chronic-inflation countries, inflationary shocks tend to increase the frequency of adjustment in nominal wages, as workers attempt to prevent an erosion in their real wages--thus leading to a shortening of wage contracts and/or periods over which adjustments to past inflation are specified.

2/ This was a feature of the Brazilian system prior to the major deindexation effort launched in 1994. It should be noted that this did not result from official indexation policy. Although the official indxation policy was modified several times prior to 1994, its main purpose was to guarantee that the minimum wage and a certain proportion of wages up to a multiple (that is, two or three) of the minimum wage were partially or fully adjusted for past inflation every few months (or even contemporaneously). In this context, at times the degree of indexation was less than the change in prices (underindexation). Adjustments to the proportion of wages greater than the multiple of the minimum wage, which in several instances resulted in indexation of wages above inflation, were the result of free negotiations between employers and employees.

3/ Since 1992, government intervention in the wage bargaining process for private sector wages stopped in all sectors in Uruguay except in the banking, construction, and health sectors, where the government has a significant presence as an employer.

1990, wage levels are adjusted when inflation on a cumulative basis exceeds a preset threshold. 1/ In Singapore, the government was directly involved in wage setting in the 1970s--as a result of a strategy aimed at maintaining low real wage growth--but since the early 1980s the country has returned to a system in which the government keeps out of labor-management bargaining, allowing workers and employers to negotiate autonomously. 2/ In Sri Lanka, wage bargaining in the formal sector is a fairly elaborate process, involving two different institutional arrangements (Rama, 1994*a*). The first arrangement involve tripartite Wage Boards, whose role is to set nation-wide minimum wages for each skill level in all sectors of the economy. The second involves direct collective bargaining agreements between firms and unions, which typically lead to wages above the levels set by the relevant Wage Board. In Korea, the government has attempted since 1990 to influence directly collective bargaining outcomes (Fields, 1994).

Trade unions play an essential role in collective bargaining mechanisms in many developing nations. The degree of unionization varies considerably across countries, and may reach up to one half of the labor force. The most recent evidence gathered by Rama (1995) on Latin America and the Carribean indicates that union membership in proportion of the labor force is 4 percent in Paraguay, 11 percent in Colombia, 15 percent in Ecuador, a quarter in Jamaica, and a third in Argentina and Venezuela. In Mexico, union affiliation rose from 10.7 percent of the total labor force in 1950 to 18.9 percent by 1970, with a 36.8 percent rate of affiliation in manufacturing industry, 93.8 percent in extractive industries and 84.5 percent in transport and communications (Nelson, 1994). Nowadays, union membership in Mexico is estimated at about 30 percent for the economy as a whole (Rama, 1995). Within manufacturing, however, it is significantly higher (Revenga, 1994). In Uruguay, the membership of trade unions (which were suspended under the military regime and allowed to operate again after the return to democracy in 1985) reached an average of 58 percent of the work force in the late 1980s, but only 47 percent for wage and salaried workers in the private sector (Rama, 1994*b*). The

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1/ Rama (1994*b*) describes the functioning of wage councils in Uruguay. The coverage of these councils varies considerably across sectors, from less than one hundred to several thousand workers.

2/ See Chadha (1991) and Fields (1994). While labor productivity grew at an average rate of 4.4 percent a year between 1973 and 1979, real product wages in manufacturing increased by only 2.3 percent a year (Chadha, 1991, p. 60). The low-wage, export-led growth strategy pursued during 1966-79 tranformed Singapore from a labor-surplus economy to a labor-constrained one (the unemployment rate dropped from 6 percent to 3.4 percent between 1970 and 1979), leading the authorities to implement various reforms of the labor market. Chadha (1991) provides a useful account of the factors underlying these policy changes in Singapore.

unionization rate exceeded 70 percent in public enterprises. 1/ Most recent estimates indicate a significant drop in the unionization rate since the early 1990s (Rama, 1995).

Except for a few countries, union membership is often much lower outside Latin America. In Egypt, 25 percent of the workforce is unionized, primarily in the public sector (Hollister and Goldstein, 1994, p. 67). 6 percent of the labor force is unionized in Jordan and 11 percent in Tunisia--with the bulk of union membership again in the public sector (Said, 1994). In Malaysia, union activities are prohibited in many production sectors, such as electronics. In Sri Lanka, where roughly a third of the labor force was unionized in the early 1980s, both the number of trade unions and the number of union members have declined substantially in recent years (Rama, 1994*a*). Union density also declined during the 1970s and 1980s in Singapore, and now stands at less than 25 percent of the eligible labor force--with a concentration in manufacturing and construction (Carling, 1995). In Taiwan, the degree of unionization is also low (Fields, 1994). Until 1987, trade unions in Korea were very weak; only about 15 percent of the workers were unionized (Fields, 1994). The trade union movement expanded somewhat afterwards. But only 17.4 percent of all workers were covered by collective bargaining agreements in the early 1990s. 2/ A low degree of unionization is often viewed as an indication that trade unions may be more relevant in affecting working conditions and enforcing labor regulations than in influencing wage negotiations, but this is not always the case (see below).

4. Private and public sector wages

Evidence on the behavior of urban, private sector wages shows marked differences across regions in the developing world. In many countries of Africa, real wages either stagnated or fell substantially during the 1980s. In Asia, sustained economic growth has often been associated with rising real wages, whereas in Latin America real wage behavior has shown considerable differences across countries. 3/ In general, however, assessing the overall behavior of private sector

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1/ In Uruguay, unions are organized by production sectors, rather than by labor categories. Rama (1994*b*) suggests that union membership rates are higher in sectors in which barriers to competition (resulting from monopoly power or foreign trade protection) are high.

2/ Mazumdar (1993) documents the low degree of institutional wage setting in the formal sector in Malaysia.

3/ These differences reflected the differences in the pattern of inflation and the degree of indexation of nominal wages to prices. See Agénor and Montiel (1994, chapter 8) for evidence on real wage movements in Latin America in the past two decades, and the World Bank (1995) for the link between long-term growth and real wages.

earnings is hampered by the lack of data on wages in the informal sector. The available evidence for Latin America for instance suggests that although real wages in the modern sector grew in several countries during the 1980s (associated with a sharp reduction in inflation), the real income of those working in the informal sector fell, particularly among the self-employed. Understanding the determinants of the formal-informal wage ratio is thus a critical step in explaining the functioning of the labor market in developing countries. We will examine in the next section the mechanisms through which private sector wages are formed, and some of the available evidence pertaining to wage rigidity.

A number of recent studies have provided evidence on the evolution of public sector wages during the 1970s and 1980s. Kraay and Van Rijckeghem (1995) have examined data for a group of 27 developing countries over the past two decades. Their results indicate that central government wages represent about 4.8 times per capita income and almost 5.6 for Sub-Saharan Africa. Average wages in central government over the past two decades have provided a premium of about 20 percent relative to civil servants at the local government level, and about 10 percent relative to employees in public enterprises and the private sector. 1/

Table 1, which is adapted from Hewitt and Van Rijckeghem (1995), presents data on central government wages based on a group of 99 countries over the period 1980-90. Wage expenditure of the central government in developing countries averaged about 7.5 percent of GDP (9.5 percent in the Middle East and North Africa, and 6.5 percent in Western Hemisphere countries), as opposed to 5.5 percent for industrial countries. 2/ As a share of central government expenditures, wages averaged 27 percent for developing countries (28 percent for Sub-Saharan Africa and 30 percent for Western Hemisphere countries), and 15 percent for industrial countries. The econometric estimates obtained by Hewitt and Van Rijckeghem (1995) suggest that these differences are related to the higher degree of decentralization in government spending in industrial countries. For the few countries for which data were available, they showed that general government wage expenditures amounted to 6.8 percent of GDP on average during the 1980s for developing countries and 11 percent for industrial

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1/ These data should be interpreted with care, because they are not adjusted for skills and other worker characteristics or for non-wage benefits.

2/ The estimates used by Hewitt and van Rijckeghem (1995) are derived from the Fund's *Government Finance Statistics* and include all salaries and other cash payments (such as bonuses) to civil servants and military personnel, in return for services rendered contained in current expenditures. As noted by the authors, however, these data may underestimate total wage expenditures by central governments. Some of the expenditures included in the capital budget in many countries, for instance, consist of wage payments.

Table 1
Central Government Wages, 1980-90
(unweighted averages)

	1980-85	1985-90	1980-90
	(in percent of GDP)		
Total	7.3	7.1	7.2
Industrial countries	5.7	5.4	5.6
Developing countries	7.8	7.7	7.7
Far East and Central Asia	6.2	6.9	6.5
Middle East and North Africa	8.9	10.2	9.5
Western Hemisphere	6.8	6.1	6.5
Other 1/	6.7	7.0	6.8
Small low-income countries	7.4	6.7	7.1
	(in percent of total central government expenditure)		
Total	24.3	24.1	24.2
Industrial countries	15.5	15.1	15.3
Developing countries	27.0	26.8	26.9
Far East and Central Asia	22.1	23.6	22.8
Middle East and North Africa	22.8	28.1	25.2
Western Hemisphere	30.2	29.6	30.0
Other 1/	20.0	20.7	20.3
Small low-income countries	27.8	23.7	25.8

Source: Hewitt and Van Rijckeghem (1995, pp. 4 and 6).
1/ Transition economies in Europe.

countries. In percent of general government expenditure, wages and salaries amounted to 21.6 percent for developing countries and 22.6 percent for industrial countries. Industrial countries seem therefore to spend more on general government wage expenditures, although they spend less on central government wages.

A well-documented feature of the labor market in many developing countries during the late 1970s and early 1980s is the drop in real public sector salaries, and the relative stability of public employment. This reflects the fact that public sector expenditure cuts (which have often formed part of stabilization and adjustment programs) have tended to rely on pay as opposed to personnel reductions in many of these countries. For the 15 largest Latin American countries (accounting for 95 percent of the region's GDP), unweighted data show that between 1979 and 1988 public sector wages and salaries paid by the central government fell by about 0.4 percent of GDP (Hicks, 1992). But it is in Africa that the fall in public sector wages was the most dramatic. Lindauer et al. (1998) have estimated that real wages for African government workers fell from the mid-1970s through 1983 at a rate that often exceeded declines in per capita income. 1/ Evidence of a significant erosion of public sector pay also exists for other countries, such as Egypt and Jordan (Hollister and Goldstein, 1994, p. 64). 2/ Such cuts have often had an adverse effect on morale and productivity, and have encouraged moonlighting (Stevenson, 1992). Compression of wage differentials in the public sector have also led to a shortage of skilled personnel in high-level positions, as well as to reduced incentives for employees in low-level positions to enhance their skills.

More recent evidence on the behavior of real wages in the public sector in Africa suggests that the dramatic fall that occured in the early 1980s was subsequently reversed. Specifically, the data displayed in Table 2 suggest that although real wages in Sub-Saharan Africa fell between 1984-86 as compared to 1980-83, they increased sharply during 1987-89--with the exception of nonoil exporting and CFA countries. In CFA countries, there was in fact no reduction in real wages during 1984-86, and during 1987-89 real wages remained at their

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1/ Colclough (1991) has defended the view that the fall in real wages during the late 1970s and early 1980s in many African countries was not the result of any commitment to wage restraint, but rather the consequence of a deliberate shift from a strategy of overvalued exchange rates (aimed at raising the real wage in the modern, formal sector) to a strategy aimed at improving competitiveness.

2/ Said (1994) shows that governments in several Arab countries attempted to protect employment in the public sector not only by cutting real wages but also by cutting spending on non-wage items (such as capital outlays), and compressing the wage structure. Cuts in capital outlays had adverse effect on growth, while the compression of the wage structure raised significantly the public-private sector wage differential for skilled workers.

level of 1980-83. In proportion of government expenditure (net of interest payments), public sector wages and salaries dropped slighlty between 1980-83 and 1984-86, but then increased significantly (to 36.7 percent) in CFA countries--thus "crowding out" other types of spending, particularly other recurrent expenditures (such as spending on materials or operations and maintenance). By contrast, in non-CFA countries, the share of wages and salaries fell continuously during the 1980s. The evidence presented in the table is consistent with the results obtained by Nashashibi and Bazzoni (1994), whose data indicate that public sector wage expenditures in fixed-exchange rate Sub-Saharan countries fell slighty in the first part of the 1980s (from 7.8 percent of GDP in 1980-81 to 7.6 percent in 1985-86) but increased thereafter (to 8.7 percent in 1990-91). By contrast, in variable-rate countries, wages fell from 6.9 percent of GDP in 1980-81 to 6.1 percent in 1985-86 and 5.8 percent in 1990-91. 1/

Government pay and employment policies affect private labor markets through a variety of channels. In many countries, public sector wages and salaries in administration are low in comparison with private sector salaries--which makes it difficult to attract and retain qualified workers. 2/ In the first part of the 1980s, public sector workers in Latin America appear to have been somewhat less well paid than their private sector conterparts (López and Riveros, 1989). 3/ Public-private wage differentials appear to be much higher in Asia and Africa. Van der Gaag and Vijberberg (1988), for instance, estimate that public sector wages were much below private wages in

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1/ In principle, the increase in the wage bill documented in Table 2 and in Nashashibi and Bazzoni (1994) could be decomposed into an employment effect (a change in employment), a salary effect (changes in the salary paid to each grade level), a structural effect (changes in the distribution of employees among grade levels, as a result of promotion for instance), and residual cross-effects. In practice, however, structural changes appear to be relatively unimportant, as opposed to employment and salary effects (see Stevenson, 1992).

2/ Low public sector wages and salaries are often a budgetary consequence of "overemployment" in government--a feature of the labor market that is captured in the framework presented below.

3/ Data on public-private pay differentials are difficult to interpret, for a variety of reasons (see Stevenson, (1992). In addition to base pay, compensation packages often include bonuses and nonwage compensation (such as subsidized housing, insurance, and other benefits), which are normally not captures by the wage data. Because of the difficulties involved in controling for differences in education and skill composition, most studies do not weigh wages by skill categories--making comparisons of average wages difficult. There are also important differences between the compensation packages of government employees and those of workers in state enterprises or local government.

Côte d'Ivoire in the mid-1980s. In some other countries, however, public sector wages have been above those in the private sector. 1/ In Sri Lanka, wages in the public sector are substantially higher than in the private sector (Dickens and Lang, 1995). The data compiled by Kraay and Van Rijckeghem (1995) for a large sample of developing countries suggest that the premium of central government wages over private sector wages is about 9 percent, with sharp differences across countries. The ratio of central government wages to private wages is 1.22 in India and 1.38 in Botswana, compared to 0.6 in Ghana. Wage scales in the parastatal sector only (essentially, financial and nonfinancial public enterprises) may be as much as 50 percent higher than in the private sector (Buffie, 1994). 2/ There also appears to be little correlation between the rates of growth of real wages in the public and private sectors. As illustrated in Figure 6, since the early 1980s the differential between public and private sector wages (in the formal sector) have either narrowed, as for instance in Kenya, or has continued to increase, as in Egypt. 3/

Public sector employment may have a limited effect on market wages when labor is hired at wages below market rates (possibly in exchange for job security). The econometric results reports by Rama (1994*a*) for Sri Lanka, for instance, did not provide much evidence of a "wage leadership effect" by the public sector. Wage increases in both the regulated manufacturing sector and in non-regulated activities did not appear to be significantly correlated with wage movements in the public sector.

1/ Relatively high public sector wages can be justified in the presence of adverse selection and moral hazard problems. They may help attract more qualified or more productive workers, thereby mitigating some of the potentially adverse effects associated with public sector employment (such as the corruption of government officials) noted earlier.

2/ In a recent study of public sector employment in Haiti, Terrell (1993) has shown that the large observed public-private sector wage differentials (once corrected for differences in human capital characteristics) reflect the existence of a rent earned by public sector workers. The rent appears to be higher in the state-owned enterprises than in public administration.

3/ In Egypt, not only did real wages during the 1980s fall more in the public sector than in the private sector, within the public sector they fell faster for government workers than for public enterprise workers (Hollister and Goldstein, 1994, p. 63).

Table 2
Sub-Saharan Africa: Public Sector Wages

Country	Real Wage Index (1983=100)				Wages and Salaries 1/			
	77-79	80-83	84-86	87-89	77-79	80-83	84-86	87-89
Benin	---	---	---	---	30.7	32.2	34.7	42.8
Botswana	86.5	100.0	127.0	176.7	23.5	25.7	22.9	19.7
Burkina Faso	---	100.0	102.4	131.2	---	51.2	51.4	51.6
Burundi	---	---	---	---	---	22.4	22.5	20.7
Cameroon	90.2	100.0	141.1	129.3	35.1	26.2	25.1	28.3
Congo	---	100.0	104.8	97.3	---	18.4	22.3	37.4
Côte d'Ivoire	---	100.0	93.0	101.9	---	24.7	30.4	37.4
Ethiopia	98.3	100.0	109.0	122.3	36.8	31.1	33.8	28.3
Gabon	---	100.0	105.5	90.4	---	17.7	16.4	30.5
Gambia	83.2	100.0	79.1	49.1	21.1	25.6	22.3	14.3
Ghana	---	100.0	163.3	261.0	28.0	26.6	29.7	32.5
Kenya	122.8	100.0	102.2	129.0	32.5	27.8	31.7	31.7
Lesotho	108.3	100.0	107.0	111.0	32.6	32.8	33.0	27.8
Liberia	83.4	100.0	73.2	63.9	26.1	36.6	37.4	35.6
Madagascar	131.9	100.0	79.5	79.9	35.9	31.1	32.8	28.1
Malawi	121.6	100.0	99.5	84.5	17.0	16.5	17.9	18.1
Mauritius	165.2	100.0	101.6	148.6	31.4	29.0	31.4	33.1
Niger	96.3	100.0	101.2	130.2	18.1	16.1	19.1	22.0
Nigeria	---	100.0	49.4	39.7	9.3	7.6	9.8	5.8
Rwanda	76.2	100.0	107.3	115.5	30.3	29.4	27.2	24.9
Sierra Leone	162.0	100.0	38.0	17.6	28.9	27.9	27.5	10.0
Swaziland	155.8	100.0	94.1	98.2	34.0	33.8	34.8	37.4
Tanzania	187.7	100.0	74.4	58.3	23.9	20.8	24.2	18.7
Togo	85.3	100.0	96.0	124.8	16.2	28.4	22.6	28.9
Uganda	---	100.0	164.6	72.5	---	11.9	13.9	8.5
Zaire	346.9	100.0	49.2	131.5	40.2	30.1	12.8	19.5
Zambia	114.7	100.0	83.3	77.4	26.7	29.1	26.2	24.0
Zimbabwe	101.4	100.0	87.7	117.6	32.5	28.1	24.6	30.4
Average	---	100.0	96.3	106.1	---	27.8	27.4	26.7
Country groups:								
Oil exporting	---	100.0	100.2	89.2	---	17.5	18.4	25.5
Nonoil exporting	---	100.0	95.7	109.2	---	29.3	28.5	26.2
CFA	---	100.0	101.5	100.6	---	32.7	31.8	36.7
Non-CFA	---	100.0	94.2	102.9	---	26.9	26.4	24.2
Middle income	---	100.0	100.5	111.1	---	23.5	24.2	28.9
Low income	---	100.0	94.3	103.5	---	29.7	28.7	25.7

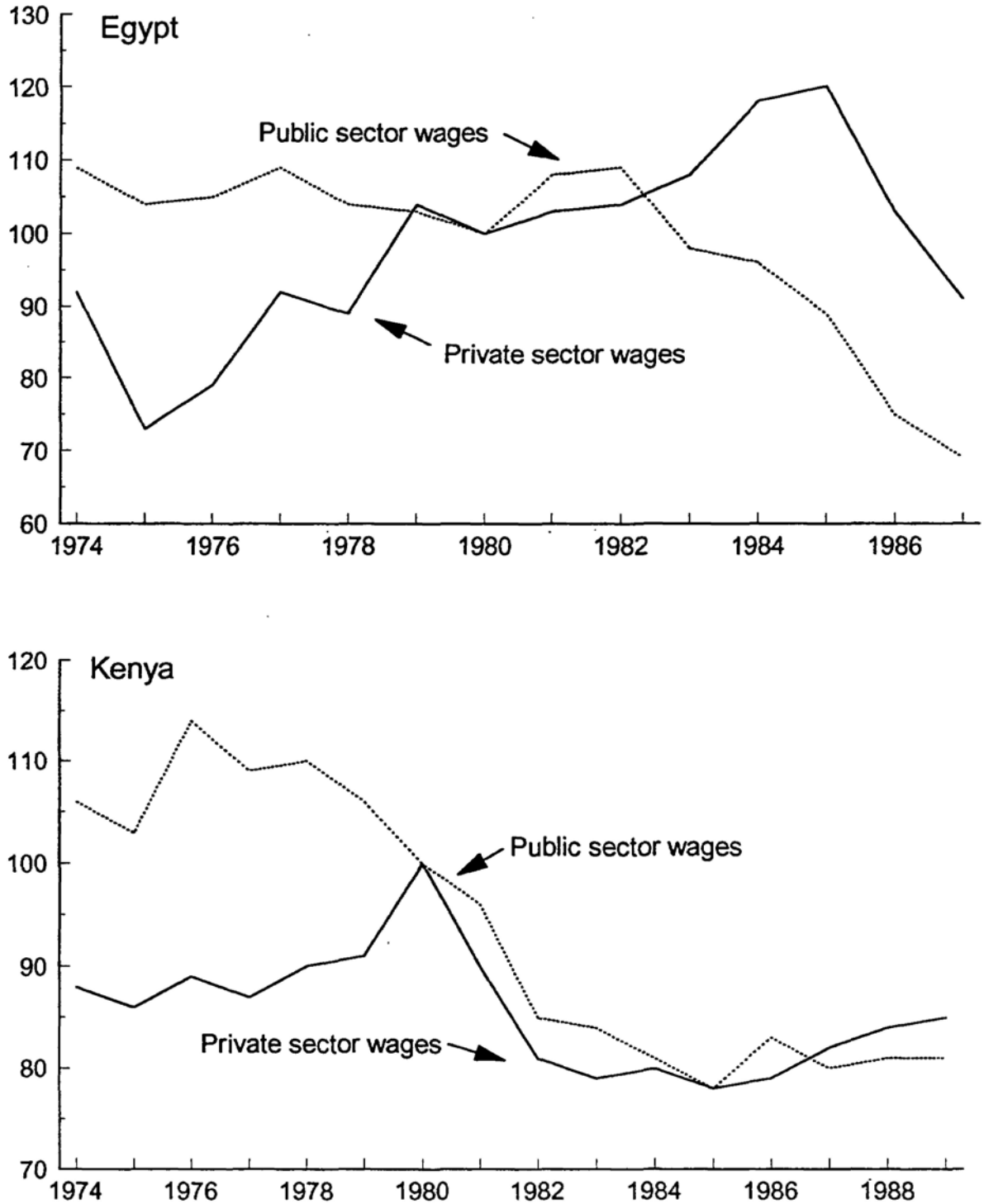
Source: Sahn (1992, p. 681).

1/ In percent of government expenditures net of interest payments.

Figure 6

Egypt and Kenya: Real Wages in Public and Private Sector

(1980 = 100)



Source: Horton et al. (1994, p. 37)

III. Wage Flexibility, Inflation and Stabilization

From a macroeconomic perspective, the degree of wage rigidity is usually viewed as an essential aspect of the functioning of labor markets. A nominal devaluation requires, to ensure a real depreciation and a transfer of resources to the tradable sector, real wage flexibility. 1/ The first part of this section examines the factors affecting real and nominal wage inertia. It is shown that a key feature of the labor market in many developing countries (at least during the 1980s) is the absence of real wage rigidity--despite the existence of a variety of labor market regulations that could potentially inhibit wage adjustment. It is also argued that nominal wage inertia and relative wage rigidity (not only across sectors but also across skill categories) may be more important features of the labor market in developing countries.

The second part examines the relationship between real wages and inflation that may emerge with nominal wage contracts, and reviews the evidence related to some stabilization programs implemented during the 1970s and mid-1980s in Israel and Latin America. The third part presents a general macroeconomic framework that captures many of the key features of the labor market in developing countries. An essential aspect of the model is the relationship between formal and informal sector wages, and labor supply in the different segments of the economy. The model is then used to examine the output, employment, and wage effects of a cut in public sector employment.

1. Nominal and real wage inertia

Factors commonly-viewed as accounting for nominal and real wage inertia in developing countries include minimum wages, indexation laws, employment protection provisions (such as labor tenure laws), restrictions on labor mobility (physical or otherwise), and large and powerful trade unions. Although the relative importance of these factors varies considerably across countries and over time, 2/ an endemic feature has been implicit or explicit wage indexation. In

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1/ See Buffie (1989), Islam (1984) and Hanson (1983), who emphasize the role that real wage resistance plays in determining whether or not a devaluation is contractionary in developing countries. Agénor and Montiel (1994, chapter 7) provide a comprehensive overview of the contractionary devaluation literature.

2/ Labor unions, for instance, have long been viewed as the main culprits in explanations of wage rigidity in Latin America. The recent wave of institutional reforms in some countries--most notably Argentina, Chile and Mexico--has greatly reduced their bargaining power and ability to impose wage settlements on employers.

high-inflation countries in particular, wage indexation is an essential feature of the labor market.

However, despite the existence of various inhibiting factors, real wages in the developing world seem to be far more flexible than generally assumed. Horton et al. (1994), in particular, summarize the findings of a comprehensive World Bank study on labor markets and adjustment in developing countries that provides evidence supporting the existence of a relatively high degree of real wage flexibility in Latin America and Asia. 1/ Evidence of downward real wage flexibility in countries of the Near East is also provided by Hollister and Goldstein (1994). Figures 2 and 7 show the evolution of unemployment and real wages in Chile and Korea, and suggest the existence of a relatively close inverse correlation between these two variables. The evidence discussed by Agénor and Montiel (1994, Chapter 3) on real wages and unemployment for four other countries (Colombia, Mexico, the Philippines, and Thailand) also suggests the existence of a significant degree of real wage flexibility.

With flexible real wages, what explains the emergence and persistence of unemployment? One line of reasoning (as discussed by Horton et al., 1994) is to attribute the persistence of unemployment to aggregate demand effects resulting from declining real wages and output market imperfections. The first type of effect has been emphasized by New Structuralists economists and is known as the Keynes-Kalecki effect. 2/ The second type of effects may occur as a result of imperfect competition in product markets, even if labor markets are competitive and real wages flexible (Layard et al., 1991). Another line of reasoning, as discussed below, is to rely on a combination of "wait" considerations, partial wage flexibility, and relative wage rigidity across skill categories.

Rather than absolute real wage rigidity, the labor market in developing countries is often characterized by nominal wage rigidity and/or relative wage inertia. Nominal wage rigidity results from a variety of factors, including lagged indexation (as discussed earlier), staggered and overlapping wage contracts, and slow adjustment in inflationary expectations. The existence of multi-period labor contracts may be an important source of nominal wage rigidity in some developing nations, particularly in Latin America. For instance, the evidence provided by Reinhart and Reinhart (1991) for Colombia (where the average length of labor contracts in the

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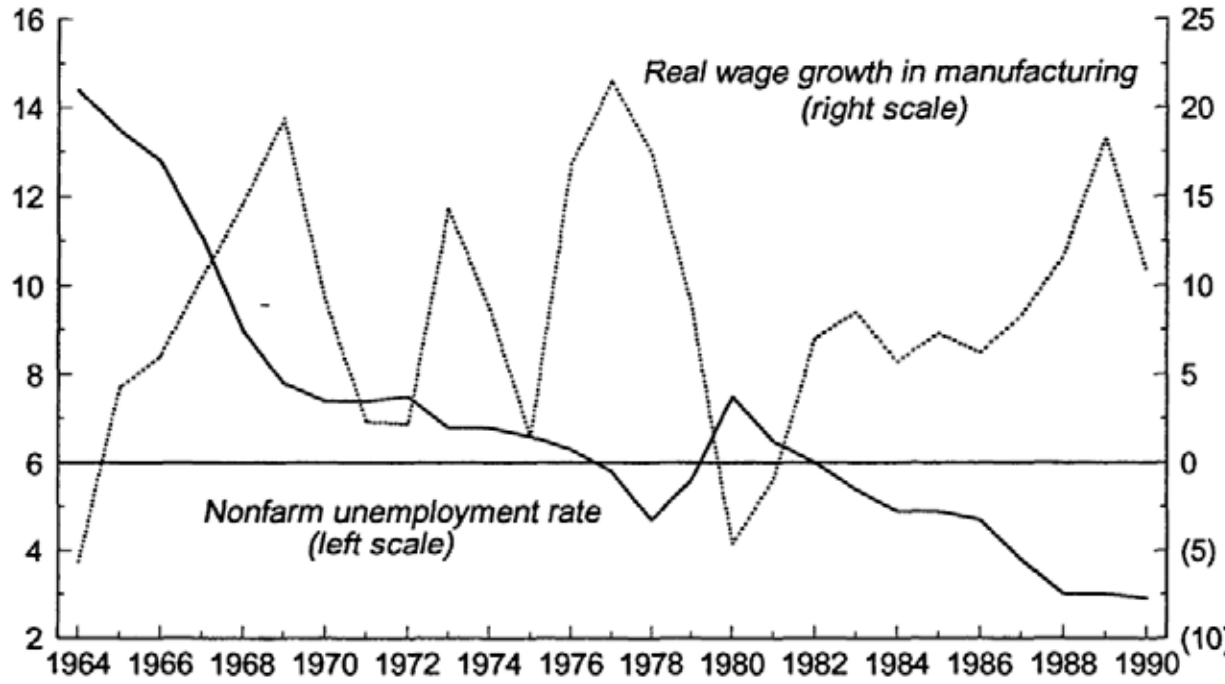
1/ See also Fallon and Riveros (1989).

2/ See Taylor (1991). The Keynes-Kalecki effect relies on the assumption that the propensity to save is significantly lower for wage earners than for profit recipients. To the extent that a fall in real wages in accompanied by a fall in the share of wages in national income, aggregate demand will also fall. Unemployment may therefore persist despite a substantial reduction in real wages.

Figure 7

Korea: Unemployment and Real Wages



Source: Kim (1994, p. 187).

private sector is estimated to be about two years) suggests that there exists considerable inertia in the behavior of nominal wages. Studies by Allen et al. (1994) on Chile and Uruguay, Condon et al. (1990), Corbo (1985), and Le Fort (1988) on Chile, and Kim (1994), Mazumdar (1993), and van Wijnbergen (1982) on Korea also support the view that nominal wages are sticky in the short run. 1/ Most of these studies are based on the estimation of aggregate standard or extended Phillips curve equations, which relate the rate of growth of nominal wages to unemployment or output deviations from trend (a measure of the excess demand for labor), the expected inflation rate, and variables such as the lagged real wage. 2/ In the long run, standard specifications of Phillips curve relationships suggest that there should be no long-run tradeoff between inflation and unemployment--a view that appears to be supported by the data displayed in Figure 8. The coefficient on the unemployment or output gap variable gives an indication of the degree of wage rigidity (Helliwell, 1988). 3/ A problem with most of the existing literature on wage equations in developing countries, however, is that very few studies properly account for the time-series properties of the variables used in estimation, as emphasized in recent developments on cointegration.

Relative wage rigidity (across sectors and/or across skill categories), which is often a manifestation of labor market segmentation, may result from a variety of factors. With heterogeneous production structures across sectors, it may be the result of considerations internal to firms. In the presence of efficiency considerations (related to the existence of a wage-productivitiy link, shirking, or the existence of large turnover costs, as indicated earlier) firms may find it optimal to maintain a positive differential between wages offered to some categories of workers (typically skilled workers, whose level of effort is often difficult to observe), compared to the going wage in alternative opportunities. In the

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1/ Riveros (1990) finds little evidence of nominal wage stickiness in Latin America, but his inference technique is open to question.

2/ An often-used variant of the Phillips curve is the "real wage resistance" or "target real wage" model, which relates changes in nominal wages to deviations between the desired and actual (lagged) real wage. The desired real wage can be related to deviations of output from trend, and deviations between the current unemployment rate and its long-run value, where the latter is assumed constant. See Sapsford and Tzannatos (1993, pp. 378-79).

3/ Levy and Newman (1989) caution against using data on aggregate wage changes to assess the degree of real wage rigidity. Such data implicitly assume that the composition of the work force remains the same over the business cycle. They argue that in the case of Côte d'Ivoire reliance on aggregate data to study the role of real wages in labor market adjustment to adverse macroeconomic shocks would lead to erroneous conclusions.

framework developed by Agénor and Aizenman (1994), firms in the formal sector must pay skilled workers a fixed markup over the going wage in the informal sector, in order to induce the required level of effort. 1/ In the model developed by Agénor and Aizenman (1995*b*), the higher wage earned by skilled workers (relative to the informal sector wage) is also justified by the need to reduce incentives to shirk. In Agénor and Aizenman (1995*a*), the positive relation between formal and informal sector wages may be related to the need to reduce turnover costs. Relative wage rigidity may also be related to the behavior of trade unions: in the macroeconomic framework developed in Agénor (1995*c*), the union's target wage depends on the informal sector wage; as a result, the wage paid to skilled workers is positively correlated with wages in the informal labor market.

2. Real wages in disinflation programs

Various forms of wage policy have been used in stabilization programs implemented in developing countries. Argentina's Austral Plan of June 1985 was preceded by a 22 percent increase in wages and a subsequent freeze. When prices kept rising--although at a much slower pace--the authorities raised nominal wages by 8.5 percent by the end of the year and then adopted quarterly wage adjustments. Israel's stabilization plan of July 1985 granted a 50 percent compensation for that month's inflation, and then froze wages for three months in a trilateral agreement betweem the government, the entrepreneurs' association, and the workers' federation, the Histadrut (Arstein and Sussman, 1990). Subsequent adjustments provided partial compensation for previous inflation of 4 percent or more. At the inception of Bolivia's August 1985 plan, the government granted bonuses and then froze wages. Later, it reduced restrictions on laying off workers, eliminated wage indexation, and set a very low minimum wage. Brazil's Cruzado plan of February 1986 established an initial bonus of 8 percent of wages for all workers. At the same time, the minimum wage was increased by 16 percent. Nominal wages were not frozen, and annual (instead of semi-annual) wage negotiations were restored. Wages were to be automatically adjusted when inflation reached 20 percent. This trigger was activated for the first time in December 1986, when the Cruzado Plan collapsed--in part as a result of excessive increases in public sector wages. As in Israel, Mexico's stabilization program implemented in end 1987-early 1988 also relied on a collective agreement (the Pacto) between labor, employers, and the government. Thus, while in some cases initial wage increases were followed by a unilateral wage freeze in the public sector (eventually followed by further adjustments, such as in Bolivia), in other cases

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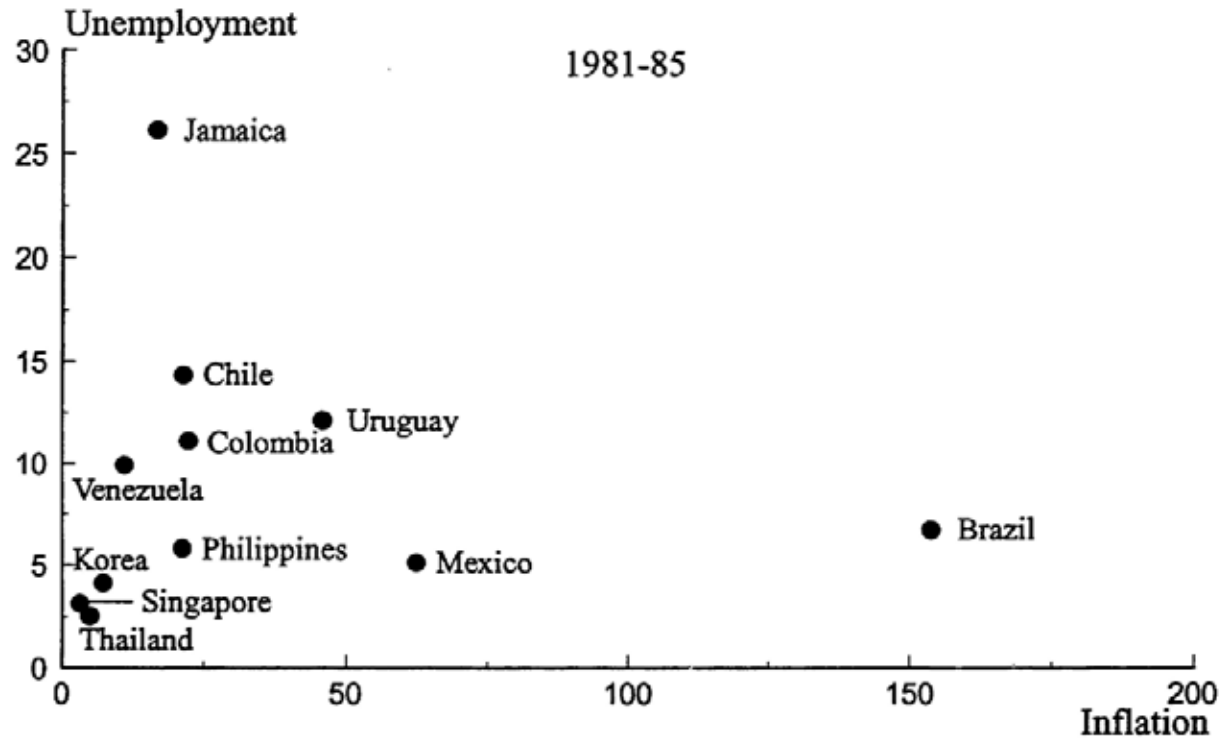
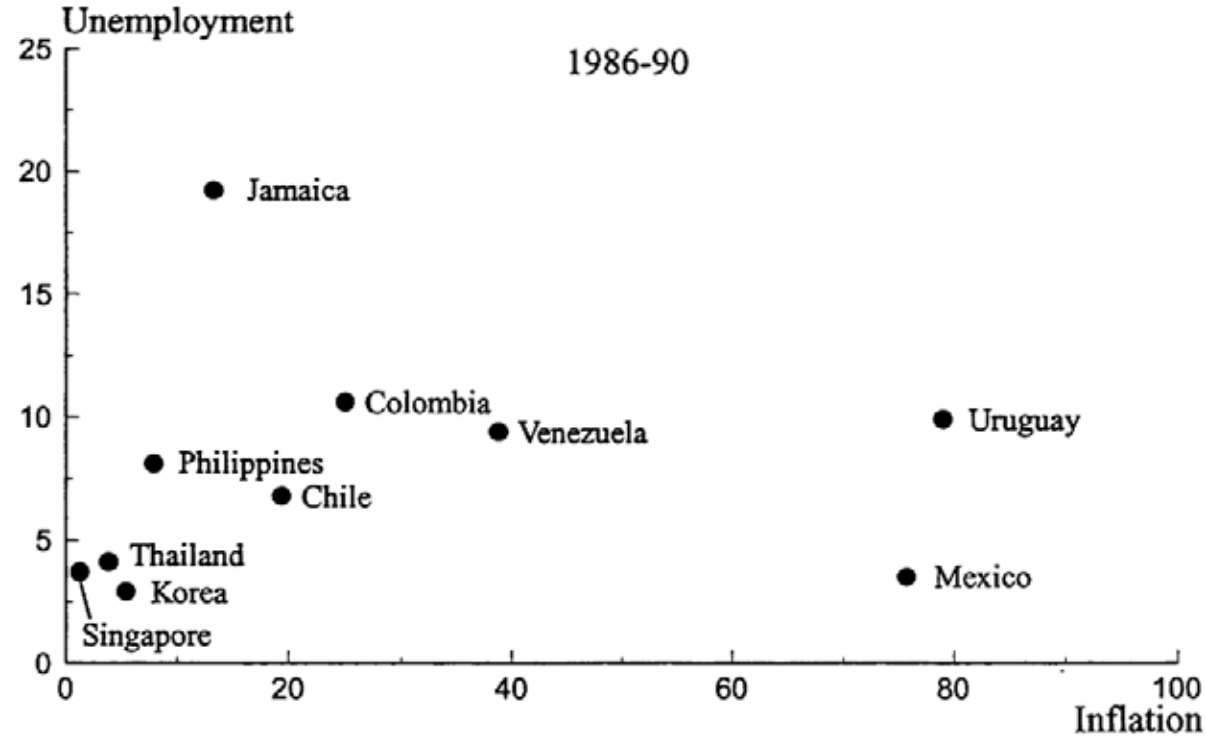
1/ In the model with homogeneous labor developed by Agénor and Santaella (1994), the ratio of wages in the formal sector (identified with the traded goods sector) to wages in the informal sector (identified with the nontradable goods sector) is also constant, as a result of the wage-productivity link.

Figure 8

Inflation and Unemployment in Developing Countries

(Period averages, in percent)





Source: Yearbook of Labor Statistics, International Financial Statistics.

wage fixing and adjustments were based on a more or less implicit social contract between workers and the state (the cases of Argentina and Brazil) or an explicit agreement between workers, entrepreneurs, and the government, as in Israel and Mexico.

The behavior of real wages in disinflation programs in developing countries has received surprisingly little attention. Studies of exchange-rate based programs have tended to focus on explaining the behavior of output on the basis of intertemporal effects associated with consumption behavior, with little emphasis on the supply side effects of stabilization. 1/ However, recent analytical developments have emphasized that the long-term effects of stabilization policy may depend crucially on the nature of wage contracts. A reduction in the rate of nominal devaluation may lead in the long run to a contraction in output of tradables with backward-looking nominal wage contracts, but to an expansion in activity with forward-looking contracts (Agénor, 1994*a*). The short-run dynamics of real wages in an an exchange-rate based stabilization program also depends crucially on the nature of wage contracts. If nominal wage contracts are backward-looking, a reduction in price inflation would lead at first to an increase in the real wage followed by a gradual reduction over time, as contracts begin to reflect the lower path of the inflation rate. However, the initial increase in the real wage may exacerbate the costs associated with stabilization. 2/ Indeed, a critical lesson from the experience of several Latin American countries in the early 1980s (Chile in particular) is that stabilization programs combining a fixed nominal exchange rate with backward-looking wage indexation leads to inflation inertia and results in an accelerating real appreciation of the exchange rate and an unsustainable widening of the current account deficit--often culminating in a balance of payments crisis and an exchange rate collapse.

If wage contracts are forward-looking, an anticipated future reduction in inflation that carries full credibility may lead either to an immediate fall in the real wage (if nominal wages are adjusted immediately to reflect the lower future path of prices) or a temporary increase in the real wage (if contracts cannot be renegotiated instantaneously because of large costs). By contrast, if price and wage setters do not believe that the future reduction in prices will take place--for instance because the announcement of the future policy

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1/ See Agénor and Montiel (1994) and Végh (1992) for a review of a variety of exchange-rate based and money-based stabilization experiments in developing countries. Roldós (1995) presents one of the few studies that have emphasized the role of supply-side factors in exchange-rate based stabilization programs.

2/ The inverse relationship between the inflation rate and the real wage emerges only if the frequency of readjustments remains constant. If this frequency falls as a result of lower inflation, the correlation between prices and real wages may be positive.

shift is not credible, or because agents expect the initial disinflation measures to be reversed in the future--nominal wages will not adjust, and the real wage may show little response. In fact, if future economic conditions are expected to deteriorate the real wage may rise immediately--despite initial corrective measures.

The Appendix presents a simple analytical model with backward- and forward-looking contracts which illustrates the above ideas. The model is based on a price equation relating changes in the inflation rate π_t to excess demand for goods and the rate of depreciation of the real exchange rate on the one hand, and a wage equation which relates nominal wages to past values of prices (under backward-looking contracts) or future values of the price level (under forward-looking contracts) on the other. Simple manipulations lead to a dynamic system in terms of the inflation rate and the level of real wages, ω_t. The steady-state solution is such that the inflation rate and the real wage are constant and excess demand is zero. Regardless of the type of wage contracts, both the inflation rate and the rate of growth of nominal wages are equal to the devaluation rate ϵ^h in the long run.

Figure 9 shows the dynamic behavior of the model under backward- and forward-looking contracts with *II* (respectively *WW*) representing the combinations of the inflation rate and the real wage for which the inflation rate (respectively the real wage) does not change over time. The saddlepath is denoted *SS* and has a positive slope. In both cases, the steady-state solution obtains at point *E*.

Consider now the effect of a disinflation program that takes the form of a permanent, unanticipated reduction in the devaluation rate, from ϵ^h to $\epsilon^s < \epsilon^h$. The dynamics of wages and inflation are shown in Figure 10. In both cases the curve *II* shifts to the left and the inflation rate falls continuously during the adjustment process. With backward-looking contracts, the real wage does not move on impact and begins rising after the policy is implemented, since the reduction in the devaluation rate induces a shift away from domestic goods, which dampens domestic inflation. The real wage increases monotonically towards its higher steady-state level, which is reached at point *E'*. By contrast, with forward-looking contracts, the real wage jumps downward immediately to a point such as *A* on the new saddlepath *S'S'* shown in the lower panel of Figure 10 and continues to fall towards its lower steady-state level, which is also reached at *E'*. Thus, while the adjustment process to a cut in the devaluation rate leads to a gradual increase in real wages with backward-looking contracts, it leads to an initial downward jump followed by a continuous fall in real wages with forward-looking contracts.

What does the evidence suggest regarding the evolution of real wages in the type of exchange-rate based stabilization programs analyzed above? Figures 11 and 12, which relates to the "tablita" experiments of the late 1970s in Latin America and the "heterodox"

Figure 9

Steady-State Equilibrium with Alternative Wage Contracts

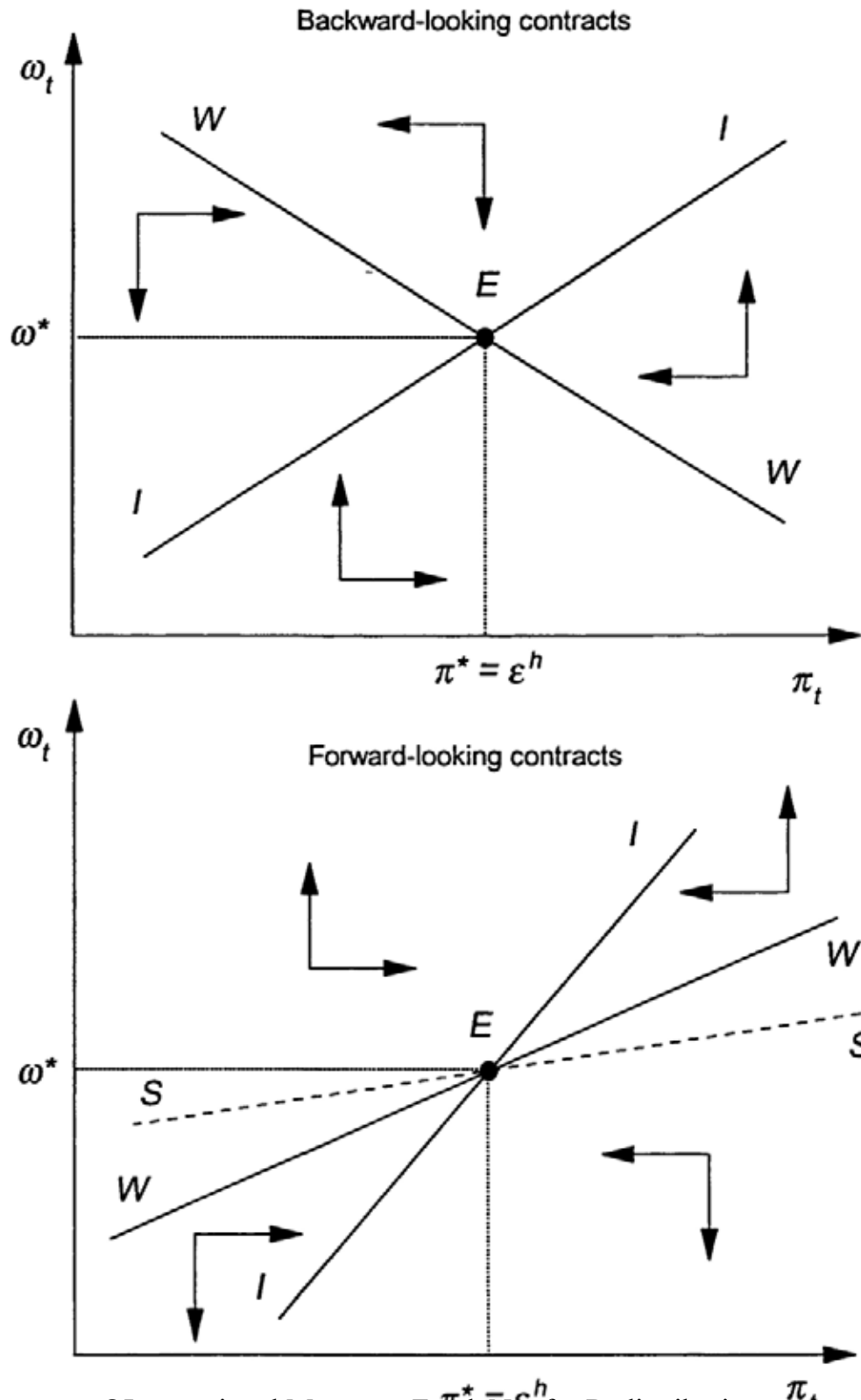
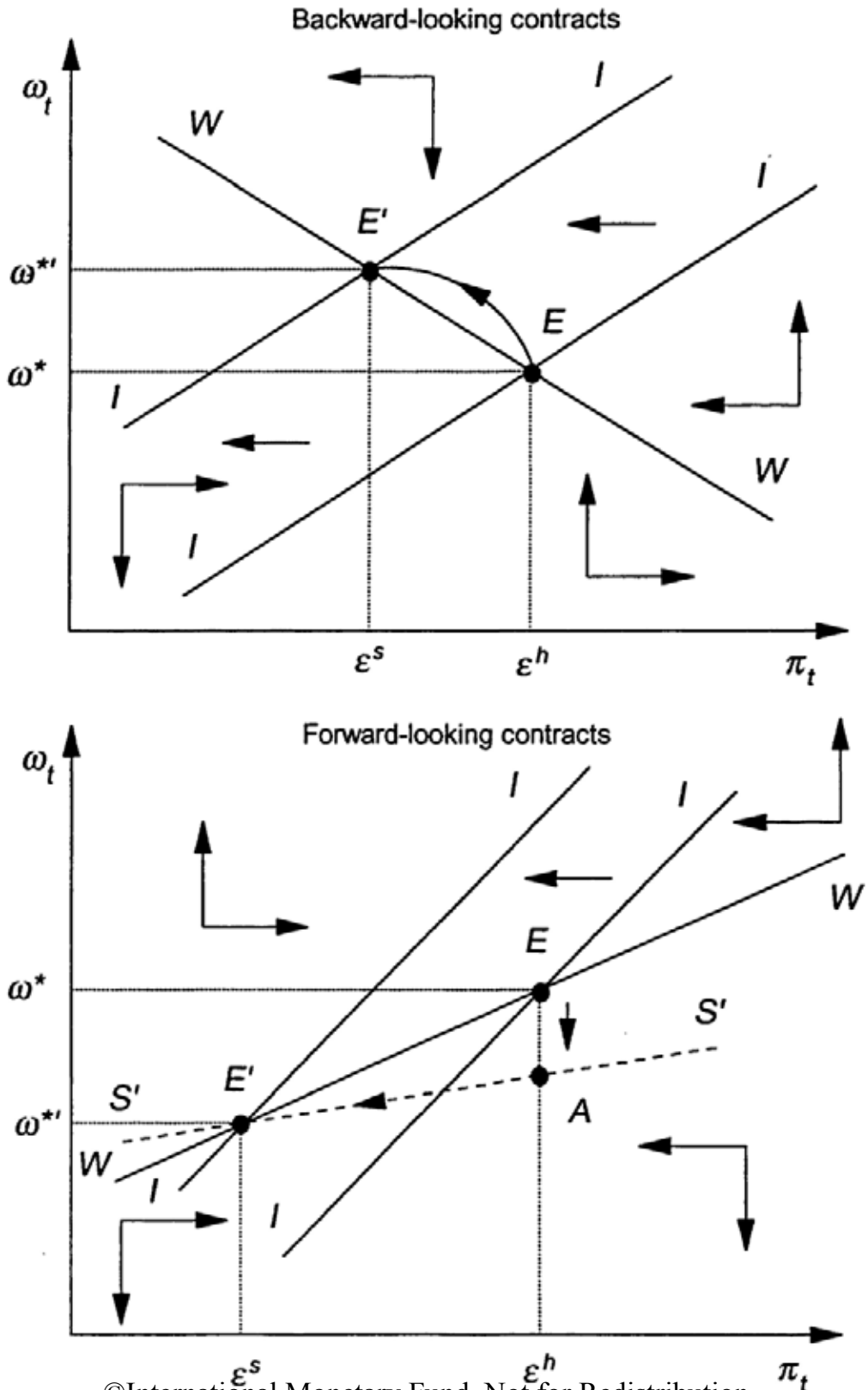


Figure 10

Disinflation and Real Wage Dynamics



experiments of the mid-1980s in Israel and Mexico, provides a mixed picture in that regard. At the inception of the tablita experiments, real wages remained either stable (Uruguay) or rose, whereas they fell in the orthodox experiments. 1/ The extent to which such movements can be viewed as reflecting backward- or forward-looking behavior and/or lack of credibility cannot be assessed without appropriate econometric methods. Unfortunately, despite the importance of this issue for stabilization policy, there have been very few attempts at estimating the degree to which wage formation is backward- or forward-looking in developing countries. 2/

3. Stabilization with segmented labor markets: A formal framework

The early emphasis on the role of real wage resistance in determining the short- and longer-run effects of stabilization and adjustment policies has given ground in recent years to an emphasis on the role of labor market segmentation and the type of rigidities that it creates in determining the response of employment and relative wages to macroeconomic policy in developing countries. Segmentation involves different degrees of wage rigidity across alternative segments of the labor market and labor categories. In an early study on this issue, López and Riveros (1989) have argued that labor market segmentation alters the differential between formal and informal wages during adjustment, and may render a nominal devaluation ineffective in altering the real exchange rate. Suppose that wage indexation prevails in the formal (tradable) sector, and that wages are fully flexible in the informal (nontradable) sector. Following a nominal devaluation, workers in the formal sector will thus be able to maintain their real wages relative to workers in the informal sector. In such condition, the devaluatíon will mainly lead to a widening of the formal-informal wage differential and a smaller real depreciation. 3/ In their review of the labor market in Argentina, Colombia, Chile and Uruguay, López and Riveros (1989) argue that formal sector wages are indeed more responsive to exchange rate changes than informal wages, and that an increase in the price of tradables implies a decline in real informal sector wages. Thus, a devaluation is likely to increase the formal-informal sector wage gap.

1/ A sharp initial fall in real wages also occured in many money-based programs, such as the program implemented in Bolivia in August 1985. See Agénor and Montiel (1994, chapter 8).

2/ Ongoing work by Agénor and Sharma (1995) examines the extent to which the methodology proposed by Moghadam and Wren-Lewis (1994) can be used to examine this issue.

3/ In addition, as noted by López and Riveros (1989), if labor mobility across sectors is low, the shift in relative prices that result will only have a limited effect on the reallocation of resources. The role of intersectoral labor mobility in adjustment is further discussed below.

The more rigid formal sector wages are, the larger the required nominal devaluation to achieve a given rate of depreciation of the real exchange rate.

An important limitation of recent macroeconomic models with segmented labor markets--including the framework developed by López and Riveros (1989)--is the absence of a fully articulated theory of the channels through which wages in the formal and informal sectors interact. While more recent papers have retained the assumption that a high degree of wage flexibility prevails in the informal sector, they have emphasized the role of efficiency considerations and explored in a more detailed manner the role of trade unions in explaining wage formation in the formal sector. The role of trade unions in wage formation in the formal sector is a central feature of the model developed by Agénor (1995*c*). In Agénor and Aizenman (1994, 1995*b*), firms in the formal segment of the labor market set wages above the level consistent with market clearing in order to elicit the required level of productivity from skilled workers and deter shirking--since monitoring on-the-job effort for that category of workers is often difficult. In Agénor and Aizenman (1995*a*), efficiency wages result from the fact that firms in the formal (tradable) face high turnover costs, and the quit rate is a function of relative wages. Indeed, a growing literature supports the existence of efficiency considerations in the modern sector in developing countries. 1/

The framework developed by Agénor (1995*b*) captures many of the economic, institutional and regulatory features of labor markets in developing countries reviewed in Section II, and is convenient for analyzing the wage and employment effects of various stabilization and adjustment policies. Three categories of agents are assumed to operate in the economy: firms, households, and the government. The exchange rate is depreciated at a predetermined rate by the government. The economy consists of two major segments: the formal economy, and the informal sector. In the formal economy two goods are produced: an exportable good, whose output is entirely sold abroad, and a nontraded government service. 2/ Firms in the informal economy produce a nontraded good which is used only for final domestic consumption. The capital stock in each production sector is fixed within the time frame of the analysis. The labor force (which is also constant) is heterogeneous and consists of skilled and unskilled

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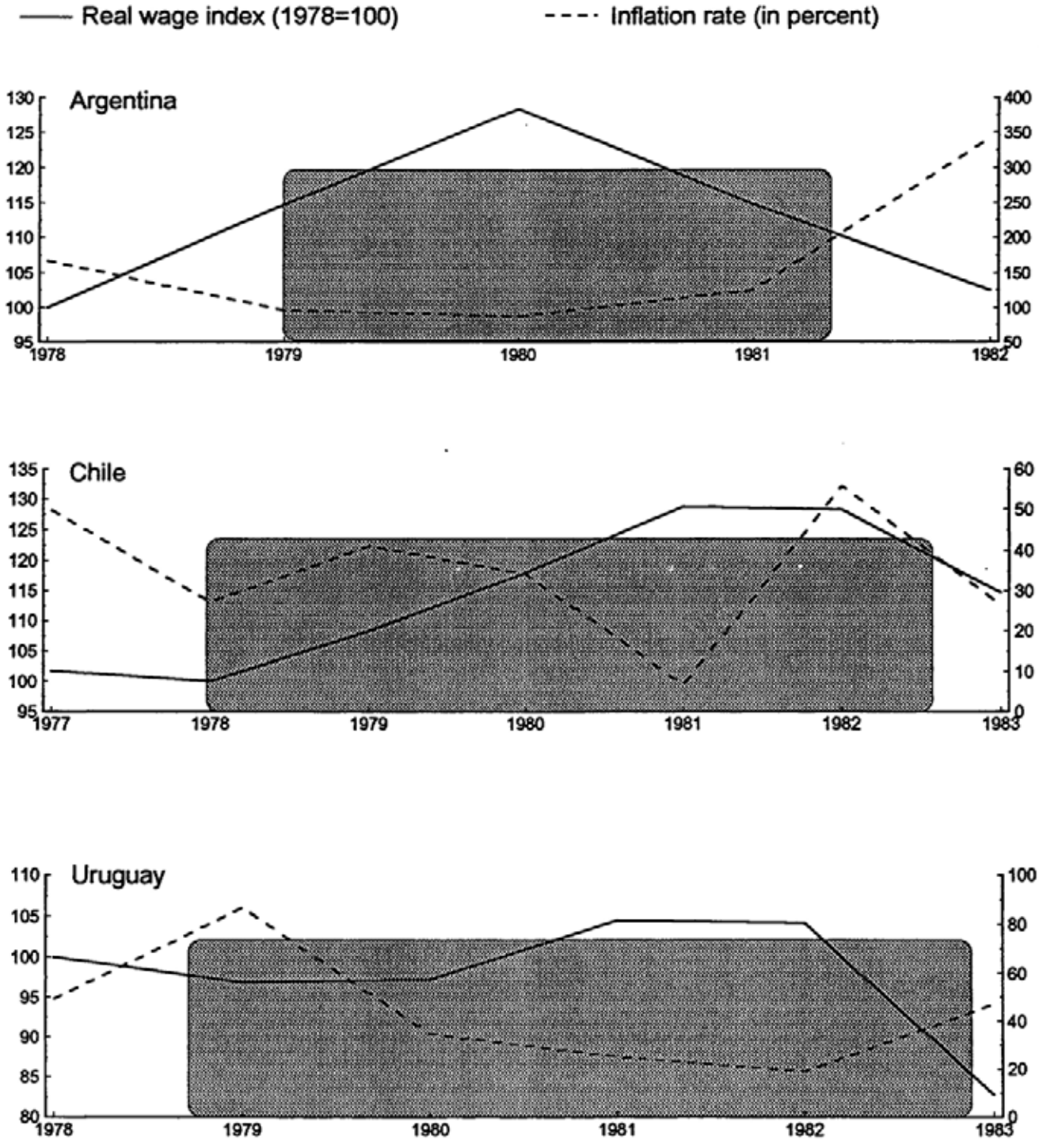
1/ This evidence often takes the form of showing large inter-industry wage differentials for equally-skilled worker. See Gatica et al. (1995) for a recent study focusing on Brazil.

2/ The absence of an import-competing sector in the formal economy can be rationalized along the lines suggested by Agénor and Aizenman (1995*a*), who assume that the efficiency losses induced by government-imposed barriers to foreign trade are so high that goods that were once importables have effectively become nontraded goods.

Figure 11
Inflation and Real Wages in the Tablita Experiments

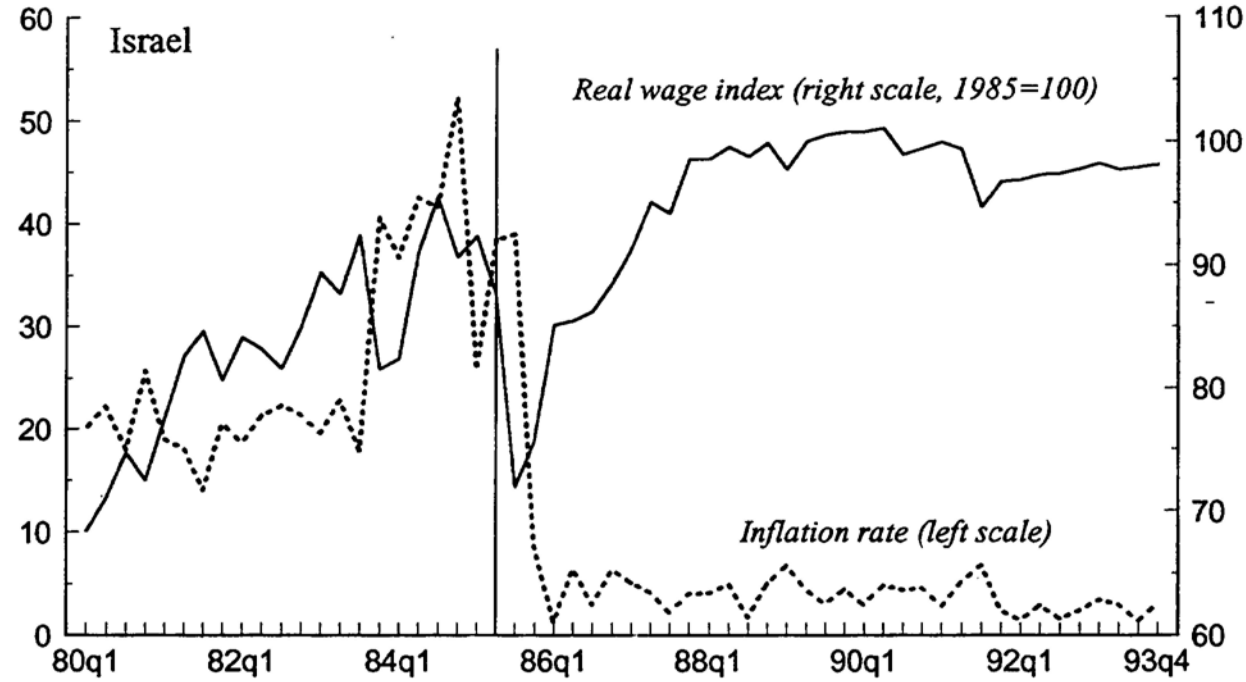


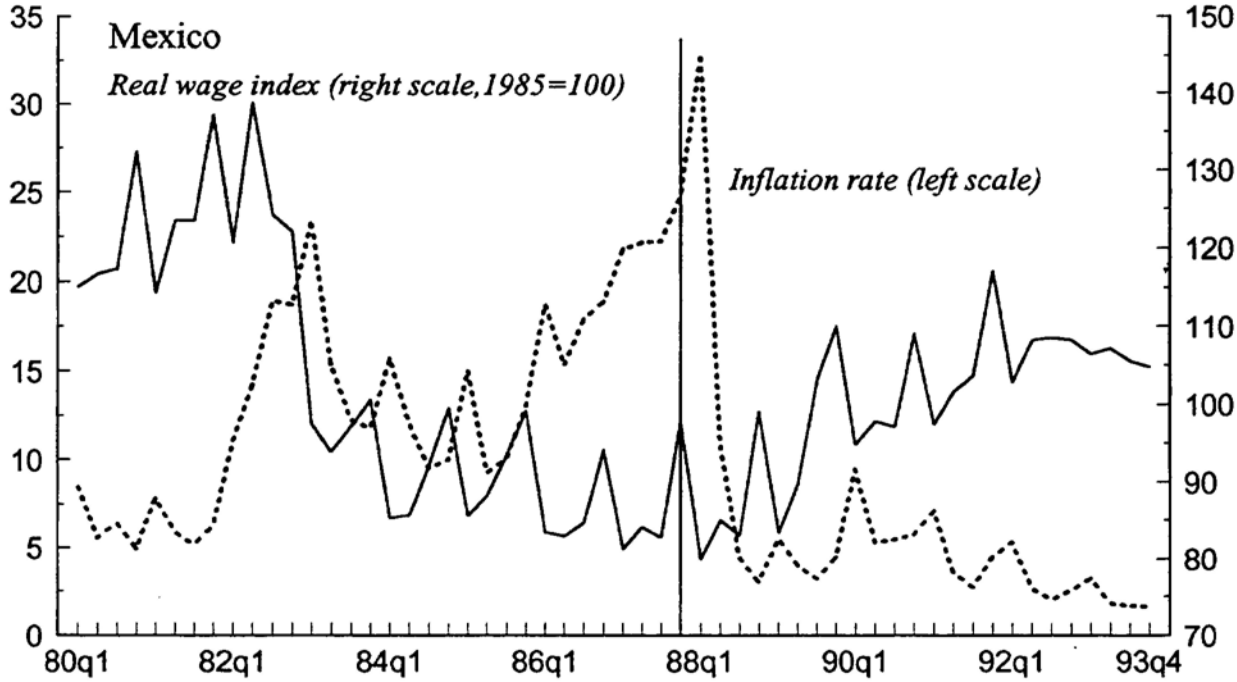
Source: Végh (1992).

Note: Shaded areas indicate periods during which the programs were in place.

Figure 12

Inflation and Real Wages in Heterodox Experiments





Source: International Financial Statistics.

Note: the vertical line indicates the start of the stabilization program.

workers. Production of the nontraded good and government services requires only unskilled labor, whereas government services are used as intermediate inputs, together with both categories of labor, in the export sector.

The labor market is segmented as a result of government regulations and relative wage rigidity. Public sector employment and the real wage (measured in terms of exportables) earned by government employees are exogenously determined. In the export sector, the (product) wage earned by skilled workers is positively related to the informal sector wage (as a result of efficiency considerations, or the existence of a utility-maximizing trade union), while unskilled workers earn the minimum wage fixed by the government. For a given level of wages, firms in that sector determine the level of employment of both categories of labor so as to maximize profits. Mobility of the unskilled labor force between the formal and the informal sectors is imperfect. 1/ Migration flows are determined by expected income opportunities, along the lines of the Harris-Todaro model discussed earlier. Skilled workers who are not able to get a job in the formal sector are not necessarily willing to take employment (as unskilled workers) in the informal economy. Whether or not they do depends on the perceived net cost of working there (related to factors such as demotivation, the efficiency of on-the-job search, loss of skills or social prestige, and the extent to which relatives are capable of providing a "safety net"). In the informal sector, which absorbs all unskilled workers who do not queue up for employment in the formal sector as well as skilled workers who are willing to work as unskilled labor there, wages adjust continuously to equilibrate supply and demand for labor. In both the short- and the long-run, therefore, "quasi-voluntary" unemployment of skilled workers and "wait" unemployment of unskilled workers may emerge. 2/ Prices are also flexible in the informal sector, and adjust to eliminate excess demand for nontraded goods.

1/ The available evidence on the degree of labor mobility across sectors in developing countries is rather scant. In practice, labor mobility depends on a variety of factors, such as employment protection regulations (most notably administrative restrictions on hiring, plant closure and the lay-off of permanent labor, and the generosity of severance payments, as discussed earlier) and other microeconomic considerations, such as proximity and family ties. Fallon and Riveros (1989) take the fact that wage differentials have apparently tended to widen in favor of expanding (tradable) sectors in the urban sector in Mexico, Colombia, Uruguay and Argentina and Chile as indicating less than perfect labor mobility. However, differences in the pattern of wage formation across industries may well explain such movements.

2/ Since there is no unemployment benefit scheme in the present framework, unemployed workers in the long run are assumed to either turn to a subsistence activity or to rely on family ties for their survival.

Households supply labor inelastically and consume, in addition to the nontraded good produced in the informal sector, an imported final good which is imperfectly substitutable for the home good. Households' financial wealth consists of traded bonds, which are accumulated through current account surpluses. Total consumption expenditure is linear in wealth. Wage and employment prospects are formed on the basis of prevailing conditions in the labor market.

As indicated earlier, the government produces services that are used as intermediate inputs in the production of export goods. It sets the real price (measured in terms of export goods) of its output, hires a constant share of the unskilled labor force and fixes production at a level that is more than sufficient to satisfy private demand for government services--thereby creating "labor hoarding" (or disguised unemployment) in the public sector. It also consumes imported goods, and finances spending by levying lump-sum taxes on households.

The world price of exports is exogenous, and the production function in the export sector is characterized by fixed proportions between government services and gross output, and between a composite bundle of skilled and unskilled labor, which produces value added. Thus, there are no substitution possibilities between government services, on the one hand, and the composite bundle of labor services, on the other. Skilled and unskilled labor are taken to be (Edgeworth) substitutes in the production of value added. 1/ Under the assumption of profit maximization, the demand functions for labor and government services are such that an increase in the real wage earned by skilled workers reduces the demand for that category of labor and raises the demand for unskilled labor, whereas an increase in the minimum wage has the opposite effects. A rise in the real price of government services reduces the demand for both categories of labor.

Technology for the production of the nontraded good in the informal sector is characterized by decreasing returns to labor. Profit maximization yields the familiar equality between marginal revenue and marginal cost, from which labor demand is derived. The supply function for goods produced in the informal sector is then negatively related to the product wage, defined as the real informal sector wage (measured in terms of the price of exports) times the real exchange rate--itself defined as the price of exports relative to the price of nontraded goods.

1/ The empirical evidence on factor substitutability in developing countries is relatively scarce. For evidence on the substitutability between skilled and unskilled labor in the formal (modern) sector in developing countries, see López and Riveros (1989). Villarreal and Breach (1988) also provide evidence for the manufacturing industry in Mexico, and suggest that while skilled and unskilled labor are substitutes in many industries, they are complementary in others.

The process of wage formation varies across segments of the labor market. As indicated above, both the minimum wage paid to unskilled workers in the export sector and public sector salaries are fixed by the government in real terms. The wage earned by skilled workers in the export sector is set as a function of the informal sector wage. 1/ As discussed below, the elasticity of skilled workers' wage to the informal sector wage (denoted γ in what follows) plays a critical role in the dynamics of policy shocks.

Consider now the informal sector labor market. The demand for labor is derived from profit maximization. The supply of unskilled workers in the formal sector is predetermined at any moment in time, and changes gradually as a response to the expected wage differential across sectors. 2/ Assuming for simplicity that government workers are paid the minimum wage, The expected wage in the formal economy is equal to the minimum wage times the probability of being hired. Assuming that hiring is random, the hiring probability can be approximated by the prevailing employment ratio. The expected wage in the informal economy is simply the going wage, since there are no barriers to entry in that sector. Skilled workers queue up for employment in the formal sector first, but those who are unable to find a job in that sector may or may not seek employment in nontraded goods activities. In line with the evidence reviewed in Section II, we focus here on the case where skilled workers who are not successful in finding a job in the formal sector opt to remain unemployed. Thus, the informal sector wage adjusted for the disutility of effort--that is, the opportunity cost of "leisure"--is lower than the expected return from being unemployed. The equilibrium condition of the labor market in the informal economy implies that the informal sector real wage (measured in terms of the price of exports) is inversely related

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1/ As indicated above, a wage setting equation in which formal sector wages are positively related to informal sector wages could be derived by assuming that firms in the export sector set wages paid to highly-qualified workers on the basis of efficiency considerations. However, depending on the specification chosen, skilled workers' wage may or may not be independent of the factors affecting directly the demand for skilled labor--namely, the minimum wage and the real price of government services. In the models of Agénor and Aizenman (1994, 1995*a*) and Agénor and Santaella (1994), such independence holds; in the model of Agénor and Aizenman (1995*b*) it does not.

2/ The absence of on-the-job search while employed in the informal sector (despite the physical "proximity" of the formal and informal sectors) may result from informational inefficiencies, which may be related to the absence of adequate institutions for conveying relevant information on employment opportunities in the formal sector to potential job seekers. As a result, searching for job offers in the formal sector may require, literally speaking, waiting for job offers at factory gates (Agénor, 1995*c*).

to the real exchange rate (the relative price of traded goods) and positively related to the size of the population of unskilled workers seeking employment in the formal economy.

The dynamics of the model can be formulated in terms of the size of the unskilled labor force seeking employment in the formal economy, and households' holdings of traded bonds expressed in foreign currency terms. The "short-run" variables, the real exchange rate and the real informal sector wage, are solved jointly through the equilibrium conditions of the market for nontraded goods and the market for (unskilled) labor in the informal sector. The steady-state equilibrium of the model displays the following properties: the current account is in equilibrium, inflation is equal to the nominal devaluation rate, and the ratio of wages earned by unskilled workers in the formal and informal sectors (the unskilled wage ratio, for short) is equal to the inverse of the employment ratio of that category of labor in the formal economy.

A simple graphical illustation of labor market adjustment in the above model is presented in Figures 13 and 14. The first figure shows the case where unskilled labor is perfectly mobile across sectors, whereas the second figure corresponds to the case where the size of the unskilled labor force seeking employment in the formal economy is determined through a Harris-Todaro mechanism. In both figures, Panel A presents labor market equilibrium in the formal sector. The demand for skilled labor L^d_{FS} is inversely related to w_{FS}, the wage earned by skilled workers. The total demand for unskilled labor is L^d_{FU}, which is equal to the sum of the demand for unskilled workers by private firms in the export sector (which is positively related to w_{FS}, since skilled and unskilled workers are gross substitutes) and public sector employment (which is exogenous). By substracting L^d_{FU} from the total supply of unskilled workers $\bar{L}_U$, Panel B allows us to determine the supply of labor in the informal economy. Given the labor demand curve in the informal sector L^d_I, the market-clearing wage is determined at point *C*. The positive relationship between the skilled workers' wage and the informal sector wage is displayed as curve *WW* in Panel D. As shown in Panel A, unemployment of skilled workers prevails in equilibrium (since unsuccessful applicants prefer not to work in the informal economy) and is given by the distance between the total supply of skilled labor $\bar{L}_S$ and the equilibrium point on the demand curve. Figure 14 considers, by contrast, the case where unemployment of both categories of labor prevails in equilibrium. The key difference with the previous case is that, as discussed earlier, in a Harris-Todaro setting the supply of unskilled workers in the formal sector L^s_{FU} is proportional to the demand for labor in that sector times the unskilled wage ratio in equilibrium. If the unskilled wage

Figure 13

Labor Market Equilibrium with Skilled Unemployment

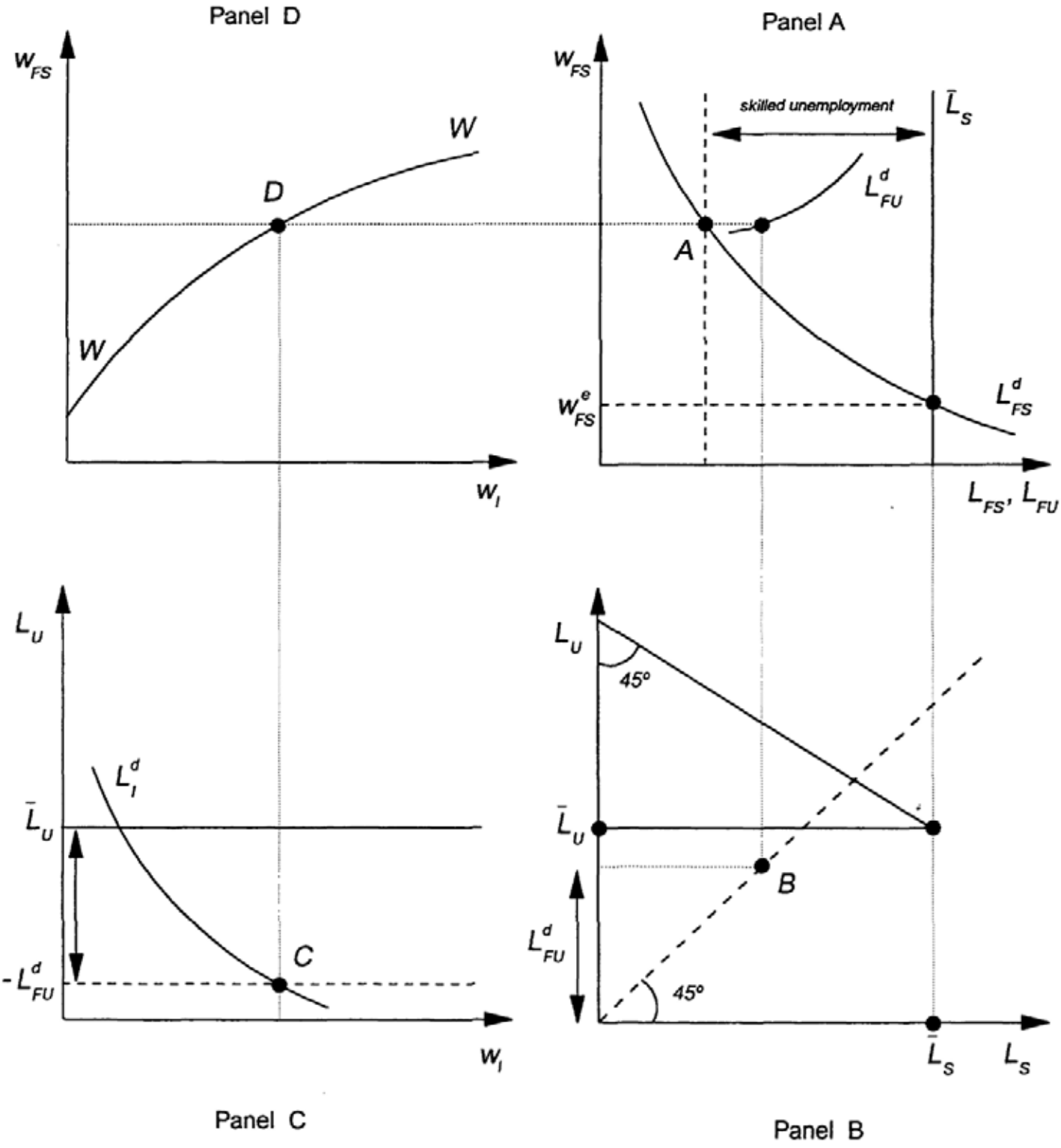
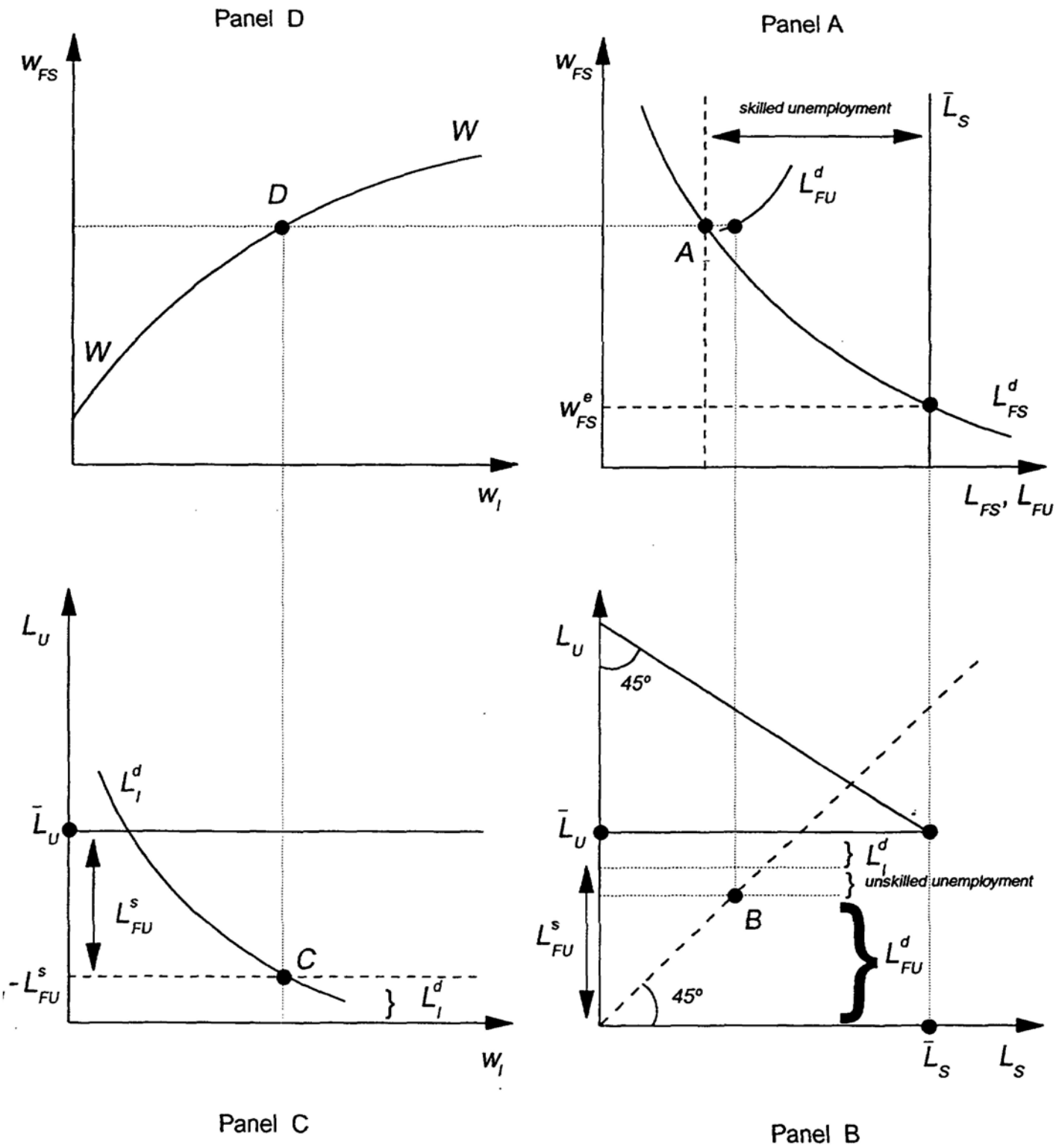


Figure 14

Labor Market Equilibrium with Generalized Unemployment



ratio is greater than unity (that is, if the informal sector wage is greater than the minimum wage), L_{FU}^{s} will be greater than L_{FU}^{d} and unemployment of unskilled labor will also prevail in equilibrium, as shown in Panel B.

While the model described above can be used to analyze a large variety of policy shocks, we will discuss here only the effects of public sector layoffs (see Agénor, 1995c, for other policy experiments). As indicated in Section II, policies involving the retrenchment of public sector employment have indeed often been part of both stabilization and structural adjustment programs, but very few studies have attempted to study their macroeconomic effects in a framework that accounts for the existence of different segments of the labor market. In the above setup, a reduction in public sector employment leads in the long run to a reduction in the number of unskilled job seekers in the primary sector, and higher holdings of bonds. The increase in labor supply in the informal sector associated with public sector layoffs lowers wages in that sector and raises output of nontraded goods. Skilled employment and output in the export sector also rise (as long as $\gamma > 0$). Skilled unemployment is lower, but because the total demand for unskilled workers falls by more than the reduction in supply of labor in the formal sector, the unskilled unemployment rate is higher in the new steady state. On impact, the real exchange rate and the informal sector wage do not change. The reduction in public sector employment nevertheless lowers the expected wage in the formal sector and reduces incentives for unskilled workers to engage in job search in the formal sector. Over time, the increase in labor supply lowers real wages in the informal sector--thereby raising output in that sector and leading to a depreciation of the real exchange rate--but the continuous reduction in the demand for unskilled labor in the formal economy (resulting, during the transition, from the substitution towards skilled labor in the export sector, as a result of the reduction in skilled workers' wage) tends to dominate, thereby leading to a continuous reduction of the number of job seekers in the formal sector. During the transition, the expansion of exports leads to a current account surplus. 1/ Thus, public sector layoffs (which often accompany stabilization programs) have important implications for employment and the informal labor market: they lead in the long run to a switch

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1/ In the case where $\gamma = 0$, the steady-state level of bonds remains constant across steady states. The transition is characterized by a sequence of current account deficits, followed by a matching sequence of surpluses.

toward informal ativities. 1/ Evidence showing that cuts in public sector employment (or reductions in recruitment rates) have led in some countries to higher employment in informal activities producing nontradables has indeed been documented in several recent studies--such as Hollister and Goldstein (1994, p. 62) on Morocco. 2/

The analytical framework presented above helps explain the apparent weak relationship (discussed earlier) between unemployment and output growth in developing countries. Interactions between the formal and informal urban labor markets may be characterized by substitutability rather than complementarity in the short run, implying that the employment effects of macroeconomic policy shocks can be highly mitigated (Agénor and Aizenman, 1994). In periods of weak output growth, for instance, unskilled workers (and, to a lesser extent, skilled workers) laid off in the formal sector may seek employment in the informal sector where wages and labor productivity tend to be lower. Fluctuations in aggregate demand may translate into changes in average productivity rather than increases in open unemployment.

IV. Structural Reforms and Labor Market Adjustment

Labor market distortions alter not only the transmission process of short-term macroeconomic policies (as discussed in the previous section) but also the short- and longer-run effects of structural adjustment policies. A commonly-held view is that such distortions may, in particular, generate false relative price signals which may lead to an inefficient allocation of resources. 3/ A government-imposed minimum wage for unskilled labor that is higher than its true opportunity cost may foster the adoption of more capital-intensive processes, thereby lowering employment. A low wage for skilled labor relative to the wage earned by unskilled workers can lead to under- investment by individuals in developing their

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1/ Another effect of cuts in public sector wages (as discussed in Section II) has been an increase in "moonlighting," notably in the informal sector. This aspect is not captured by the model considered above, since there is no possibility of dual job holding.

2/ As noted in Section II, fiscal adjustment in the 1980s has often taken the form of reduction in real public sector wages, rather than cuts in public sector employment. In the present setting (with lump- sum taxation), however, reduction in public sector wages do not generate significant agregate effects. Results would be different with an explicit wage formation mechanism in the public sector.

3/ See, for instance, Lal (1989) for an analysis of adjustment policies with homogeneous labor markets but with flexible and sticky nominal wages.

productive skills, thereby constraining economic growth. 1/

A large literature in development economics has emphasized the role of labor market "flexibility" in the process of economic growth. One of the key features of the "East Asian miracle" for instance, as argued by a number of observers, is the limited impact of trade unions and other distortions on the labor market (Fields and Wan, 1989), and the unusually high growth of employment without excessive wage pressures. 2/ This section examines the effects of labor market reforms on economic "flexibility", and the effect of structural policies on output and employment in a context where both imperfect labor mobility and labor market segmentation prevail. The focus here is on a structural policy that has been advocated and implemented in a number of developing countries in recent years, namely an adjustment in tariffs.

1. Labor market reforms and economic "flexibility"

Advocates of labor market reform ave argued that circumventing the scope of hiring and firing regulations, reducing nonwage labor csots, eliminating (or restricting the scope of) minimum wage laws, limiting unemployment benefits, and curtailing the role of trade unions in the wage bargaining process would enhance flexibility and have a positive effect on growth. In what follows we attempt to provide a balanced view of the effects of such reforms.

- There is a widespread view that job security provisions, despite being often commendable in principle (to the extent that their objective is the protection of workers against unsafe work practices and unjustified dismissals) have had in practice a variety of adverse consequences. Such provisions have led in some cases to a general loss of profitability, reduced flexibility at the firm level to relative price shocks and shifts in aggregate demand, and distortions in favor of more capital-intensive production techniques (Fallon and Riveros, 1989). 3/ Enterprises tend to become reluctant to take on new employees when faced with high hiring and firing costs. In

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1/ The importance of human capital accumulation in the growth process is a key feature of the new "endogenous" growth theories. See the discussion below.

2/ In turn, this is viewed as the result of large investments in primary and secondary education, which have ensured an ample supply of skilled workers and helped to prevent large changes in relative incomes (see Fields, 1994).

3/ Tokman (1992) estimates that in a group of Latin American countries labor regulations contributed to an increase in labor costs of about 20 percent on average--which was about equally divided between fringe benefits (such as health insurance and sick leave) and social security contributions--during the 1980s.

addition, employers may become cautious about hiring new workers with contracts of indefinite duration, opting instead to rely on casual labor, sub- contracting, or fixed-term contractual relationships. 1/ By inhibiting the reallocation of labor and wage flexibility, labor regulations lead to higher (and more persistent) unemployment. 2/

However, this "consensus" view has become the subject of intense controversy in recent years, in both industrial and developing countries. For industrial countries (particularly Europe), there appears to be limited empirical evidence supporting the view that employment protection measures (such as hiring and dismissal procedures) are sources of unemployment persistence. A careful examination of employment protection measures in Germany, France, and Belgium in the mid 1980s by Abraham and Houseman (1994) found no evidence that changes in such provisions affected the speed of labor market adjustment. 3/ Recent research on employers' responses to the introduction of unfair dismissal legislation in the United Kingdom showed also little evidence of reduced hiring. In the context of developing countries, Freeman (1993) has argued that high hiring and firing costs may have more limited practical effects than is often thought where (at least segments of) labor markets are highly flexible--precisely in part due to poor compliance with existing regulations. Job security provisions may have no direct effects on employment and unemployment, if wages are "de facto" flexible. Indeed, it has been argued that standardization of the contractual rules across firms may reduce information and transactions costs, thus rendering the market more efficient. However, if employment protection legislation is not applied uniformly to all firms in all production

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1/ In situations where demand conditions tend to fluctuate, the average level of wage employment in the affected industries or occupations could thus become lower than optimal. The use of repeated temporary contracts to circumvent regulations on hiring and firing may also increase with competitive pressures, such as in the aftermath of trade liberalization (Currie and Harrison, 1994).

2/ The role of hiring and firing costs in introducing inertia into firms' employment decisions has been emphasized also in the context of industrial countries, notably by Bean (1994) and Lazear (1990). Bean (1994) has argued that such costs (together with the progressive disconnection of the unemployed from the labor market) are the major factor explaining unemployment persistence in European countries. By increasing the incidence of long-term unemployment through reduced labor turnover, they speed up the "deskilling" process among the unemployed and reduce the downward pressure exerted by the unemployed on wages.

3/ It should be noted, however, that employment protection measures may only have a second-order impact on labor market flexibility in the presence of other (more important) distortions, such as high minimum wages (as in France) or very generous long-term unemployment benefits (as in Belgium or France).

sectors (or if enforcement varies according to firm size), it will distort labor allocation and firm size, and foster expansion of the informal economy as producers go "undergournd."

- The role of minimum wage laws on the functioning of labor markets in developing countries continues to be the subject of intense controversy. Two divergent views appear to dominate the scene (Freeman, 1992). The "advocate" view holds that minimum wages have positive nutritional effects in poor countries--as emphasized in the efficiency-wage model of Dasgupta and Ray (1986)--and may redistribute resources in a welfare-enhancing way. As a result, high minimum wages may help reduce poverty and raise productivity--by enticing workers to work harder and change jobs less frequently. 1/ They may also enhance growth prospects and increase welfare if the positive externality associated with human capital accumulation has a sufficiently large impact on overall productivity (Cahuc and Michel, 1995). The "distortionist" view, by contrast, suggests that minimum wage legislation leads to excessively high wage costs (particularly for unskilled labor) in the formal sector, misallocation of labor and lower employment (by preventing wages from adjusting downward to excess supply of labor), the creation of rents for some groups of workers (Rama and Tabellini, 1995), labor market segmentation (as in the Harris-Todaro model presented earlier), depressed wages in the informal urban sector (which has an adverse effect on the poor) and ultimately to a reduction in the rate of growth. Even if a higher minimum wage may raise employment in the short term, it also increases the relative cost of employing unskilled workers (thereby accelerating the substitution of capital for unskilled labor) and reduces profits--thereby lowering firms' capacity to invest. As a result of both factors, high minimum wages restrain the expansion of labor demand over time. 2/

In general, assessing the effect of minimum wages on average wages and employment of unskilled workers is inherently difficult in developing countries. Lack of compliance with the law makes studies based on the formal sector highly imprecise. As indicated earlier, for instance, a significant share of workers in Mexico are paid below minimum wages in the formal manufacturing sector. Workers in some segments of the formal manufacturing sector may also earn wages in excess of the minimum wage. At least in theory, changes in the minimum wages may have important distributional effects within the category of unskilled workers, for instance between those employed in

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1/ As emphasized since the mid-1940s, "reasonably high" minimum wages may even have a direct positive effect on employment in the presence of monopsony factors. See Agénor and Aizenman (1995*b*) for a discussion of these issues.

2/ In industrial countries, there has been renewed interest on the employment effects of minimum wages in recent years, particularly in the United States. See Layard et al. (1991).

the formal sector and the informal sector. Explicit consideration of the informal sector (as was done earlier) is thus an essential step in analyzing the aggregate effects of changes in the minimum wage.

- It has been argued that unemployment insurance or compensation schemes act, to some extent, as a disincentive to search for (or to accept) employment, and that they may act as an incentive to enter the labor force in order to collect unemployment benefits. However, unemployment insurance may also have positive effects in encouraging labor force participation and favoring regular, as opposed to marginal, employment (Atkinson and Micklewright, 1991). Because of limited data on variables such as the duration of unemployment benefits in developing countries, it has proved difficult to test alternative views on these issues. The elasticity of unemployment with respect to replacement rates (benefits before taxes as a percentage of previous earnings) may be relatively low; but whether high unemployment benefits tend to increase unemployment remains an open issue.

- In assessing the role of trade unions in the bargaining process and wage formation in developing countries, two considerations are important (Nelson, 1994). First, trade union movements in these countries are typically not very centralized (even in Latin America), making it difficult to organize collective labor action. In Mexico for instance, the average union size in the Confederation of Mexican Workers (the country's largest confederation) is small (about 130 members). Less than half of its members are in powerful industrial unions (such as railroads, petroleum, or mining). Nearly half of them are in enterprise-level unions which are, in turn, loosely related to regional federations. However, the aggregate implications of a low degree of centralization on wage formation are not entirely clear. Economic theory suggests that the relationship between the degree of centralization in wage bargaining--defined as the extent to which unions and employers cooperate in wage negotiations--and wage pressures has an inverted U-shape, rather than being monotonic. Wage push is limited when bargaining is highly centralized (conducted at the union level) and highly decentralized--when it takes place at the level of individual firms (Calmfors, 1993; Moene et al., 1993). The highest degree of influence on wage formation would thus tend to occur in countries where centralization is in the intermediate range, that

is, at the industry level. 1/ In practice, however, it is not always easy to classify wage bargaining systems into completely centralized or decentralized systems. In Argentina in recent years, the government has sought to decentralize collective bargaining agreements from the sectoral to the firm level. In early 1995 Mexico also moved towards terminating centralized wage agreements in favor of decentralized bargaining arrangements. In Brazil, by contrast, the evidence seems to suggest that wage negotiations have become more centralized in a number of industries during the 1980s (Amadeo, 1994). Whether the outcome in these countries will be a reduction in wage pressures is unclear at this stage.

The second consideration is that the degree of unionization is a highly imperfect measure of the incidence of trade unions on wage formation and the labor market. Trade unions in certain "strategic" sectors or industries in some developing countries may exert considerable influence on wage formation and working conditions at the national level, even if overall union membership is low in proportion of the work force. Often-cited examples are the trade unions representing tin miners in Bolivia and oil workers in Nigeria (Nelson, 1994). In Singapore, although union density is low, collective bargaining agreements are often extended to the non-unionized workers within individual firms (Carling, 1995).

The empirical evidence on the impact of unions on real wages in developing countries is somewhat limited. Jones (1994) suggests that in Latin America unions have caused wages to rise above the opportunity cost of labor through a combination of union pressure, minimum wage legislation, and wage policies in the public sector. In Taiwan and Korea, the evidence also suggests that unions have limited power in bargaining over wages (Fields, 1994). Other studies have attempted to estimate directly the bargaining strength of organized labor, as reflected in the union-nonunion wage differential. Park (1991) for instance estimates that blue-collar workers in the unionized manufacturing sector in Korea are paid on average only 4 percent more than their counterparts in the nonunionized sector. Panagides and Patrinos (1994) have estimated that the union/nonunion wage differential in Mexico (based on a household survey for 1989) was

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1/ Various types of externalities have been used to explain why centralized bargaining is likely to produce lower aggregate real wages and higher employment (see Calmfors, 1993). The basic idea is that a high degree of cooperation between unions and employers implies that the effects on others of a wage increase in one part of the economy will be internalized, thereby lowering the marginal benefit of an increase in wages. Decentralized bargaining systems also produce real wage moderation because of the restraint imposed by competitive forces--although moderation may occur at the cost of increased wage dispersion. With intermediate centralisation, neither internalisation effects nor competitive forces are sufficiently strong to restrain unions' incentives to demand lower wages.

about 10.4 percent, which indicates the existence of some bargaining strength. 1/ Amadeo (1994) provides evidence of a positive relationship between unions' (relative) bargaining power--measured by the degree of indexation of wages to price changes--and relative wages in Brazil. More generally, however, the assumption that trade unions are often powerful enough to affect wage formation is somewhat contradicted by the fact that real wages fell quite significantly in a number of Latin American and Sub-Saharan African countries during the 1980s, as discussed above. Thus, attempts at circumventing the role of unions in the process of wage formation is unlikely to have any significant effect on "flexibility" in most cases.

2. Trade liberalization and Unemployment

In recent years, growing recognition of the severe allocative distortions associated with import-substitution strategies has led an increasing number of countries in the developing world to adopt a more liberal external trade regime. Traditional economic arguments suggest that a reduction in trade barriers (such as tariffs and import quotas) fosters an adjustment in relative prices that leads to a reallocation of resources toward the exportable sector. In the long run, trade reform leads to an expansion of output of exportables and a contraction of activity in import-competing industries, as well as to an overall transfer of resources from sectors producing nontradables towards those producing tradables.

While there appears to be broad agreement on the allocative effects of trade liberalization in the long run, the short- and intermediate-run impact of trade reform on the wage structure, the composition of employment and aggregate unemployment remains imperfectly understood. The evidence gathered in the comprehensive study of trade reform episodes in developing countries conducted in the early 1980s at the World Bank and summarized by Papageorgiou et al. (1990) appears to be largely inconclusive in that regard. While most individual country studies suggested that total employment in the manufacturing sector either fell or remained stable in the aftermath of the liberalization program, they often did not distinguish between traded and nontraded manufacturing goods, and were therefore unable to characterize changes in the distribution of employment. In addition, almost no evidence was provided on changes in employment in production

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1/ However, if union workers are more productive than their nonunion counterparts (as a result of reduced shirking induced by greater job security, for instance), the productivity differential between the two categories of labor may be large enough to offset the union-nonunion wage differential.

activities other than manufacturing, or changes in the aggregate unemployment rate. 1/

Some more recent studies have attempted to study directly the effects of tariff reform on the labor market. Rama (1994*b*) has examined the relationship between tariffs, employment and wages in the Uruguayan manufacturing sector. He found no impact of the reform on wages, but a negative effect on employment. His estimates indicate that a reduction in the tariff-inclusive price of imports by 1 percentage point led to an employment drop in manufacturing of between .4 and .5 percentage points. In a study of the trade liberalization program implemented in Mexico between 1985 and 1988, Revenga (1994) has estimated that the reduction in tariffs during the period (of about 10 percentage points) led to a much smaller reduction in aggregate employment in the manufacturing sector (by 2 to 3 percentage points) and an increase in average wages. 2/ However, her study also suggests that, despite relatively limited aggregate effects, significant changes occurred in the composition of employment at the industry level. Currie and Harrison (1994) have found that the comprehensive trade reform that was implemented in Morocco between 1984 and 1990 (which led to a reduction in the coverage of import licenses from 41 percent of imports in 1984 to 11 percent in 1990, and a reduction in the maximum tariff rate from 165 percent to 45 percent) also had a small (albeit significant) impact on aggregate wages and employment in the formal manufacturing sector. As in the case of Mexico, pronounced sectoral shifts in employment appeared to have taken place, particularly in the manufacturing industries that were subject to large tariff reductions.

The impact of trade reform on the dynamics of wages, the composition of employment and aggregate unemployment in the presence of labor market distortions has been examined by Agénor and Aizenman

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1/ These limitations (which in several cases resulted from the paucity of meaningful data) are compounded by the methodological shortcomings that affect many of the specific country studies. For instance, although in several cases trade reforms were implemented simultaneously with macroeconomic stabilization programs--and in an environment characterized by severe external shocks--few authors attempted to disentangle rigorously the employment effects associated with each set of measures (Edwards, 1993). Despite this important caveat, Papageorgiou et al. attribute the fall in manufacturing sector employment observed in a few cases in the aftermath of reform mostly to restrictive macroeconomic policies.

2/ Feliciano (1994) finds no impact of the Mexican trade reform on employment. She also finds an increase in wage dispersion, rather than an effect on average manufacturing wages.

(1995*a*). 1/ In contrast to the existing literature, they model explicitly imperfect labor mobility and interactions between wage formation across sectors, highlighting the role of efficiency considerations induced by the existence of high turnover costs in the formal sector. 2/ The remainder of this section examines the short- and longer-run effects of a permanent reduction in tariffs, coupled with an adjustment in lump-sum taxes to equilibrate the government budget, in the Agénor-Aizenman (hereafter *AA*) framework. 3/

Consider again a small open economy with three types of agents: producers, households, and the government. The economy produces two goods, a nontraded good which is used only for final domestic consumption, and an export good, whose output is entirely sold abroad and whose price is determined on world markets. 4/ The capital stock in each sector is fixed during the time frame of the analysis. Labor is homogeneous and imperfectly mobile across sectors. Firms in the export sector determine both wages and the level of employment. Workers employed in that sector are paid an above-equilibrium real wage in order to reduce turnover costs--which include recruitment,

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1/ Earlier studies include Buffie (1986), Edwards (1988), and Cox Edwards and Edwards (1994). However, these authors abstract from potentially important factors that may alter the impact of trade reform on the composition of employment and the aggregate unemployment rate in developing countries. Buffie (1986) focuses on the potential short-run contractionary effect of trade liberalization in the presence of economy-wide nominal and real wage rigidity, whereas Edwards (1988), considers in his analysis of tariff reform an economy in which wages are rigid in only one sector. Both authors, however, focus on the case of absolute, rather than relative, wage rigidity--thus excluding potential interactions between wage formation in different sectors of the economy--and do not account for impediments to labor mobility in the short run. The models considered by Cox Edwards and Edwards (1994) are also subject to the first type of limitations, although they do address the issue of intersectoral labor mobility. In addition, their treatment of the dynamics associated with trade liberalization does not allow a full characterization of the adjustment process.

2/ Evidence on labor turnover rates and turnover costs is somewhat limited in developing countries. Renard (1984) has argued that turnover rates in the modern sector in developing countries are typically low. Kim (1994) also found low turnover rates in Korea, even in the manufacturing sector.

3/ The *AA* framework shares several common characteristics with the macroeconomic model discussed in Section II. An important difference, however, is the assumption of homogeneous labor adopted in the *AA* model.

4/ As in the model discussed in Section II, there is no domestic import-competing sector in this economy.

hiring, training and firing costs--while the wage of workers employed in the nontraded goods sector is fully flexible. By analogy with the macroeconomic model presented in Section III, therefore, the export sector can be identified with the formal sector, and the nontraded goods sector with the informal sector.

Although workers who are not hired in the export sector could find a job at the going wage in the nontraded goods sector, imperfect labor mobility prevents an instantaneous reallocation of the labor force. Households consume nontraded goods and imported goods, supply labor inelastically and hold a traded bond, which bears a constant rate of return determined on world capital markets. Total consumption depends on disposable income, defined as net factor income minus lump-sum taxes. The government consumes only nontraded goods, and collects lump-sum taxes as well as taxes on imported goods. Finally, wage and employment expectations (as before) depend on prevailing conditions in the labor market.

Firms in the export sector face high turnover costs. Specifically, the production process in the export sector is characterized by a fixed recruiting and training cost per employee, which occurs upon hiring a worker in order to replace the vacancy created by another worker quitting the firm. The quit rate depends on the wage ratio across sectors. As a result, wages in the export sector (determined so as to minimize total labor costs) are positively related to the market-clearing wage in the nontraded goods sector.

In the above framework, the long-run effects of a tariff reduction (coupled with an increase in lump-sum taxes to equilibrate the budget) on unemployment is ambiguous--despite an increase in output and employment (induced by a fall in the real product wage) in the exportable sector--and depends crucially on the size of the elasticity of wages in the export sector relative to wages in the nontraded goods sector. The Harris-Todaro migration mechanism embedded in the *AA* framework requires (as in the macroeconomic model presented in Section III) the wage ratio to be equal in the steady state to the inverse of the employment rate in the export sector. It is precisely the equilibrium condition imposed by the Harris-Todaro migration function that helps determine the steady-state effect of tariff reform on the wage ratio (and consequently on the employment rate in the export sector), the allocation of the labor force, and the unemployment rate. The long-run effects on the labor market depend critically on the elasticity of the efficiency wage in the export sector relative to the market-clearing wage in the nontraded goods sector. If that elasticity is less than unity, labor supply in the export sector will rise by more than labor demand, and the unemployment rate will rise. If that elasticity is higher than unity, tariff reform would imply a long-run reduction in unemployment--as

emphasized in the conventional view--whereas an elasticity exactly equal to unity would imply no long-run effect at all. 1/

In the short run, unemployment is also likely to fall in the above framework. Intuitively, the increase in lump-sum taxes that accompanies the reduction in tariffs lowers consumption spending on impact, which requires a real depreciation of the exchange rate to maintain equilibrium of the home goods market. Lower wages in the nontraded goods sector translate into lower wages in the export sector and an increase in labor demand. As a result, and because the supply of labor in the export sector cannot change on impact, the employment ratio unambigously rises and the unemployment rate falls on impact.

These results differ significantly from those emphasized by the "orthodox" or neoclassical view of trade liberalization, which rests on the assumptions of perfect flexibility of wages and prices, and perfect labor mobility across sectors. The absence of market imperfections implies that a reduction in tariff protection leads to changes in relative prices that affect both supply and demand, and to a full and instantaneous reallocation of resources across sectors. In the case for instance where the economy produces three categories of goods--importables, exportables, and nontradables--and capital is sector-specific, trade reform leads to lower employment in the production of importables and nontradables, and an increase in employment in the production of exportables. Unemployment cannot emerge, since workers are perfectly mobile and product wages adjust continuously to clear the labor market. 2/

The *AA* model departs from the "orthodox" approach in two major respects: the modeling of the labor market, and the specification of the production structure. Regarding the modeling of the labor market, there are two major assumptions underlying the *AA* framework: wage efficiency considerations are important and are relevant only in the export sector; and labor reallocation across sectors follows a Harris-Todaro process. As discussed earlier, efficiency factors appear to matter in the manufacturing in developing countries. The existence of a wage differential across sectors serves as a necessary

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1/ A unit elasticity (or equivalently, a constant relative wage ratio) could be generated by modeling efficiency factors through a wage-productivity link, as shown by Agénor and Aizenman (1994).

2/ To the extent that the income effect associated with trade reform affects the supply of labor, "secondary" wage and employment effects may occur. However, such effects would not normally lead to an increase in unemployment.

condition for the emergence of unemployment. 1/ The assumption that labor is imperfectly mobile across sectors implies that the distribution of the labor force cannot change instantaneously, and explains in part the reduction in the unemployment rate that may be associated with a reduction in tariffs. It also alters (as in Mussa, 1986) the conventional transmission mechanism of trade reform, since the reallocation of resources cannot take place in response to relative price signals.

Regarding the production structure of the economy, the *AA* framework relies on an important restrictive assumption: there is no production of importables--or more precisely, inefficiencies associated with initial tariff barriers are assumed to have become so large that potentially importable goods have effectively become nontraded. This specification implies that a key channel through which adverse short-run unemployment effects are expected to emerge (the elimination of protection to inefficient import-competing industries) is absent. The result according to which unemployment may fall in the short run would be substantially altered in the presence of an import-competing sector, although the mechanism discussed previously might still be operative. More generally, while the treatment of the production structure in the *AA* framework may carry some plausibility in the short and intermediate run, it is clear that a comprehensive and sustainable trade reform may significantly alter the composition of production activities over time--importables that had become nontraded goods may again become traded. This in turn may lead to a reduction in the opportunity cost faced by workers in the exportable sector, which may stimulate employment and output in that sector. Trade liberalization may also induce the creation of new production activities over time, increasing thereby the demand for labor. 2/

Another restrictive aspect of the *AA* framework is that it does not account for the existence of worker heterogeneity, along the lines discussed in Section III. In her study of trade liberalization in

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1/ In the absence of any type of frictions in intersectoral labor mobility, involuntary unemployment would not normally emerge since wages in the nontraded goods sector are perfectly flexible. Voluntary unemployment might exist in the presence of wage flexibility in the nontraded goods sector to the extent that the disutility associated with working there is perceived to be higher than the cost of remaining unemployed, thus inducing workers to choose not to work (see Section II).

2/ As can be inferred from the recent literature on wage bargaining, trade liberalization may also affect the process of wage formation (Calmfors, 1993). By increasing the discipline imposed on domestic agents, a greater degree of openness may restrain the propensity of decentralized trade unions to demand high wage settlements.

Mexico, for instance, Revenga (1994) noted that the observed increase in average manufacturing wages may have reflected a change in the composition of the labor force--a shift towards high-skill, high-wage workers. A similar shift in the composition of the workforce was noted by Currie and Harrison (1994) in their analysis of trade reform in Morocco. Understanding the mechanisms through which tariff reductions affect the skill composition of employment is particularly important for studying their distributional effects.

V. Some Research Perspectives

The foregoing discussion of the role of the labor market in the adjustment process has highlighted a number of questions that remain unanswered in the current literature. The purpose of this section is to suggest a selected list of topics that may represent particularly important areas of investigation. This list suggests a focus on the role of intersectoral employment shifts; the costs and benefits of employment regulations; the interactions between income distribution, poverty, and the labor market; the political economy of public sector employment; the effects of labor market distortions on long-run economic growth; and the role of labor market reforms in the overall sequencing of the reform process.

- Lack of adequate data on the sectoral composition of employment has prevented so far a detailed analysis of the degree of labor mobility from the nontradable sector to the tradable sector, or from the formal to the informal sector. Evidence on the behavior of relative wages across skill categories also remains scant. As illustrated in the models described earlier, efforts to document these aspects of the labor market are crucial for understanding the effects of macroeconomic policies on the labor market.

- How should the cost of labor market regulations be measured? As indicated ealier, many authors have argued that employment security provisions often lead to increased reliance on temporary labor, and may (by raising the cost of dismissing redundant workers, for instance) limit labor mobility across sectors. In effect, labor may become a "quasi-fixed" factor of production (Fallon and Riveros, 1989)--thereby raising the short-term costs of adjustment policies. Moreover, employment regulations may negatively reinforce each other, aggravating their direct effects on the labor market. For instance, it has been argued that high minimum wages and job protection legislation may combine to reduce employment prospects of unskilled workers, by pricing them out of jobs and reducing incentives to search and invest in skills acquisition. Thus, removing (or reducing the scope of) these provisions would reduce non-wage labor costs and eliminate rigidities that impede labor mobility and the efficient allocation of resources.

However, this views obviates some of the benefits of employment security regulations. In recent years, Standing (1991) has been one of the most forceful advocates of the positive effects of these regulations. In particular, they can improve workers' commitment to the enterprise and thus raise work motivation and productivity. They may reduce the "transactions costs" of employment, by reeducing labor turnover--a consideration that carries particular importance when productivity rises with on-the-job learning. They may improve job and work flexibility, that is, improve the willingness of workers to accept (and even initiate) occupational and work environment changes. They may induce workers to accept lower wage rises. Finally, they may reduce the probability of frictional unemployment by enabling workers made redundant to have adequate notice of impending job loss to seek alternative employment, thus reducing both the individual and social costs of mobility. Determining the net cost of employment security regulations requires taking into account all their potential benefits. 1/ In a careful review of the experience of several industrial countries, for instance, Blank and Freeman (1994) have found that there exists little empirical evidence supporting the existence of a large trade-off between labor market flexibility and social protection programs. Job security provisions--advance notice and severance pay requirements--in Western Europe (Belgium, France and Germany) have not hindered labor market flexibility. 2/ Another recent collective study by the Center for Economic Policy Research suggests that dismantling labor regulations would be a naive response to high unemployment in Europe, as the cost of these restrictions is not as high as it looks (Alogoskoufis et al, 1995). In developing countries-- where one would expect labor regulations to have limited employment effects, due to extensive noncompliance--it appears that the recent literature has focused almost exclusively on the alleged costs of job security provisions. A more balanced evaluation, dwelling on detailed case studies, appears warranted. In the absence of detailed case studies, it appears difficult to conclude (as many observers have done) that easing employment protection regulations

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1/ In addition, the distortionary effects of employment protection regulations are judged by comparison to a situation of perfect competition--a probably inappropriate benchmark. As argued by Blank and Freeman (1994), in a setting where government-induced restrictions tend to overlap, some employment security regulations may offset the inefficiencies and distortions caused by others.

2/ However, in contrast to the United States, they appear to be conducive to greater emphasis on hours adjustment and less on employment adjustment after economic shocks. The degre of labor mobility may therefore be (without corresponding information on wage and hours adjustment) a poor measure of the degree of labor market flexibility.

(such as minimum wage laws) would, in particular, help increase labor mobility. 1/

A macroeconomic approach to measuring the effects of labor market regulations was recently developed by Rama (1995). His study, based on cross-section data for 31 countries in Latin America and the Caribbean covering the period 1980-92, suggests that labor market regulations such as social security contributions, minimum wages and severance pay requirements do not appear to affect significantly the rate of economic growth. 2/ Higher minimum wages appear, in fact, to be positively correlated with employment growth. Although these results are preliminary and need to be corroborated by additional evidence, they do cast doubt on the simplistic view that policies aimed at eliminating labor market distortions would necessarily enhance economic performance.

- The labor market is central to any understanding of how economic adjustment affects the poor and the distribution of income, since the poor rely almost entirely on their labor services to generate income (Demery and Addison, 1993). A feature of many adjustment programs implemented in the 1980s in developing countries has been a worsening of the plight of the urban poor and the unemployed, fixed-income earners, and minimum wage earners. 3/ The increase in poverty has been viewed as one of the key factors explaining the growth in the informal sector, notably in Africa (Colclough, 1991). A positive correlation between the development of the informal sector and income inequality has also been noted in the case of Chile during the 1970s and 1980s by Riveros (1990). Camargo (1988) has found a high correlation in Brazil between income concentration and the evolution of the real minimum wage--an indicator of formal sector wages for unskilled workers. However, there appears to be no adequate analytical framework, based on the formal-informal dichotomy, for analyzing the distributional effects of adjustment programs. An increasing wage differential between the formal and

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1/ For instance, high minimum wages may lead formal sector firms to adopt more efficient managerial practices, and to invest in labor-saving technology rather than rely on low wages as the main source of profitability. The overall effect in the longer run may be an increase in productivity and competitiveness, which could outweigh adverse short-term effects on employment.

2/ The results also suggest a negative relationship between the relative size of government employment, the unionization rate, and the rate of growth.

3/ See Edwards (1995) for evidence on the dramatic increase in the incidence of urban poverty during the 1980s and early 1990s in Latin America. In some countries wage dispersion also increased sharply; in Chile, for instance, wages of university graduates rose by 56 percent relative to those of high school graduates between 1980 and 1990 (World Bank, 1995, p. 57).

informal sectors, as discussed in previous sections, has crucial implications for analyzing the effects of adjustment on income distribution. A better understanding of the distributional implications of labor markets may help design stabilization and adjustment programs that will have the potential to be more successful, by enhancing support for the reform process.

- As indicated in Section II, the public sector absorbs a large share of formal wage employment in developing countries, and public sector employment has often been used to offset the effect of adverse shocks on the labor market. But in many countries government wage and employment decisions are determined more by political considerations than conventional "economic" considerations. When faced with budgetary pressures, it is easier politically for governments to cut investment outlays or maintenance expenditure than fire public sector workers. An unstable political climate may lead to increases in employment or higher wages to attract followers (prior to elections, in participatory democracies) or to retain them (by "rewarding" key followers). Because the government's primary constituency is often the urban labor force (of which it employs a large share), it tends to legislate in its favor--by, say, raising the minimum wage at a faster rate than prices. Although the political economy of public sector pay and employment reforms has made considerable progress, a variety of issues have yet to be addressed (see Nelson, 1994).

- It has often been argued that labor market distortions such as high minimum wages may hamper the process of human capital accumulation (as a result of a lack of critical skills), thus creating bottlenecks and hampering economic growth. While the recent literature on endogenous growth has stressed the role of human capital accumulation (Barro and Sala-i-Martin, 1994), surprisingly little work has attempted to gauge the extent to which labor market distortions (and the phenomena that they give rise to, such as a thriving informal sector) affect the process of economic growth--whether, for instance, the growth-impeding effects result from higher-than-equilibrium wages or lower productivity gains--and the speed of convergence in income per capita across nations. 1/ As noted earlier, some recent studies have argued that high minimum wages may raise the rate of human capital accumulation--rather than reduce it, as often argued--and increase growth rates in the long term (Cahuc and Michel, 1995).

- The role of labor market reform in the overall reform process has not received sufficient attention. Edwards (1989) was one of the first to emphasize that labor market reform may need to precede trade

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1/ Loayza (1994) develops an endogenous growth model in which labor regulations and capital market imperfections lead formal sector firms to be more capital intensive and informal sector firms (which do not comply with employment regulations but face a higher cost of access to capital markets) more labor intensive than what would be optimal given the economy's factor endowments.

reform, in order to increase labor mobility and facilitate the reallocation of resources across sectors. The issue, however, also arises in the context of other policies. Most notably, should labor market reforms precede macroeconomic adjustment measures? On the one hand, reforms aimed at altering the process of wage formation in the formal economy (such as changes aimed at indexing nominal wages on future, rather than past, inflation) may be critical in reducing inflation. On the other, experience suggests that labor market reforms are often difficult to introduce, leaving policymakers in practice with little more than the option to proceed with macroeconomic and structural adjustment despite major labor market rigidities. In some cases, it may well prove impossible to initiate far-reaching labor market reforms in the presence of large macroeconomic imbalances, as labor market rigidities (such as indexation practices) may have developed over time to help protect workers from the adverse effects of an unstable macroeconomic environment.

More generally, there appears to be a strong case for placing labor market reforms early in the overall sequence of macroeconomic and structural reforms. Hollister and Goldstein (1994, p. 51) for instance have offered three arguments in that regard: *a*) labor market distortions are all-pervasive in developing countries; *b*) the fear of unemployment often retards critical reforms in other areas; and *c*) labor market distortions are usually hard to remove and tend to be relegated to the end of the reform sequence (often for political reasons) leaving the opportunity to some powerful groups to block the overall reform proces. The issue that needs to be answered, of course, is whether the "labor-market-reforms-first" approach is always optimal or welfare dominant.

VI. Summary and Concluding Remarks

The process of economic adjustment in developing countries involves stabilization policies--which typically require a reduction in public fiscal deficits and tight monetary policy--and structural measures aimed at depreciating the real exchange rate, in order to foster a reallocation and more efficient use of resources across production sectors. The functioning of the labor market has profound effects on the outcome of both types of policies. This paper has provided a comprehensive review of issues related to the labor market in the process of adjustment in developing countries. A key feature of the discussion has been an emphasis on the role of labor market segmentation and relative wage rigidity on the determination of output, wages, employment distribution, and unemployment.

The first part of the paper provided an overview of the recent evidence regarding the main structural and institutional features of labor markets in developing countries. The structure of the labor market was first described, and the evidence related to the composition of employment (notably the size of the informal labor

market and the importance of public sector employment) as well as the level of unemployment was reviewed. Institutional features of the labor market (such as hiring and firing regulations, minimum wage laws, nonwage labor costs and unemployment benefits, wage indexation provisions, and bargaining structures) and the behavior of public and private sector wages were then examined.

The second part of the paper focused on the effect of wage inertia, labor market segmentation, and imperfect labor mobility on the transmission process of macroeconomic policy shocks. After reviewing the evidence related to the degree of wage inertia in developing countries and the behavior of real wages in the course of some of the disinflation programs implemented during the 1970s and 1980s, the discussion focused on the role of labor market imperfections in the transmission process of short-term macroeconomic policies. A formal framework that captures somew of the salient features of the labor market in developing countries (as discussed in Section II) was described, and the aggregate effects of a cut in the level of employment in the public sector was discussed. The analysis highlighted the importance of accounting for interactions in the process of wage formation across different segments of the labor market and the role of imperfect labor mobility in assessing the employment and wage effects of stabilization programs.

The third part examined the effects of labor market reforms on economic flexibility, and the effect of labor market rigidities on the outcome of structural adjustment policies. We discussed, in particular, the implications of labor market segmentation and imperfect labor mobility for the effects of trade reform (a reduction in tariffs coupled with an increase in lump-sum taxes to equilibrate the budget). The analysis showed that whether trade reform lowers or raises unemployment in the long run depends crucially on the elasticity of wages in the tradable sector relative to wages in the nontradable sector--a link that may emerge as a result of either efficiency considerations (related to shirking, or turnover costs) or the existence of trade unions. Finally, the last part of the paper identified some research topics for the years ahead--such as the net cost of labor market distortions, the role of such distortions on long-run growth, and the distributional effects of adjustment policies in the presence of segmented labor markets.

Although the present paper does not offer conclusive evidence of its own on many of the issues reviewed here, a final observation is worth making. Under some circumstances, it is correct to argue that labor market distortions may hamper adjustment to large external shocks or structural adjustment policies, as well as magnify the cost of adjustment, by preventing an efficient reallocation of resources. In particular, labor market segmentation (rather than real wage rigidity) may explain an increase in open unemployment induced by structual adjustment programs. However, too often the tendency in the literature has been to rely on broad assertions, with little empirical basis. Not all labor market regulations have an adverse effect on

employment; various positive aspects must be accounted for to offer a balanced perspective. A critical task in the years ahead will be to rely on more rigorous quantitative analysis to distinguish "facts" from "fiction" in this area.

APPENDIX

This Appendix presents a simple analytical model to contrast the behavior of real wages and inflation in the aftermath of a reduction in the nominal devaluation rate, under alternative assumptions regarding the formation of wage contracts. Suppose that changes in the inflation rate π_t depend on excess demand for goods and the rate of depreciation of the real exchange rate:

$$\dot{\pi}_t = \kappa[c(\overset{+}{\omega_t}) - \bar{y}] + \sigma(\epsilon^h - \pi_t), \qquad c' \leq 1 \qquad (A1)$$

where $c()$ denotes aggregate expenditure, $\bar{y}$ capacity output, and ϵ^h the rate of depreciation of the nominal exchange rate. Expenditure depends positively on the real wage $\omega_t = w_t/P_t$, where w_t denotes the nominal wage and P_t the price level. 1/

The nominal wage w_t is set under two alternative contract mechanisms. 2/ Under the first scheme, wage contracts are backward-looking and depend only on past levels of prices:

$$w_t = \alpha \int_{-\infty}^{t} e^{-\alpha(t-k)} P_k dk,$$

where $\alpha > 0$ is a discount factor. Differentiating this equation with respect to time yields:

$$\dot{w}_t = -\alpha(w_t - P_t). \qquad (A2)$$

Under the second scheme, nominal wage contracts are assumed to be forward-looking and to depend on future prices:

$$w_t = \alpha \int_{t}^{\infty} e^{\alpha(t-k)} P_k dk,$$

implying that

$$\dot{w}_t = \alpha(w_t - P_t). \qquad (A3)$$

1/ A price equation similar to (A1) has been used in a variety of models. The direct effect of wages on consumption can be justified by assuming that profits are entirely saved, as in New Structuralist models (see for instance Taylor, 1990).

2/ See Agénor (1994*a*) for a more detailed discussion of these specifications of wage contracts.

APPENDIX

Given the definition of the real wage, its rate of change over time can be written as, under backward-looking wage contracts:

$$\dot{\omega}_t/\omega_t = -\alpha(1-\omega_t^{-1}) - \pi_t, \tag{A4}$$

and under forward-looking wage contracts:

$$\dot{\omega}_t/\omega_t = \alpha(1-\omega_t^{-1}) - \pi_t. \tag{A5}$$

The steady-state solution is characterized by $\dot{\pi}_t = \dot{\omega}_t = 0$ and the equality between expenditure and capacity output. Thus, under both types of contracts, inflation and the rate of growth of nominal wages must be equal to the devaluation rate in long-run equilibrium. Taking a linear approximation around the initial steady state yields, with backward-looking contracts:

$$\begin{bmatrix}\dot{\omega}_t \\ \dot{\pi}_t\end{bmatrix} = \begin{bmatrix}-\alpha/\omega^* & -\omega^* \\ \kappa c' & -\sigma\end{bmatrix}\begin{bmatrix}\omega_t - \omega^* \\ \pi_t - \epsilon^h\end{bmatrix} + \begin{bmatrix}0 \\ \sigma\epsilon^h\end{bmatrix}, \tag{A6}$$

where $\omega^* = (1+\epsilon^h/\alpha)^{-1}$ denotes the steady-state level of the real wage. With forward-looking contracts, the system is given by

$$\begin{bmatrix}\dot{\omega}_t \\ \dot{\pi}_t\end{bmatrix} = \begin{bmatrix}\alpha/\omega^* & -\omega^* \\ \kappa c' & -\sigma\end{bmatrix}\begin{bmatrix}\omega_t - \omega^* \\ \pi_t - \epsilon^h\end{bmatrix} + \begin{bmatrix}0 \\ \sigma\epsilon^h\end{bmatrix}, \tag{A7}$$

where $\omega^* = (1-\epsilon^h/\alpha)^{-1}$.

Global stability of the dynamic system (A6) with backward-looking contracts requires that the determinant of the coefficient matrix be positive, and that its trace be negative. These conditions are always satisfied here. In the system (A7) with forward-looking contracts, since real wages are now a jump variable, saddlepath stability requires that the determinant of the coefficient matrix be negative. In turn, this requires that the curve *II* be steeper than the curve *WW*, as shown in the lower panel of Figure 9. Finally, it should be noted that although the increase in the real wage toward its new long-run value is shown to be monotonic in Figure 10, this is not always the case: depending on parameter values, adjustment can be cyclical.

References

Abraham, Katharine, and Susan Houseman, "Does Employment Protection Inhibit Labor Market Flexibility? Lessons from Germany, France, and Belgium," in Social Protection versus Economic Flexibility, ed. by Rebecca M. Frank, Chicago University Press (Chicago, Il.: 1994).

Agénor, Pierre-Richard, "Wage Contracts, Capital Mobility, and Macroeconomic Policy," International Monetary Fund, Working Paper No 95/10 (January 1995*a*).

———, "Fiscal Adjustment and Labor Market Dynamics," unpublished, International Monetary Fund (October 1995*b*).

———, "Employment Effects of Stabilization Programs," unpublished, International Monetary Fund (October 1995*c*).

Agénor, Pierre-Richard, and Sunil Sharma, "Inflation and Real Wages," work in progress, International Monetary Fund (October 1995).

Agénor, Pierre-Richard, and Joshua Aizenman, "Macroeconomic Adjustment with Segmented Labor Markets," Working Paper No 4769, National Bureau of Economic Research (June 1994).

———, "Trade Liberalization and Unemployment," Working Paper No 95/20, International Monetary Fund (February 1995*a*). Forthcoming, Journal of International Trade and Development.

———, "Minimum Wages and Urban Unemployment in Developing Countries," unpublished, International Monetary Fund (October 1995*b*).

Agénor, Pierre-Richard, and Peter Montiel, Development Macroeconomics, unpublished, International Monetary Fund (December 1994). Forthcoming, Princeton University Press.

Agénor, Pierre-Richard, and Julio A. Santaella, "Efficiency Wages, Disinflation, and Labor Mobility," unpublished, International Monetary Fund (August 1994).

Allen, Steven G., Adriana Cassoni, and Gaston J. Labadie, "Labor Market Flexibility and Unemployment in Chile and Uruguay," Estudios de Economía, Vol. 21 (November 1994), pp. 127-46.

Amadeo, Edward J., "Bargaining Power, Mark-up Power, and Wage Differentials in Brazil," Cambridge Journal of Economics, Vol. 18 (June 1994), pp. 313-22.

Arstein, Yael, and Zvi Sussman, "Wage Policy during Disinflation: the Israeli Stabilization Program of 1985," Economic Review (Bank of Israel), No 64 (January 1990), pp. 1-36.

Atkinson, Anthony B., and John Micklewright, "Unemployment Compensation and Labor Market Transitions: A Critical Review," Journal of Economic Literature, Vol. 29 (December 1991), pp. 1679-727.

Banerjee, Biswajit, and Gabriella A. Bucci, "On-the-Job Search in a Developing Country," Economic Development and Cultural Change, Vol. 43 (April 1995), pp. 565-83.

Barbosa, Fernando de Holanda, and Paul D. McNelis, "Indexation and Inflationary Inertia: Brazil 1964-1985," World Bank Economic Review, Vol. 3 (September 1989), pp. 339-57.

Barro, Robert J., and Xavier Sala-i-Martin, Economic Growth, McGraw Hill (New York: 1994).

Bean, Charles, "European Unemployment: A Survey," Journal of Economic Literature, Vol. 32 (June 1994), pp. 573-619.

Bell, Linda A., "The Impact of Minimum Wages in Mexico and Colombia," unpublished, the World Bank (July 1994).

Bhattacharya, Prabir, "Rural-Urban Migration in Economic Development," Journal of Economic Surveys, Vol. 7 (September 1993), pp. 243-81.

Blank, Rebecca M., and Richard B. Freeman, "Evaluating the Connection between Social Protection and Economic Flexibility," in Social Protection versus Economic Flexibility, ed. by Rebecca Blank, Chicago University Press (Chicago, Il.: 1994).

Bliss, Chistopher, and Nicholas H. Stern, "Productivity, Wages, and Nutrition, I: the Theory," Journal of Development Economics, Vol. 5 (December 1978), pp. 331-62.

Braun, Juan, and Norman V. Loayza, "Taxation, Public Services, and the Informal Sector in a Model of Endogenous Growth," unpublished, the Workd Bank (October 1994).

Buffie, Edward F., "The Macroeconomics of Trade Liberalization," Journal of International Economics, Vol. 17 (August 1986), pp. 121-37.

———, "Real Wage Rigidity and Optimal Commercial Policy in Less Developed Countries," Journal of Development Economics, Vol. 26 (August 1987), pp. 321-41.

———, "Imported Inputs, Real Wage Rigidity and Devaluation in the Small Open Economy," European Economic Review, Vol. 33 (September 1989), pp. 1345-61.

———, "Public Sector Layoffs, Credibility, and the Dynamics of Inflation in a Simple Macromodel," unpublished, Indiana University (February 1994).

Cahuc, Pierre, and Philippe Michel, "Minimum Wage, Unemployment and Growth," unpublished, University of Paris (January 1995). Forthcoming, European Economic Review.

Calmfors, Lars, "Centralization of Wage Bargaining and Macroeconomic Performance," Working Paper No 536, Institute for International Economics, Stockholm University (April 1993).

Calvo, Guillermo A., "Urban Unemployment and Wage Determination in LDCs: Trade Unions in the Harris-Todaro Model," International Economic Review, Vol. 19 (February 1878), pp. 65-81.

Camargo, José M., "Minimum Wages in Brazil: Theory, Policy and Empirical Evidence," in Assessing the Impact of Statutory Minimum Wages in Developing Countries, Management Series No 67, International Labor Office (Geneva: 1988).

Carling, Robert, "Labor Market Policies," in Singapore: A Case Study in Rapid Development, ed. by Kenneth Bercuson, Occasional Paper No 119, International Monetary Fund (Washington, DC: 1995).

Carmichael, Jeffrey, Jerome Fahrer, and John Hawkins, "Some Macroeconomic Implications of Wage Indexation: A Survey," in Inflation and Unemployment--Theory, Experience and PolicyMaking, ed. by Victor E. Argy and John W. Neville, G. Allen and Unwin (London: 1985).

Chadha, Bankim, "Wages, Profitability, and Growth in a Small Open Economy," Staff Papers (International Monetary Fund), Vol. 38 (March 1991), pp. 59-82.

Charmes, Jacques, "A Critical Review of Concepts, Definitions and Studies in the Informal Sector," in The Informal Sector Revisited, ed. by David Turnham, Bernard Salomé, and Antoine Schwartz, Development Centre, OECD (Paris: 1990).

Colclough, Chistopher, "Wage Flexibility in Sub-Saharan Africa," in Towards Social Adjustment, ed. by Guy Standing and Victor Tokman, International Labor Office (Geneva: 1991).

Condon, Timothy, Vittorio Corbo, and Jaime de Melo, "Exchange Rate-Based Disinflation, Wage Rigidity, and Capital Inflows: Tradeoffs for Chile, 1977-81," Journal of Development Economics, Vol. 32 (January 1990), pp. 113-31.

Corbo, Vittorio, "International Prices, Wages and Inflation in an Open Economy: A Chilean Model," Review of Economics and Statistics, Vol. 67 (June 1985), pp. 564-73.

Cox Edwards, Alejandra, "Labor Market Legislation in Latin America and the Caribbean," Regional Studies Program, Report No 31, the World Bank (December 1993).

Cox Edwards, Alejandra, and Sebastian Edwards, "Labor Market Distortions and Structural Adjustment in Developing Countries," in Labor Markets in an Era of Adjustment, ed. by Susan Horton, Ravi Kanbur and Dipak Mazumdar, the World Bank (Washington, DC: 1994).

Crosby, Mark, "Wage Indexation and the Time Consistency of Government Policy," Scandinavian Journal of Economics, Vol. 97 (March 1995), pp. 105-21.

Currie, Janet, and Ann Harrison, "Trade Reform and Labor Market Adjustment in Morocco," unpublished, the World Bank (June 1994).

Dasgupta, Partha, and Debraj Ray, "Inequality as a Determinant of Malnutrition and Unemployment: Theory," Economic Journal, Vol. 96 (December 1986), pp. 1011-1034.

Davis, Steven J., "Cross-Country Patterns of Changes in Relative Wages," National Bureau of Economic Research, Working Paper No 4085 (June 1992).

Demery, Lionel, and Tony Addison, "Impact of Macroeconomic Adjustment on Poverty in the Presence of Wage Rigidities," Journal of Development Economics, Vol. 40 (April 1993), pp. 331-48.

Devereux, Michael, "Wage Indexation, Adjustment, and Inflation," in Labor Markets in an Era of Adjustment, ed. by Susan Horton, Ravi Kanbur, and Dipak Mazumdar, EDI Development Studies, the World Bank (Washington, D.C.: 1994).

Dickens, William T., and Kevin Lang, "An Analysis of the Nature of Unemployment in Sri Lanka," Journal of Development Studies, Vol. 31 (April 1995), pp. 620-36.

Disney, Richard, and Ho Soo Kang, "Do Real Wages Matter in an Open Economy? the Case of Singapore, 1966-1987," Oxford Economic Papers, Vol. 42 (July 1990), 635-57.

Djajic, Slobodan, "Human Capital, Minimum Wage and Unemployment: A Harris-Todaro Model of a Developed Open Economy," Economica, Vol. 52 (November 1985), pp. 491-508.

Dornbusch, Rudiger, Federico Sturzenegger, and Holger Wolf, "Extreme Inflation: Dynamics and Stabilization," Brookings Papers on Economic Activity, No 1 (March 1990), pp. 1-84.

Edwards, Sebastian, "Terms of Trade, Tariffs and Labor Market Adjustment in Developing Countries," World Bank Economic Review, Vol. 2 (May 1988), pp. 165-85.

———, "On the Sequencing of Structural Reforms," Working Paper No 3138, National Bureau of Economic Research (October 1989).

Edwards, Sebastian, "Openness, Trade Liberalization, and Growth in Developing Countries," Journal of Economic Literature, Vol. 31 (September 1993), pp. 1358-93.

———, From Despair to Hope, Oxford University Press (Oxford: 1995).

Esfahani, Hadi S., and Djavad Salehi-Isfahani, "Effort Observability and Worker Productivity: Towards an Explanation of Economic Dualism," Economic Journal, Vol. 99 (September 1989), pp. 818-36.

Fallon, Peter R., and Luis A. Riveros, "Adjustment and the Labor Market," PPR Working Paper No 214, the World Bank (June 1989).

Feliciano, Zadia M., "Workers and Trade Liberalization: the Impact of Trade Reforms in Mexico on Wages and Employment," unpublished, Harvard University (June 1994).

Fields, Gary S., "Labor Market Modelling and the Urban Informal Sector: Theory and Evidence," in The informal Sector Revisited, ed. by D. Turnham, B. Salomé, and A. Schwarz, eds., OECD Development Centre (Paris: 1990).

———, "Changing Labor Market Conditions and Economic Development in Hong Kong, the Republic of Korea, Singapore, and Taiwan, China," World Bank Economic Review, Vol. 8 (September 1994), pp. 395-414.

Fields, Gary S., and Henry Wan, Jr., "Wage-Setting Institutions and Economic Growth," World Development, Vol. 17 (September 1989), pp. 1471-83.

Fischer, Stanley, "Real Balances, the Exchange Rate and Indexation: Real Variables in Disinflation," Quarterly Journal of Economics, Vol. 103 (March 1988), pp. 27-49.

Fiszbein, Ariel, "Do Workers in the Informal Sector benefit from Cuts in the Minimum Wage?," PRE Working Paper No 826, the World Bank (January 1992).

Freeman, Richard B., "Labor Market Institutions and Policies: Help or Hindrance to Economic Development?," World Bank Economic Review, Proceedings of the World Bank Annual Conference on Development Economics (Washington, DC: March 1992).

———, "Labor Markets and Institutions in Economic Development," American Economic Review, Vol. 83 (May 1993), pp. 403-08.

Gatica, Jaime, Alejandra Mizala, and Pilar Romaguera, "Interindustry Wage Differentials in Brazil," Economic Development and Cultural Change, Vol. 43 (January 1995), pp. 315--31.

Gelb, Alan, J. B. Knight, and Richard H. Sabot, "Public Sector Employment, Rent Seeking and Economic Growth," Economic Journal, Vol. 101 (September 1991), pp. 1186-99.

Gruber, Jonathan, "Incidence of Payroll Taxation: Evidence from Chile," National Bureau of Economic Research, Working Paper No 5053 (March 1995).

Hamermesh, Daniel, "Unemployment Insurance in Developing Countries," Working Paper No 897, the World Bank (May 1992).

———, Labor Demand, Princeton University Press (Princeton, NJ: 1993).

Hanson, James A., "Contractionary Devaluation, Substitution in Production and Consumption, and the Role of the Labor Market," Journal of International Economics, Vol. 14 (February 1983), pp. 179-89.

Harris, John, and Michael P. Todaro, "Migration, Unemployment and Development: A Two-Sector Analysis," American Economic Review, Vol. 60 (March 1970), pp. 126-43.

Heady, C., "Alternative Theories of Wages in Less Developed Countries: An Empirical Test," Journal of Development Studies, Vol. 24 (October 1987), pp. 5-15.

Helliwell, John F., "Comparative Macroeconomics of Stagflation," Journal of Economic Literature, Vol. 27 (March 1988), pp. 1-28.

Hewitt, Daniel P., and Caroline Van Rijckeghem, "Wage Expenditures of Central Governments," Working Paper No 95/11, International Monetary Fund (January 1995).

Hicks, Norman L., "Trends in Government Expenditures and Revenues in Latin America, 1975-88," Working Paper No IDP-0110, the World Bank (March 1992).

Hirata, Helena, and John Humphrey, "Workers' Response to Job Loss: Female and Male Industrial Workers in Brazil," World Development, Vol. 19 (June 1991), pp. 671-82.

Hollister, Robinson Jr., and Markus Goldstein, Reforming Labor Markets in the Near East, ICS Press (San Francisco, Cal.: 1994).

Horton, Susan, Ravi Kanbur, and Dipak Mazumdar, "Overview," in Labor Markets in an Era of Adjustment, ed. by Susan Horton, Ravi Kanbur, and Dipak Mazumdar, the World Bank (Washington, DC: 1994*a*).

Kannappan, Subbiah, "Urban Employment and the Labor Market in Developing Nations," Economic Development and Cultural Change, Vol. 33 (July 1985), pp. 699-730.

Kim, Choongsoo, "Wage Policy and Labor Market Development," in Macroeconomic Policy and Adjustment in Korea, ed. by Stephan Haggard, Richard N. Cooper, Susan Collins, Choongsoo Kim, and Sung-Tae Ro, Harvard University Press (Harvard, Mass.: 1994).

Kraay, Aart, and Caroline van Rijckeghem, "Employment and Wages in the Public Sector--A Cross-Country Study," Working Paper No 95/70, International Monetary Fund (July 1995).

Labán, Raúl, and Felipe Larraín, "Continuity, Change, and the Political Economy of Transition in Chile," in Reform, Recovery and Growth, ed. by Sebastián Edwards and Rudiger Dornbusch, Chicago University Press (Chicago, Il.: 1994).

Lal, Deepak, "A Simple Framework for Analysing Various Real Aspects of Stabilisation and Structural Adjustment Policies," Journal of Development Studies, Vol. 25 (April 1989), pp. 291-313.

Lazear, Edward P., "Job Security Provisions and Employment," Quarterly Journal of Economics, Vol. 105 (August 1990), pp. 699-726.

Le Fort, Guillermo, "The Relative Price of Nontraded Goods, Absorption and Exchange Rate Policy in Chile, 1974-82," Staff Papers (International Monetary Fund), Vol. 35 (June 1988), pp. 336-70.

Levy, Victor, and John L. Newman, "Wage Rigidity: Micro Evidence on Labor Market Adjustment in the Modern Sector," World Bank Economic Review, Vol. 1 (January 1989), pp. 97-117.

Lindauer, David L., Oey Astra Meesook, and Parita Suebsaeng, "Government Wage Policy in Africa: Some Findings and Policy Issues," World Bank Research Observer, Vol. 3 (January 1988), pp. 1-25.

Lindbeck, Assar, and Dennis J. Snower, "Segmented Labor Markets and Unemployment," Discussion Paper No 523, Centre for Economic Policy Research (April 1991).

———, "How are Product Demand Changes Transmitted to the Labor Market?," Economic Journal, Vol. 104 (March 1994), pp. 386-98.

Loayza, Norman V., "Labor Regulations and the Informal Economy," unpublished, the World Bank (November 1994).

López, Ramón, and Luis A. Riveros, "Macroeconomic Adjustment and the Labor Market in Four Latin American Countries," PPR Working Paper No 335, the World Bank (December 1989).

López, Ramón, and Luis A. Riveros, "Do Labor Market Distortions Cause Overvaluation and Rigidity of the Real Exchange Rate?," PRE Working Paper No 485, the World Bank (August 1990).

Lubell, Harold The Informal Sector in the 1980s and 1990s, Development Centre, OECD (Paris: 1991).

Mazumdar, Dipak, "Segmented Labor Markets in LDCs," American Economic Review, Vol. 73 (May 1983), pp. 254-59.

Mazumdar, Dipak, "Labor Markets and Adjustment in Open Asian Economies: the Republic of Korea and Malaysia," World Bank Economic Review, Vol. 7 (September 1993), pp. 349-80.

Moene, Karl O., Michael Wallerstein, and Michael Hoel, "Bargaining Structure and Economic Performance," in Trade Union Behavior, Pay Bargaining, and Economic Performance, ed. by Robert Flanagan, Karl O. Moene, and Michael Wallerstein, Oxford University Press (Oxford: 1993).

Moghadam, Reza, and Simon Wren-Lewis, "Are Wages Forward Looking?," Oxford Economic Papers, Vol. 46 (July 1994), pp. 403-24.

Mussa, Michael, "The Adjustment Process and the Timing of Trade Liberalization," in Economic Liberalization in Developing Countries, ed. by Armeane M. Choksi and Demetris Papageorgiou, Basil Blackwell (Oxford: 1986).

Nashashibi, Karim, and Stefania Bazzoni, "Exchange Rate Strategies and Fiscal Performance in Sub-Saharan Africa," Staff Papers (International Monetary Fund), Vol. 41 (March 1994), pp. 76-122.

Nelson, Joan, "Organized Labor, Politics, and Labor Market Flexibility in Developing Countries," in Labor Markets in an Era of Adjustment, ed. by Susan Horton, Ravi Kanbur, and Dipak Mazumdar, the World Bank (Washington, DC: 1994).

Paldam, Martin, and Luis A. Riveros, "The Causal Role of Minimum Wages in Six Latin American Labor Markets," Working Paper No 270, Development Research Department, the World Bank (April 1987).

Panagides, Alexis, and Harry A. Patrinos, "Union-Nonunion Wage Differentials in the Developing World: A Case Study of Mexico," Policy Research Working Paper No 1269, the World Bank (March 1994).

Park, Young-Bum, "Union-Nonunion Wage Differentials in the Korean Manufacturing Sector," Internnational Economic Journal, Vol. 5 (Winter 1991), pp. 79-91.

Parkin, Vincent, Chronic Inflation in an Industrializing Economy: The Brazilian Inflation, Cambridge University Press (Cambridge: 1991).

Quibria, M. G., "Migration, Trade Unions, and the Informal Sector: A Note on Calvo," International Economic Review, Vol. 29 (August 1988), pp. 557-63.

Rama, Martín, "Flexibility in Sri Lanka's Labor Market," Policy Research Working Paper No 1262, the World Bank (March 1994*a*).

Rama, Martín, "The Labor Market and Trade Reform in Manufacturing," in The Effects of Protectionism on a Small Country, ed. by Michael Connolly and Jaime de Melo, the World Bank (Washington, DC: 1994b).

———, "Do Labor Market Policies and Institutions Matter? The Adjustment Experience in Latin America and the Carribean," unpublished, the World Bank (May 1995).

Rama, Martín, and Guido Tabellini, "Endogenous Distortions in Product and Labor Markets," PRD Working Paper No 1413, the World Bank (January 1995).

Renard, Robrecht, "Rural-to-Urban Migration and the Shadow Wage in LDCs," European Economic Review, Vol. 24 (April 1984), pp. 401-07.

Riveros, Luis, "International Differences in Wage and Nonwage Labor Costs," PRE Working Paper No 188, the World Bank (April 1989).

———, "Recession, Adjustment and the Performance of Urban Labor Markets in Latin America," Canadian Journal of Development Studies, Vol. 11 (March 1990), pp. 34-59.

———, "The Effects of Wage Indexation on Adjustment, Inflation and Equity," Working Paper No 17, Human Resources Development and Operations Policy, the World Bank (November 1993).

Roberts, B., "The Changing nature of Informal Employment: the Case of Mexico," in Towards Social Adjustment, ed. by Guy Standing and Victor Tokman, International Labor Office (Geneva: 1991).

Roldós, Jorge, "Supply-Side Effects of Stabilization Programs," Staff Papers (International Monetary Fund), Vol. 42 (March 1995), pp. 158-83.

Rosenzweig, Mark, "Labour Markets in Low-Income Countries," in Hollis Chenery, and T.N. Srinivasan, eds., Handbook of Development Economics, Vol. I, North Holland (Amsterdam: 1988).

Sahn, David E., "Public Expenditures in Sub-Saharan Africa during a Period of Economic Reforms," World Development, Vol. 20 (May 1992), pp. 673-93.

Said, Mona, "Public Sector Employment and Labor Markets in Arab Countries: Recent Developments and Policy Implications," unpublished, International Monetary Fund (September 1994).

Sapsford, David, and Zafiris Tzannatos, The Economics of the Labor Market, St. Martin's Press (New York: 1993).

Shapiro, Carl, and Joseph E. Stiglitz, "Equilibrium Unemployment as a Worker Discipline Device," American Economic Review, Vol. 74 (June 1984), pp. 433-44.

Simonsen, Mario H., "Indexation: Current Theory and the Brazilian Experience," in Inflation, Debt and Indexation, ed. by Rudiger Dornbusch and Mario H. Simonsen, MIT Press (Cambridge, Mass.: 1983).

Standing, Guy, "Structural Adjustment and Labour Market Policies: Towards Social Adjustment?," in Towards Social Adjustment, ed. by Guy Standing and Victor Tokman, International Labor Office (Geneva: 1991).

Stark, Oded, The Migration of Labor, Basil Blackwell (Oxford: 1991).

Stevenson, Gail, "How Public Sector Pay and Employment Affect Labor Markets," PRE Working Paper No 944, the World Bank (August 1992).

Stiglitz, Joseph E., "Alternative Theories of Wage Determination and Unemployment in LDCs: the Labor Turnover Model," Quarterly Journal of Economics, Vol. 98 (May 1974), pp. 194-227.

———, "Alternative Theories of Wage Determination and Unemployment: The Efficiency Wage Model," in The Theory and Experience of Economic Development, ed. by Mark Gersovitz et al., Allen and Unwin (London: 1982).

Taylor, Lance "Real and Money Wages, Output and Inflation in the Semi-Industrialized World," Economica, Vol. 57 (August 1990), pp. 329-53.

———, Income Distribution, Inflation and Growth, MIT Press (Cambridge, Mass.: 1991).

Terrell, Katherine, "Public-Private Wage Differentials in Haiti: Do, Public Servants Earn a Rent?," Journal of Development Economics, Vol. 42 (December 1993), pp. 293-314.

Tokman, Victor, "Policies for a Heterogeneous Informal Sector in Latin America," in Beyond Regulation: The Informal Economy in Latin America, ed. by Victor Tokman, Lynne Rienner (Boulder, Col: 1992).

Turnham, David, Employment and Development: A New Review of Evidence, Development Centre, OECD (Paris: 1993).

Urani, André, and Carlos Winograd, "Distributional Effects of Stabilization Policies in a Dual Economy: the Case of Brazil, 1981-88," Revista Brasileira de Economia, Vol. 48 (January 1994), pp. 71-84.

Van der Gaag, Jacques, and Wim Vijverberg, "Switching Regression Model for Wage Determinants in the Public and Private Sectors of a Developing Economy," Review of Economics and Statistics, Vol. 70 (May 1988), pp. 244-52.

Van Ginneken, Wouter, "Labour Adjustment in the Public Sector: Policy Issues for Developing Countries," International Labour Review, Vol. 129 (No 4, 1990), pp. 441-57.

Van Gompel, J., "Stabilization with Wage Indexation and Exchange Rate Flexibility," Journal of Economic Surveys, Vol. 8 (September 1994), pp. 251-81.

Villarreal, Norma S., amd Ricardo S. Brach, "Evaluation of the Impact of Minimum Wages on the Mexican Economy," in Assessing the Inpact of Statutory Minimum Wages in Developing Countries, Management Series No 67, International Labor Office (Geneva: 1988).

Végh, Carlos A., "Stopping High Inflation: an Analytical Overview," Staff Papers (International Monetary Fund), Vol. 39 (September 1992), pp. 626-95.

Weiss, Andrew, Efficiency Wages: Models of Unemployment, Layoffs, and Wage Dispersion, Princeton University Press (Princeton, New Jersey: 1990).

World Bank, Workers in an Integrating World, World Development Report (Washington, DC: 1995).