

POLICY RESEARCH WORKING PAPER

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# Unemployment Insurance in Algeria

## Implications for a Labor Market in Transition

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Industrial restructuring has serious and persistent implications for Algeria's labor market. Algeria's labor strategy should incorporate supply-side policies to create jobs and stimulate development of the private sector, so that it will have a more agile labor market in the long run.

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## Summary findings

To predict how Algeria's unemployment crisis will evolve, Ruppert evaluates the Algerian unemployment insurance system's ability to finance itself, to affect employment decisions (of both firms and workers), and to promote enterprise restructuring (with attention to long-term implications for the labor market).

Her main conclusion: Industrial restructuring has serious and persistent implications for the labor market. In an environment where many equilibria are possible, there is a real danger of reaching a high unemployment equilibrium.

The big-bang experience of structural adjustment in the transition economies of Central and Eastern Europe resulted in large-scale unemployment. Despite considerable progress in restructuring, structural rigidities still exist in the labor market there, and long-term unemployment has persisted. Boeri (1993) calls this "transitional unemployment" and argues that it is difficult to eliminate by reintegration into the labor force.

One advantage of the big-bang approach is the speed of adjustment, but the unemployment that results may be too costly for Algeria's economy, especially because it

would be persistent. A more moderate "mixed bang" approach would incorporate active employment measures to mitigate entrenched unemployment. A crucial function of such policies is to maintain or enhance human capital through work (learning by doing), so idle workers don't lose their skills. Flex-time arrangements would help workers maintain a degree of attachment to the labor force. However minor, such work would help workers avoid the traps of long-term unemployment.

Two striking conclusions emerge from the Central and Eastern European experience:

- Unemployment is not essential to enterprise restructuring and labor market adjustment. Private sector vacancies are filled by job-to-job shifts, without recourse to the unemployment pool.
  - Growing long-term unemployment is self-fulfilling and results in higher and persistent unemployment.
- Although active employment measures are costly and have relatively low rates of return in the short run, they can be marginally effective as part of a long-term strategy.

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This paper — a product of the Country Operations Division, Middle East and North Africa, Country Department I — is part of a larger effort in the department to assess the characteristics and dynamics of labor markets in the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Huguette Osselyn, room H4-135, telephone 202-473-6039, fax 202-477-8528, Internet address [hosselyn@worldbank.org](mailto:hosselyn@worldbank.org). September 1996. (22 pages)

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**UNEMPLOYMENT INSURANCE IN ALGERIA:  
IMPLICATIONS FOR A LABOR MARKET IN TRANSITION**

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The World Bank

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## **UNEMPLOYMENT INSURANCE IN ALGERIA: IMPLICATIONS FOR A LABOR MARKET IN TRANSITION**

1. In an environment of high unemployment, persistent economic stagnation and social and political unrest, and confronted by tighter fiscal constraints due to weak world oil prices and diminished access to foreign financing, the Algerian authorities undertook an extensive program of policy reform and structural adjustment. Currently in transition from central planning to a market economy, Algeria, like its counterparts in Central and Eastern Europe, faces a dilemma. On the one hand, it must correct the macroeconomic imbalances endemic to the socialist model because its economy is stagnating and losing competitiveness, and it faces balance of payments and fiscal constraints due to high debt servicing obligations and rising subsidization of its population. On the other hand, structural reform is onerous due to its scope, and its consequences for workers laid off in the process of enterprise restructuring. In July, 1994, the Algerian authorities adopted a national unemployment insurance scheme to protect workers laid off during the period of adjustment.

2. Unemployment insurance is a policy mechanism to achieve certain objectives for overall employment levels, firms' lay-off behavior, workers' job search behavior, and worker protection. This paper seeks to analyze the Algerian system design in the context of recent international experience. The first section examines a variety of policy variables typical of unemployment insurance schemes, and the theoretic implications for the labor market. The experience of the transitional economies of Central and Eastern Europe provides insight into the evolution of employment and unemployment in the face of various employment policies. Section II discusses labor market policy and theory in the context of the dynamic Burda model. The third section raises the principal objectives in designing an unemployment insurance scheme. Section IV describes and evaluates the Algerian system's eligibility criteria, benefit parameters and financing measures, and derives conclusions based on the dynamic model discussed in the second section. Section V presents an analysis of the potential costs of the system, based on a model that estimates the projected financial viability of the system by simulating a range of employment profiles and parameters. Finally, the paper concludes with international evidence on labor market policies and their effect on the evolution of unemployment.

### **Section I: Unemployment Insurance in Central and Eastern Europe**

3. In a well-functioning and minimally regulated labor market, wages and employment determine an equilibrium allocation of labor that is Pareto optimal. Market failures emerge, however, due to impediments to competition such as asymmetric information, and the delays in adjustment and reallocation associated with the contractual nature of labor agreements. The resulting inequitable distribution of income and lack of protection for workers provides a rationale for government intervention. The fundamental purpose of unemployment insurance (UI) is to smooth income over time by insuring against unexpected drops in income in the event of job separation. In the case of economies undergoing adjustment, this takes the form of poverty alleviation. Mandatory schemes typically pursue the additional objective of income

redistribution, which can be attained in two ways. In pay-as-you-go systems financed by worker contributions in the form of a payroll tax, there is a redistribution of income from the employed to the unemployed. Similarly, the design of benefit minimums and maximums can effect a redistribution; in a contributory scheme with flat rate contributions and capped benefits, workers earning higher salaries subsidize those earning lower wages. While it is preferable that the link between contributions and benefits be close and transparent, income redistribution is consistent with the equity objectives pursued by socialist governments such as those found in the transitional economies of Central and Eastern Europe (CEE), as well as Algeria. Unemployment insurance plays a crucial role in the transition to markets by facilitating industrial restructuring and labor reallocation. Most of the transitional economies have recently implemented UI systems with the goal of promoting labor shedding while providing income support to the affected population.

4. The Central and Eastern European systems. The various UI systems found in CEE have similar blueprints, which can be generalized as follows (see Table 1). Firms contribute a flat rate tax on the wage bill to a government-controlled Social Fund, which is responsible for financing both the payment of benefits as well as active labor market policies such as job

<b>Table 1: Characteristics of Unemployment Benefit Systems in Central and Eastern Europe and Algeria</b>				
<b>Country</b>	<b>Duration of benefit<sup>1</sup></b>	<b>Replacement rate<sup>2</sup></b>	<b>Minimum</b>	<b>Maximum</b>
Bulgaria	6-12 mo.	90-140% of MW	-	-
Czech & Slovak Republics	6 mo.	60% for 3 mo. 50% after <sup>3</sup>	-	3,000 CSK
Hungary	12 mo. max.	75% for 3 mo. 60% for 9 mo.	8,600 HFT <sup>5</sup> 8,600 HFT	18,000 HFT 15,000 HFT
Poland	12 mo.; 18 mo. in crisis areas	36% of avg. nat'l wage ( $\equiv$ MW)	-	-
Romania	9 mo.	60% for means-tested population <sup>4</sup> 70% for those w/ higher education	-	-
Slovenia	2 years max.	70% for 3 mo. 60% after	80% of MW	4 times MW
Algeria	1 year min. 3 years max.	Declining replacement of MW-weighted "reference salary" <sup>6</sup>	75% of MW	3 times MW

MW denotes minimum wage.

<sup>1/</sup> After exhausting benefits, can receive a "social benefit" less than MW, e.g. in Hungary, Romania, Slovenia.

<sup>2/</sup> Replacement rate of average wage earned over the last year of employment, unless otherwise noted.

<sup>3/</sup> 70% replacement if in retraining, benefits for 1 year.

<sup>4/</sup> Eligible population earns < 50% of MW.

<sup>5/</sup> Minimum wage in Hungary is 9,000 HFT (1993).

<sup>6/</sup> For details, see para. 24 and Table 3.

Sources: Jackson, Koltay, and Biesbrouck, 1995; World Bank.

training and placement programs. The portion of the payroll tax that finances unemployment-related charges is paid by the employer, typically with no worker contribution. The level of benefits is set proportionally to the salary earned while employed, at a replacement rate ranging from 50-75 percent. A uniform duration of benefit eligibility is common, although some systems use length of experience to determine duration. The maximum caps that apply to duration range from 6 to 12 months in most CEE countries, with the longest duration found in Slovenia, up to two years (see Table 1). Despite the variety of system parameters, the bias toward worker protection is apparent in the generosity of benefit duration. Considering the highly regulated labor markets in socialist economies, it is not surprising that the newly implemented UI programs exhibit similarly protective features.

5. Comparing Algeria. In many ways Algeria's system is similar, but with notable differences. Benefits are financed by payroll contributions shared by employers and employees, but also by a mandatory entry fee paid by firms. The entry fee is proportional to the worker's salary and work tenure, up to maximum equivalent to 12 months' salary, thus representing a significant additional cost to firms. In terms of benefit structure, duration eligibility is generous relative to the CEE countries, ranging from a one year minimum to a 3 year maximum, and averaging 23 months. These parameters clearly favor the worker, reflecting the social priorities of a centrally planned economy. In fact, Algerian workers benefit from a high degree of labor market regulation. Unlike the UI programs found in Central and Eastern Europe, however, Algerian firms incur a financial burden elsewhere borne by the state (i.e. the Social Fund). The benefit level in the Algerian system is determined by a declining replacement rate of the "reference salary", calculated as the mean of the actual and minimum wages (see para. 24 and Table 3 for a detailed discussion). This formula leads to a compression of benefits, but the minimum and maximum levels relative to minimum wage are comparable to those found in other transitional economies.

6. Early results in Central and Eastern Europe. It is instructive to evaluate the success of the above mentioned UI systems in obtaining the desired objectives in an effective and financially viable way. Because the UI systems have been operating for several years, in general since 1990-1991, it is particularly beneficial to study the effects on the labor market as well as the performance of the economy. Industrial production suffered significant losses over a period of several years, on the order of 40 percent, and unemployment steadily increased from negligible unemployment to levels from 11-16 percent by 1993 (see Table 2). The declines in output may be explained by both aggregate and relative shocks. Initial shocks at the aggregate level, such as liberalizing prices, currency devaluations, and credit constraints, led to higher

	% Δ Ind. VA	% Δ GNP/cap.	Unemp. (1993)	Average Inflation
Bulgaria	-39.5%	-46.2%	16.4%	104%
Czech Republic	-31.5%	-22.5%	3.5%	23%
Slovak Republic	-43.5%	-3.5%	14.4%	25%
Hungary	-9.0%	19.3%	12.1%	27%
Poland	-25.4%	na	16.4%	116%
Romania	-37.1%	-49.7%	10.9% <sup>1</sup>	143%

Source: World Bank 1/ 1994

costs of inputs, loss of competitiveness and, for the first time, hard budget constraints.<sup>1</sup> After some adjustment in production levels and reallocation of resources, various relative shocks ensued. Changes in relative costs and the collapse of domestic demand led to additional compression in productive activity, thus creating fiscal pressure. The ensuing high inflation proved destabilizing to the macroeconomic situation (see Table 2). The degree of labor shedding over this tumultuous period, however, was more moderate. The decline in output considerably exceeded the decline in employment, signifying continued labor hoarding and soft budget constraints initially, with reliance on attrition, extended unpaid vacation, early retirement, and exit from the labor force. The relatively moderate rates of unemployment can be explained by: (i) the discrepancy between the level of official, registered unemployed, and the level of *de facto* unemployed; (ii) exit from the labor force; and (iii) measurement problems associated with informal sector activity. Labor market surveys in Russia, for example, yield significant discrepancies in the magnitude of unemployment relative to the official numbers (Commander and Yemtsov, 1995).

7. The success of the new UI programs has not been uniform across the CEE countries. Since initially implemented, several countries have adjusted the benefit parameters in the direction of tighter eligibility requirements, shorter durations or lower replacement rates, because of spiraling costs, which led to a squeeze on financing for active labor market policies. Counterexamples are provided by Poland and Romania, which experienced particularly high rates of unemployment and declines in living standards early in the transition period. Poland extended its duration maximum to 18 months in regions deemed to be in particular crisis, and Romania added a "social benefit" provision at a very low level of support (40 percent of the minimum wage, means-tested only), to last 18 months in addition to the regular benefit duration of up to 9 months, bringing the total duration to greater than two years. Despite the intention to increase protection of vulnerable populations, introducing more generous benefits at critical stages of adjustment is equivalent to backtracking on reforms, and can have serious and persistent negative consequences for the labor market. The model discussed in the next section illustrates the potentially damaging result of hysteresis in terms of entrenched long-term unemployment and the associated risk of marginalizing an important segment of the labor market.

## **Section II: A Dynamic Model of the Labor Market**

8. In his recent labor market analyses (Burda, 1988, 1992, 1993; Commander and Coricelli, 1995) Michael Burda develops a model to describe the effects of various labor market institutions in a unified framework, with the goal of analyzing the evolution of unemployment over the medium and long terms. Although short-run price and demand shocks are not unimportant, the model addresses the long-run dynamics of the labor market. The model is therefore useful in describing economies in transition whose labor markets are undergoing drastic change.

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<sup>1/</sup> Commander and Coricelli (1993) find that negative growth in output is fairly uniform across sectors, suggesting that aggregate shocks play a significant role.

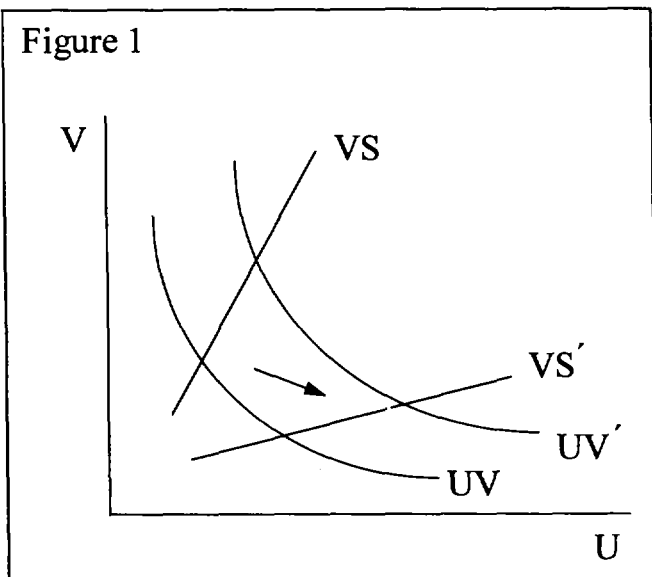


9. An economy's long-run equilibrium in unemployment-job vacancy space is determined by the intersection of the demand for jobs, depicted by the unemployment-vacancy curve UV, also known as the Beveridge curve, and the supply of vacancies curve VS, as shown in Figure 1. The level of unemployment reaches a steady state equilibrium when inflows to unemployment caused by separation (resulting from lay-off or shut-down) are equal to outflows from unemployment into job vacancies, i.e.

$$\dot{u} = s(1-u) - x(u, v) = 0,$$

where  $s$  represents the separation rate that applies to employed workers  $(1-u)$ , and  $x(u, v)$  is the matching function that brings together unemployed workers and vacancies. The UV curve is a continuum of combinations of  $u$  and  $v$  for which  $du/dt = \dot{u} = 0$ . The UV locus is downward sloping (as  $v$  declines,  $u$  increases), and convex to the origin. An increase in  $s$  will shift UV outward to a higher locus of  $(u, v)$  combinations, denoted UV'. Similarly, a less efficient matching function  $x(\cdot)$  will shift the UV curve away from the origin.

10. The VS curve describes the willingness of firms to create jobs. As such, it is affected by the incentives introduced by labor market regulations. The curve is generally upward sloping, because higher unemployment means a decline in real wages, making job creation cheaper, and also increases the probability of finding a worker to fill the vacancy. External factors such as increases in workers' bargaining power, interest rates, real wage costs, UI benefits, alternative income from informal activities and the cost of severance payments to the firms will rotate the VS curve clockwise to VS'. In such an environment, a new equilibrium level of unemployment will be reached where UV' and VS' intersect.



This shift describes the situation encountered in the CEE transitional economies, where industrial restructuring entrained large scale lay-offs, real interest rates climbed, output plummeted and domestic demand collapsed, compounded by significant shocks to the terms of trade, unions acquired greater power, and UI systems were implemented that included benefit payments and severance packages. The result was a shift to a new steady state of higher unemployment and lower vacancies.

11. In the framework of the model, alternative policies can be introduced to counteract the shift to a high-unemployment equilibrium. The most effective policy measures, borne out by the experience in the Czech Republic, are active labor market policies.<sup>2</sup> Acting on both the

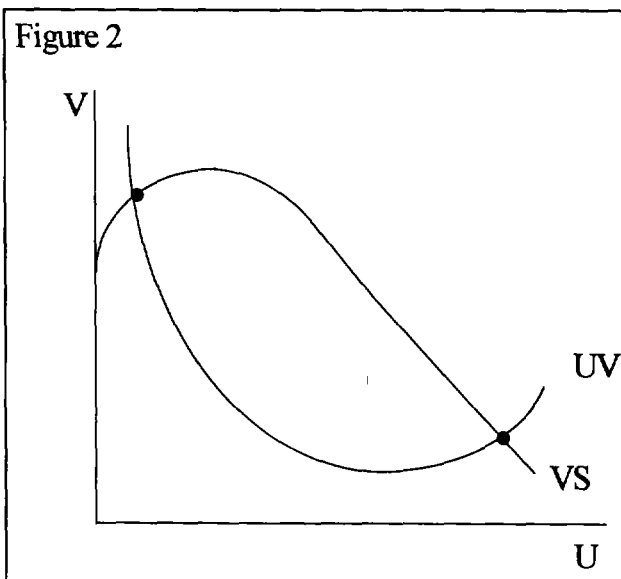
<sup>2/</sup> The Czech Republic has the lowest U/V ratio among the CEE transitional economies (Boeri, 1994).

demand and supply sides can mitigate the movements described above. Job creation measures, for example, such as public works schemes, wage subsidies, and tax incentives for private firms, will rotate the VS curve up and left, by rendering vacancies more productive. Similarly, requiring beneficiaries of unemployment insurance to participate in job training improves the pool of those who can fill vacancies, which also has a positive effect on the supply of vacancies. Switching to the demand side, the model captures the effects of active employment measures that improve the efficiency of the matching function  $x(u, v)$ . Measures to improve the exchange of information at employment offices regarding vacancies and training programs, as well as better monitoring of the unemployed, and retraining programs to eliminate mismatch (a common problem in state-controlled industries which relied on obsolete technology) will effectively cause the UV curve to shift inward toward the origin. The model therefore derives policy prescriptions in terms of active employment policies because of their positive influence in mitigating long-term unemployment.

12. Moving beyond a simple static version of the model, Burda incorporates some dynamic complexity in the process of job search and employment decisions for workers and firms. Evidence from both OECD and CEE countries suggests that a significant portion of labor market movement comes from job-to-job switches, without passing through unemployment. The model incorporates on-the-job search into the unemployment function, assuming that a fraction  $\Pi$  of the pool of employed workers actually look for a job while working, such that the equilibrium unemployment condition becomes

$$\dot{u} = s(1-u) - (u/(u+\Pi(1-u))) * (x(u+\Pi(1-u), v)) = 0, \quad \text{for } \Pi \in (0,1).$$

Because job-search is procyclical, fewer workers look for jobs as unemployment worsens (i.e.  $\Pi' \leq 0$ , and  $\Pi'' < 0$ ). The resulting UV curve is not strictly convex, and can be upward sloping for high levels of  $u$ , as in Figure 2. The intuition for this result lies in the fact that high  $u$  means a smaller employed labor force, and therefore fewer effective job searchers, such that vacancies are greater. There is no concurrent improvement in the matching function, because high  $u$  causes congestion, i.e.  $dx/du < 0$ . On the supply side, the VS curve can be totally differentiated to yield  $dv/du > 0$  initially, i.e. for  $u=0$ , but  $dv/du$  turns negative assuming that  $\Pi$  is sufficiently responsive to high levels of  $u$ . Firms' incentive to offer vacancies diminishes at high rates of unemployment because there are fewer on-the-job seekers, such that vacancies become less "productive". Therefore, when job search behavior of workers is considered, multiple equilibria are possible, as depicted in Figure 2.



13. An environment in which multiple equilibria are possible raises questions vis-à-vis the big bang theory of adjustment through wide-spread labor compression. Despite the positive effect of facilitating restructuring and introducing mobility and adjustment to the labor market by pushing workers to look for jobs, a big bang risks moving too quickly to high unemployment, diminishing the number of on-the-job seekers and discouraging job creation among firms. However, higher unemployment may actually slow the process of restructuring, through lower job turnover, especially quits. This argument makes the case for a big bang, because it increases the returns to public enterprise restructuring. Multiple equilibria can be generated by features other than on-the-job search. Bad public finance, for example, in which UI benefits are set exogenously and financed by a tax on firms which is raised in times of UI fund short-fall, can lead to a downward sloping vacancy supply curve by raising firms' costs of creating jobs.<sup>3</sup> Artificially high wages and persistent soft budget constraints distort wage signaling, which is crucial in determining employment levels through its allocative function. The resulting high natural rate of unemployment is a path-dependent equilibrium, implying that a reversal of the policies or exogenous shocks which led to its present steady state would not return the economy to its original equilibrium.

14. This phenomenon of a path-dependent steady state is known as hysteresis, and in this case means persistence of a low level or undesirable equilibrium over the long run. The new steady state equilibrium depends not only "on the long-run values of the exogenous variables (as usually) but also on the initial condition of each state variable" (Franz, 1990, p.110). Hysteresis arises when negative shocks to the demand for labor are accompanied or followed by persistent negative supply side effects. For example, after a decline in labor demand, hysteresis can result from the loss of human capital and negative labeling associated with unemployment, leading to entrenched long-term unemployment. Other supply side factors which potentially lead to hysteresis are structural rigidities in the labor market, illustrated by a lack of mobility across regions or industries<sup>4</sup>, or the effect of generous workers' benefits on the decision to remain employed and abandon job search. Each example represents a distortion in the agent's incentive to act, with ultimately negative and persistent consequences for the economy. The analysis herein advises caution in designing labor market policies in an environment in which multiple equilibria are possible, because of the danger of hysteresis associated with low level equilibria.

### **Section III: Objectives of Unemployment Insurance**

15. In designing an effective UI system, it is necessary to delineate the desired objectives, and to prioritize them according to short-term and medium-term measures. The transition to a market economy gives rise to specific and immediate needs that take precedence over more infrastructural and market efficiency issues. Short-run measures include strengthening the

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<sup>3/</sup> Solvency triggers found in the UI systems of most jurisdictions in the U.S. have the same negative dynamic effects by raising the contribution rate during periods of recession (see Worden and Vroman, 1991).

<sup>4/</sup> In Central and Eastern Europe, rigidities in the housing market result from inadequate property rights and a lack of rental housing, for example. In Algeria, mobility is constrained by a severe housing shortage.

system of unemployment insurance by simplifying targeting and eligibility requirements, such that it has the administrative capacity to handle large numbers of participants. Minimum income support is a crucial element, and resources should be directed to protecting the minimum level of benefits, which should be set at least equal to the country's poverty line for individuals. A flat benefit rate is simplest to establish, to adjust, and to administer. A fundamental goal of UI in the early stages of transition is to facilitate enterprise restructuring, labor shedding and reallocation toward the private sector, which can be motivated by appropriate incentive structures for employers and employees by adjusting policy variables such as the contribution structure, eligibility criteria, and benefit level and duration. It is essential that the program design takes account of alternative social safety net measures and pension and non-wage compensation which influence employment decisions, such that the new UI system has a consistent incentive structure and does not introduce new distortions.

16. Additional policy options to be pursued in the short run concurrently with UI would reinforce objectives to mitigate the immediate effects of unemployment. With an eye toward the needs of individual communities, the state could diversify its overall employment strategy by complementing the centralized UI scheme with decentralized programs designed for particular regions. Alternatives include: (a) financial assistance and employment-generating projects in areas devastated by mass layoffs or shutdown of the main industrial employer; (b) employment subsidies to maintain a minimum level of productive activity on a temporary basis; (c) public works schemes; (d) programs to foster entrepreneurship and other local economic development. These programs are particularly challenging to design and implement because they are inherently complex and expensive, they risk subsidizing non-viable activities, and they perpetuate the socialist phenomenon of over-dependence on the state.

17. In order to lay the groundwork for medium-term objectives in the short run, they must be integrated into the overall strategy and design of an UI scheme from the outset. Goals for the medium term can be divided into three categories: (i) rationalize the benefit structure of UI such that it encourages participation and achieves broader coverage; (ii) implement active employment policies such as retraining and redeployment programs; and (iii) improve the administrative capacity of the UI and employment programs. All three address improving efficiency, whether at the program level, in operational terms, or at the market level, by improving labor allocation and mobility. First consider the benefit structure of UI. In order to link directly contributions and benefits such that individual agents (both workers and firms) finance their own insurance, contributions should be shared between workers and employers, with the employee contribution appearing on the pay slip. In addition, the rate of contribution should mirror the benefits; a flat rate contribution should yield a flat rate cash transfer, while a proportional contribution (i.e. a percentage of the gross wage) should yield benefits which vary with salary, and are not subject to a maximum. It is possible to have a two-pillar approach which combines the two payment structures. The main reasons to rationalize benefits with contributions are to foster social integration, signal responsibility of the individual, minimize distortions to individual job search and employment decisions, and counteract evasion of the payroll tax. On the employer side, lay-off behavior can be affected by the contribution requirements; experience rating, which is commonly used in the United

States, determines the contribution level based on an employer's history of generating unemployment, so that at least some of the cost of unemployment is borne by the employer.

18. The second category of medium-term objectives pertains to the efficient functioning of the labor market and labor mobility. Unemployment insurance is considered to be a passive policy because it responds *ex poste* to a specific event of unemployment, but does not act to reduce the risk of or correct that event in the future. Active labor market policies, by contrast, are characterized by proactive measures designed to find permanent solutions to unemployment. Job creation, for example, can be stimulated through public works and temporary employment programs, or on a more permanent basis, through promoting the private sector. Programs which retrain workers in new technologies or industries where price and trade liberalization has generated higher demand are particularly useful in transitional economies. Lessons from Central and Eastern Europe reveal gaps in technological knowledge, in which the highly skilled labor force was trained for outmoded methods of production rendered noncompetitive on international markets. This was exacerbated by production targets inherited from the old system which were severely misaligned with actual demand. Structural unemployment is very costly in terms of lost production as well as income support. Retraining programs, therefore, can facilitate labor reallocation to correct sectoral imbalances resulting from the transition to an open economy. Redeployment and job brokering act in a similar manner. Agencies that provide information services about job openings and training programs contribute to labor mobility, especially among unskilled and semi-skilled workers. While active employment programs are integral to a well-functioning labor market, the drawbacks include their limited scope of effectiveness because they reach a narrow audience, and their relatively high cost. In an environment where multiple equilibria are possible, however, such as when on-the-job search is present, the Burda model presented above demonstrates that despite the drawbacks, such active labor market policies are crucial to avoiding low level, high unemployment equilibria.

19. The final category of medium-term goals consists of measures to increase administrative capacity. Some advantages to be gained are administrative cost savings through more effective contribution collection, faster and more reliable delivery of services and benefits, which encourages greater participation, and increased capacity for control, which will diminish fraud. All these contribute to reduce the costs of the system. The steps which will achieve these benefits are time- and labor-intensive, but can pay handsomely in terms of improved system efficiency. Fundamental steps include (a) replacing the enterprise as a purveyor of benefits, which will result in more equity, greater transparency of benefit levels, and less fraud and leakage from the system; (b) establishing a system of social insurance records by individual worker and firm (e.g. issuing a social security identification number); (c) computerizing record-keeping in a central database that can be linked with other social assistance program databases and used for cross-checking; and (d) improving the delivery of benefits.

#### Section IV: Algeria's Unemployment Insurance System

20. While the objectives described in the previous section pertain to unemployment insurance in the unconstrained case, the issue of financial viability of the system complicates the design of a UI scheme. During the process of economic restructuring, the CEE countries encountered financial pressure on the system in the wake of extremely adverse economic conditions, namely severe fiscal constraints, declines in output, increases in unemployment, declining living standards, and political and social instability. This fragile situation requires a well-defined strategy, and a separation and prioritization of goals by feasibility (both financial and administrative) in the short run, and over the medium term. Above all, it is important that incomes policies and unemployment benefit structures be consistent with a comprehensive labor market strategy without introducing adverse incentives.

21. This is a tall order, especially for Algeria. Unlike its Central and Eastern European counterparts, Algeria did not follow the socialist model of full employment. In designing its unemployment insurance system, therefore, it faced an initial condition of substantial unemployment (on the order of 24% of the labor force in 1994). However, by adopting a new scheme in July 1994, the Algerian authorities sought three objectives: (i) to facilitate enterprise restructuring by encouraging labor shedding, (ii) to protect workers laid off for economic reasons as a result of restructuring; and (iii) to gain political capital during a period of economic, social and political crisis. These objectives represent imperatives that constrain choices in designing the system. To disregard these elements might exacerbate an environment already rife with social tension.

22. Financing structure. The Algerian system of unemployment insurance is financed by a 4 percent payroll tax shared by the employer and employee (2.5% and 1.5%, respectively) as well as a one-time payment of entry fees by firms for each eligible worker, paid at the time of lay-off. The amount of entry fee is proportional to the worker's salary history over the last year of employment as well as his/her tenure of work experience. Although the Unemployment Insurance Fund is a public institution, it is fiscally independent of the central government. It administers benefits, processes claims, and manages the fund's reserves. Financed entirely by payroll tax contributions and entry fees, it does not administer or finance any active labor market policies such as job training or placement schemes, nor does it have recourse to government funding in periods of reserve shortfalls. Instead, it must amend its contribution and benefit parameters to restore financial viability. Although nominally separate from Treasury support, the government in effect subsidizes the UI fund through its payroll tax on the public administration wage bill; public servants make up almost half of the eligible labor force, but they are not *de facto* subject to lay-off. Because benefits are capped (at 3 times the minimum wage), the flat rate contribution constitutes an income redistribution from higher wage earners to those actually laid off. While a closer link between contributions and benefits would minimize any disincentive to participate in the unemployment insurance system, the Algerian scheme's mandatory participation and redistributive benefit design are intended to promote social solidarity in a country where social welfare is central to determining policy.

23. Although Algeria's system of UI shares its basic contributory structure and benefit design with many CEE and OECD countries, it incorporates two innovative features. The first concerns the payment of an entry fee by the employer to the UI fund, proportional to the worker's salary history and job tenure, such that the firm's lay-off decision takes account of the cost of lay-off.<sup>5</sup> This serves to boost fund reserves by covering more than half of the total stream of monthly indemnities to be paid to the beneficiary. The firm's requirements include a lump sum severance package equivalent to three months' salary, followed by an entry fee equal to 80 percent of the monthly salary for each year of work experience greater than three years, up to a maximum equivalent to 12 months' salary (Table 3 contains details of system). This represents a significant financial burden to the enterprise, which is also required to present a restructuring plan to its worker participation committees for negotiation, and to assemble the administratively cumbersome application for eligibility to UI benefits for each employee. The new system was implemented to facilitate enterprise restructuring by encouraging labor shedding. The cost of layoffs may prove prohibitively expensive for firms, however. This evidently played a role in the former system of severance packages; the combination of high up-front costs (15 months' salary due at the moment of separation), labor promotion policies of the government, and soft budget constraints faced by public enterprises discouraged large scale participation.<sup>6</sup> Because the maximum entry fee plus severance pay owed by firms did not change, any cost savings of the new system comes from spreading charges over time, thereby easing liquidity constraints.

24. Benefit structure. The second innovative feature involves the benefit structure, which is characterized by a benefit level proportionate to salary history, and a progressive replacement rate of over the eligibility period. The benefit level is based on a reference salary, equal to the average of the monthly salary earned over the last year of employment and the minimum wage. While the link between salary-related contributions and benefits is apparent, there is *de facto* compression of the reference wage, in favor of lower wage earners. The upper and lower bounds on benefit level span a fairly narrow range, and thus eliminate any perverse income redistribution effects while providing a more than sufficient level of protection to the affected population. The replacement rate of the reference salary declines over the 4 quarters which make up the eligibility period, starting with 100 percent replacement, followed by 80, 60, and finally 50 percent replacement in the last quarter. Although this graduated structure encourages job search, any positive incentives are overwhelmed by the generous limits on duration. The system administers indemnity payments for a period proportional to work history, but for a minimum of one year, and as long as three years. The fact that the eligible worker receives near-full replacement (90% on average) for at least 6 months, and possibly as long as 18 months, effectively nullifies any incentive to seek new employment. Long benefit periods, longer than those found in other transitional economies, encourage attachment to unemployment, and risk exacerbating unemployment over

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<sup>5/</sup> This is similar to the experience rating found in various UI systems in the U.S. However, the Algerian system does not perfectly internalize the cost of lay-off into the employer's decision in the event that a worker quickly finds alternative employment. The old employer is still required to pay the entry fee, even though the UI fund pays no benefits to the worker concerned.

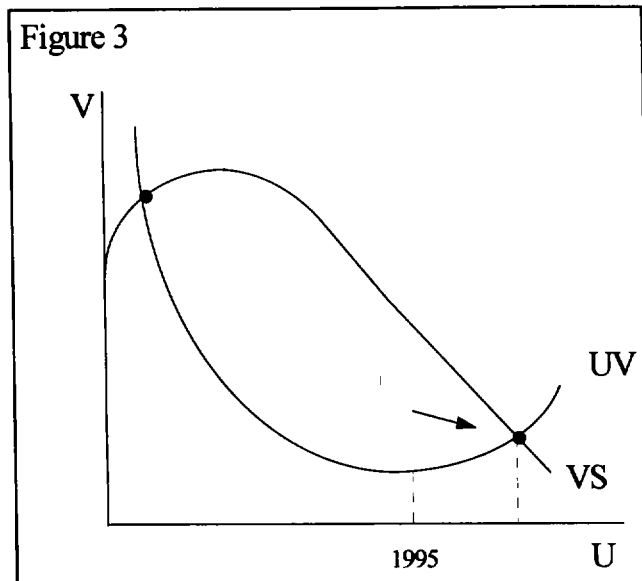
<sup>6/</sup> Large-scale lay-offs also required union support.

Table 3: The Algerian Unemployment Insurance System

Eligibility criteria for worker	Eligibility requirements for employer
<p>Laid off for economic reasons (i.e. involuntarily);</p> <p>Receives no other revenue, except for unpaid leave;</p> <p>Ineligible for early or regular retirement;</p> <p>Affiliated with Social Security system for at least 3 years;</p> <p>Paid UI contributions for at least 6 months prior to lay-off;</p> <p>Does not refuse job offer or reconversion;</p> <p>Employer paid the entry fee to the UI fund;</p> <p>Registered "job seeker" with employment office for at least 3 months.</p>	<p>Firm must be current in payment of SS contributions and UI contributions;</p> <p>Firms with &gt; 9 employees must present employment reduction or restructuring plan (<i>volet social</i>) to workers' participation committees and to labor unions for agreement, for negotiation and mediation, with recourse to arbitration;</p> <p>Lay-off decision for each employee includes severance package, notification of UI fund, and payment of entry fee;</p> <p>Entry fee is equal to 80% of the gross monthly salary for each year of work experience over three years, up to a maximum of 12 months salary (i.e. 18 years of tenure).</p> <p>Initial payment equivalent to 2 months salary must be paid up front, with the balance to be paid over the following year;</p> <p>Failure to comply results in penalties ranging from 5,000-10,000 DA per worker.</p>
<b>Benefit Structure</b>	
<ul style="list-style-type: none"> <li>◇ Severance pay equal to 3 months salary, paid in lump sum by employer directly to the worker;</li> <li>◇ Benefits are subject to employee portion of SS contributions;</li> <li>◇ Continued eligibility for health insurance, maternity benefits, family benefit;</li> <li>◇ Duration period equal to 2 months per year of UI contributions paid to the last employer: 12 month minimum, 36 month maximum;</li> <li>◇ Monthly reference salary equal to <math>\frac{1}{2} * (\text{gross monthly salary} + \text{minimum wage})</math>;</li> <li>◇ Duration period is divided into 4 equal quarters;</li> <li>◇ Graduated replacement rate of the monthly reference salary: <ul style="list-style-type: none"> <li>100% during the 1st quarter of duration period;</li> <li>80% during 2nd quarter;</li> <li>60% during 3rd quarter;</li> <li>50% during 4th quarter;</li> </ul> </li> <li>◇ Benefit level minimum = 75% of the minimum wage, maximum = 3 times the minimum wage;</li> <li>◇ After exhaustion of benefits, continued eligibility for health insurance and family benefits for one year.</li> </ul>	



the long term by shifting the labor market to a higher rate of steady state unemployment. The average duration of unemployment for Algerian workers age 25 and older exceeds the global average, which suggests a tendency toward entrenchment for the long-term unemployed. Evidence from Central and Eastern Europe indicates that flows out of unemployment to jobs are low, and that new hiring is characterized by job-switching, without recourse to the pool of unemployed workers. The labor market in Algeria appears to be moving toward a low employment equilibrium in an environment of multiple equilibria, illustrated in Figure 3. Even before implementing the new UI system, unemployment has increased steadily over the last decade, from 17 percent of the labor force in 1986, to 24 percent by 1994. The dynamics of unemployment, with the interplay of on-the-job search, describe a gloomy picture for the labor market in the long run.



25. The principle weakness of the Algerian UI system stems from its heavy reliance on firms to finance the process of industrial restructuring. The incentive structure is problematic because it seeks to facilitate restructuring through labor compression, but at the same time imposes a considerable burden on firms. The level of labor market regulation and taxation is significant: employers pay 24 percent of the wage bill in taxes.<sup>7</sup> Adding the worker portion of payroll contribution raises the level of taxation to 31.5%<sup>8</sup>, which ultimately costs workers in the form of lower real wages. This may inhibit private sector development in the formal sector, as firms evade taxes through informal sector activity. The potential costs to firms who lay off employees (i.e. severance pay, entry fees, and administrative procedures) may discourage labor shedding. Although the system is relatively new, initial indications of a rapid pick-up in separations during the first year of operation suggest that the cost to enterprises is not prohibitive. These early results, however, may reflect the recessionary conditions prevailing over the last several years, and the imperative to restructure enterprises in an economy in the process of transition.

26. Risk of a high unemployment equilibrium. The strongest conclusion reached in analyzing the Algerian system of unemployment insurance is that the labor market is in danger of reaching a high unemployment equilibrium which will have a lasting effect on the economy.

<sup>7/</sup> Taxes include social security, accident insurance, pension and early retirement in addition to unemployment insurance.

<sup>8/</sup> An additional 2.5% is paid by workers to unions to finance the firm's social fund (*oeuvres sociales*) administered by the union.

Although the system's stated objectives of facilitating restructuring and protecting those laid off do not specifically address the labor market in the long run, they have serious implications for it. Facilitating restructuring concerns productive efficiency of the industrial sector, but ignores the labor component. Similarly, the UI system provides income support to those laid off, but effectively promotes attachment to unemployment, thus introducing an element of stagnation to the labor market. While the UI system cannot be expected to address a broad range of issues, and would be most successful with specifically targeted objectives, it has explicit, non-neutral implications for the labor market. This can be explained by the authorities' over-riding objective of providing income support during a politically unstable period.

27. Returning to the framework of the Burda model, the potential for hysteresis can be illustrated in the dynamic context of unemployment and benefits. In what he terms "passively reactive unemployment benefits", the benefit level responds to labor market conditions. This feedback can be explained by political economy arguments, wherein a worsening of unemployment will lead the authorities (pressured by voting or popular support) to raise benefits.<sup>9</sup> Steady state unemployment is reached when flows into U are equal to flows out of U, i.e.

$$\dot{u} = s(1-u) - uf = 0, \text{ where } f = \text{flows out of U.}$$

Further, an increase in the rate of U will increase the level of benefits, such that

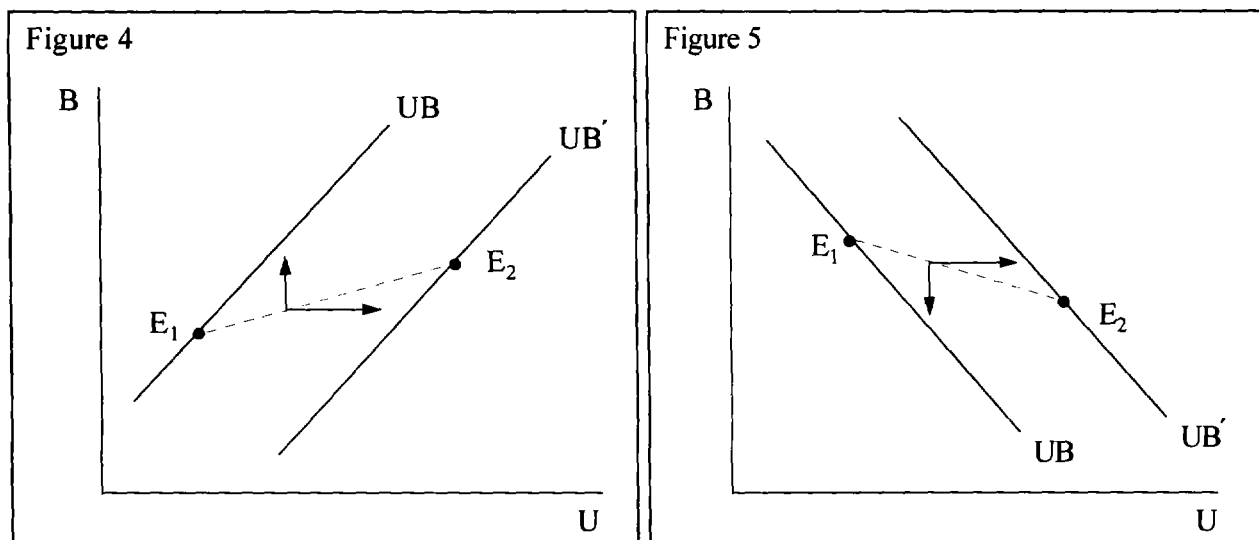
$$du/dt = \lambda * db/dt, \text{ where } \lambda > 0,$$

implying an upward sloping UB curve. Figure 4 illustrates the evolution of the labor market when a shock such as a decline in productivity causes the UB curve to shift outward to UB'. The dynamics of the system out of steady state, depicted by the arrows, suggest that a shock to the system results in a higher unemployment equilibrium locus, as well as an increase in the level of U and benefits (from initial point E<sub>1</sub> to new steady state E<sub>2</sub>). A derivation of the roots of the dynamic system of equations yields a zero root, which is equivalent to hysteresis. Even if Algeria were to lower benefits in the face of higher unemployment in order to maintain financial viability and fiscal independence<sup>10</sup>, hysteresis would result. Reversing the situation above, such that  $du/dt = \alpha * db/dt$ , for  $\alpha < 0$ , the UB curve now slopes downward, as shown in Figure 5. The same negative shock to productivity shifts the curve out to UB', and the movement of  $(u, b)$  outside of steady state, depicted by the arrows, shifts down and out, to a new equilibrium of lower benefits and higher unemployment. The analysis demonstrates the potential for hysteresis in the Algerian labor market, and raises the issue of which labor

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<sup>9/</sup> Burda cites the recent evidence of Democratic administrations in the U.S., during whose tenure UI benefit durations were temporarily increased during recessionary periods. He also notes the extension and increases in benefits over the last two decades in most EC member countries experiencing high unemployment.

<sup>10/</sup> The legislation permits changing benefit and/or contribution parameters to improve financial solvency, although one could argue that lowering benefits is politically untenable.



market institutions should be adopted, and what policies can counteract the tendency toward hysteresis.

### Section V: Financing Costs of the Algerian System

28. From the viewpoint of the early stages of industrial restructuring, the Algerian labor market faces potentially high layoffs, with consequences for the current UI system. Recognizing that the system's eligibility criteria limit the scope of effectiveness to only a fraction of the labor force, an analysis of future costs and the financial viability of the system is useful, both for planning and for evaluating the efficiency of the contribution-benefit parameters. A model was constructed to measure the UI fund's solvency by simulating a variety of unemployment scenarios and the resulting impact on the UI fund balance.

29. Financing model simulations. The financing model replicates the parameters of Algeria's system by tracking flows into unemployment, flows out of unemployment, the distribution of benefit levels, the average level of entry fees and its payment over time, the distribution of wages of the employed population, and the relevant payroll contribution. The model tracks the evolution of the fund parameters quarterly, over the short and medium terms, specifically 1995 through 1999. The UI fund balance in period  $t$  is defined to be equal to the positive financial inflows resulting from the payroll tax and entry fees, minus the outflows to benefit payments, social security payments for eligible beneficiaries, administrative costs and the UI fund balance carried over from the previous period  $t-1$ .<sup>11</sup> The base case scenario assumes that 270,000 workers are laid off over the next two years. This level, equivalent to 10 percent of the currently employed work force affiliated with social security (i.e. the formal sector), is consistent with layoff rates experienced in the CEE countries undergoing transition. The resulting financial position of the unemployment insurance fund is positive and increasing over time. While the Algerian system is similar to those found in other countries, it differs in

<sup>11/</sup> Details of the model and parameter assumptions behind the base case scenario are found in the attached annex. N.B. The model replicates the legal parameters of the system and assumes universal compliance.

two significant ways: (i) the UI fund only finances the payment of indemnities and administrative costs, with no funding of active labor market policies such as training; and (ii) the design of the entry fee paid by the employer is unique to Algeria. The level of the entry fee represents a significant cost to firms, although slightly lower than previously required in the form of severance pay. The projected positive balance of the UI fund is partially due to the high entry fee required for each retrenched worker, because it covers more than half of the total stream of monthly indemnities to be paid to the beneficiary. However, if the system was financed uniquely by employer and employee contributions generated by a payroll tax, the balance would still be positive, although considerably lower (on the order of fifty percent lower in 1999).

30. Sensitivity analysis. While the base case depends on reasonable assumptions regarding the evolution of employment, wage inflation, and average duration of unemployment, *inter alia*, sensitivity analysis was performed to determine the robustness of the financial situation. In an environment of wage inflation, for example, provided that minimum wage increases do not outpace economy-wide inflation<sup>12</sup>, the UI fund balance grows more quickly than the increase in benefit outlays, which are fixed at the moment of admission for the entire benefit period. The risk in an inflationary environment, therefore, is not to the solvency of the UI fund, but rather to the beneficiaries, whose real income would be eroded. The analysis concludes that the financial position of the UI fund would be stable under a wide range of profiles of unemployment. Finally, to evaluate the limits of sustainability, a low case scenario was considered. The resulting UI fund balance is projected to be positive for each year in the medium term; the initial build-up of reserves from contributions and entry rights in 1995 and 1996 off-sets the net negative flows projected for 1997 and 1998. Although the financial viability of the system could withstand a combination of negative conditions, the fund balance would turn negative in the case of extremely high layoffs (on the order of 20 percent) in the short run.

31. A simulation of the base case scenario with a shorter maximum duration of 18 months, and an entry fee calculated at half the former rate yields a UI fund balance that is positive and financially sound. In the event of negative shocks which threaten the fund's financial position, parameters may be adjusted to increase the reserve level. The UI legislation contains a general solvency provision for adjusting contribution and benefit rates in case financing becomes insufficient. This provision needs to be made explicit, however. A danger encountered with solvency provisions is the timing of the trigger, and the time lag between the discrete decision and the date of effectiveness of the new regulations. Ad-hoc treatment and long delays can have serious consequences for the fund's solvency, and could jeopardize its long-term viability. The Burda model discussed above describes the serious consequences for the labor market in the case of bad public finance. Raising the payroll tax rate during recessionary periods can generate multiple equilibria, with the economy arriving at a high unemployment steady state, illustrated in Figure 2. Even reducing the benefit level can result in hysteresis at

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<sup>12/</sup> This was not the case in Algeria during the recessionary period from 1991 to 1994, however, because the authorities increased the minimum wage in real terms, giving rise to wage inflation.

high unemployment levels in the event of negative shocks to productivity, as demonstrated in the example described in the previous section.

### **Section VI: Conclusion**

32. The analysis of the Algerian unemployment insurance system presented here evaluates the system's ability to affect employment decisions of both firms and workers, to promote enterprise restructuring with careful regard to long-term labor market implications, and to finance itself, in order to estimate the future evolution of the unemployment crisis in Algeria. The main conclusion can be summarized as follows: industrial restructuring has serious and persistent implications for the labor market, and in an environment where multiple equilibria are possible, there is a real danger that a hysteretic, high unemployment equilibrium will be reached. This serves as cautionary advice when designing policies that affect the evolution of unemployment in an economy. The big bang experience of structural adjustment in the transitional economies of Central and Eastern Europe resulted in large scale unemployment; despite considerable progress in restructuring, labor markets are still characterized by structural rigidities as well as persistent long-term unemployment. Boeri (1993) labels this phenomenon "transitional" unemployment, and argues that it is very difficult to eliminate through reintegration into the labor force. The Algerian labor market is characterized by rigidities and regulation similar to those found in the CEE countries, but unlike its counterparts, it faces the challenging initial condition of high unemployment. While this magnifies the need for effective policies, it also raises the risk of failure.

33. The big bang approach has advantages in speed of adjustment, but its negative consequences for unemployment may prove too costly for the economy, especially in view of its persistent nature. A more moderate "mixed bang" approach incorporates the active employment measures that mitigate entrenched unemployment. One of the crucial functions of these policies is to maintain or enhance human capital through working (i.e. learning-by-doing), thus avoiding the skill obsolescence that accompanies idleness. Programs that introduce flexible working-time arrangements succeed in maintaining a degree of attachment to the labor force which, however minor, enables workers to avoid the traps associated with long-term unemployment. The policies adopted in the CEE aimed to reduce labor supply in the short run in order to ease employment pressures in an environment of overemployment and labor hoarding inherited from the old regime. The resulting decline in labor force participation is undesirable in the medium term, however, because of the associated budget costs of social assistance, and the productivity limits imposed on the labor market. Although the CEE countries typically have very high participation rates for both men and women, Algeria does not. In fact, while 80 percent of working age men are in the labor force, the participation rate for women is only 10 percent.

34. To minimize the risk of marginalizing an important segment of the labor force, active labor market policies should be pursued from the outset to address transitional unemployment typically arising from enterprise restructuring. Empirical evidence from several cross-country studies (Burda, 1988; Jackman, *et al.*, 1990) suggests a significant negative correlation between average unemployment rates and expenditure on active labor market policies. The

most striking conclusions that emerge from the CEE experience are that (i) unemployment is not necessary to enterprise restructuring and labor market adjustment (since private sector vacancies are filled by job-to-job shifts, without recourse to the unemployment pool (Jackman, 1994)), and (ii) growing long-term unemployment is self-fulfilling and results in higher and persistent unemployment (described by a permanent outward shift of the Beveridge curve due to deterioration of the matching function (Boeri, 1994)). Although active employment measures are costly and have relatively low rates of return in the short run, Lehmann (1995) concludes that they can be marginally effective when pursued strategically. Although more analysis on the effectiveness of active employment measures is needed (thus far the evidence has been mixed), they represent a means to mitigate the negative impact of large-scale lay-offs, thus avoiding the low-level equilibrium trap. The labor market strategy in Algeria should incorporate supply side policies to promote job creation and stimulate the development of the private sector, in order to establish the pre-conditions for an agile labor market in the long run.

### Annex: The Financing Model and Base Case Scenario

The Unemployment Insurance Fund balance (UIF) in period  $t$  is defined as follows:

$$\text{UIF}_t = \alpha_3 W_t + [\text{COD}_{2 \text{ mos.}} * s_t (1-u_t)] + [\sum_{i=1-4} (\text{COD}_{\text{balance } t-i} * s_{t-i} (1-u_{t-i}))] + G_t - B_t - \text{SS}_t - A_t - T_t + \text{UIF}_{t-1} + r(\text{UIF}_{t-1})$$

where  $\alpha_1$  = employer payroll contribution;

$\alpha_2$  = employee payroll contribution;

$\alpha_3 = \alpha_1 + \alpha_2$ ;

$W$  = wage bill = Employed labor force \* wage distribution;

$\text{COD}$  = entry fee (*contribution d'ouverture des droits*), paid for each new entrant to UI system in period  $t$ , in a lump sum equivalent to 2 months salary up front (i.e. in period  $t$ ), with the balance paid over the next 4 quarters;

$s$  = separation rate;

$u$  = level of unemployment, equivalent to the rate of unemployment, as % of labor force;

$(1-u)$  = employed labor force, where total labor force is normalized to 1;

$G$  = government subsidy for  $G > 0$ ; transfer to government for  $G < 0$ ;

$B$  = total benefits paid out, equal to  $\sum b_i$ ,  $\forall$  recipients  $i$ ;

$\text{SS}$  = social security contribution paid by the UI fund acting as employer for each beneficiary;

$A$  = administrative costs;

$T$  = training costs;

$\text{UIF}_{t-1}$  = UI fund balance from the previous period;

$r$  = nominal rate of return on invested  $\text{UIF}_{t-1}$ .

The financing model tracks the inflow of beneficiaries to the UI system, based on exogenous assumptions about the lay-off rate over the period of restructuring, considered to be from 1995 through 1999. Estimates of entry fee payments (based on wage and work history averages) are tracked, and the benefit stream for the entire duration period is calculated. In addition, the monthly payroll tax is calculated, based on the evolution of the employed labor force and assumptions about wage inflation. The model tracks financial flows into and out of the UI fund, calculates the UI fund balance quarterly, and carries the balance forward to the following period.

The base case scenario depends on the following assumptions:

$$\alpha_1 = 2.5\%;$$

$$\alpha_2 = 1.5\%;$$

$$\alpha_3 = \alpha_1 + \alpha_2 = 4\%;$$

The wage distribution here reflects average monthly wages for each sector:

10% of labor force earn the minimum wage (SNMG, amounting to 4000 DA);

20.5% earn 9700 DA;

16.8% earn 10,680 DA;

21.5% earn 10,900 DA;

26.2% earn 12,080 DA; and

5.0% earn 21,191 DA;

Wage inflation = 10% in 1995, 7% in 1996, 4.6% in 1997, 4% in 1998, 4% in 1999;

COD is proportional to salary and work history. It is calculated to be 80 % of the worker's gross monthly salary for each year of work experience over 3 years, up to a maximum of 12 months' salary (i.e. 18 years of tenure);

$s = 10$  percent of the labor force in the formal sector ( $\cong 270,000$ ) from 1995-1997;

$u_0 =$  initial unemployment = 25%; assume that the base unemployment rate remains 25% outside of lay-offs associated with restructuring (i.e. no specific assumptions regarding outflow from the labor force into early retirement or inactivity, or inflow of school leavers);

$G = 0$ , i.e. no link with the central government budget;

Average duration of benefits equal to 30 months, with standard deviation of 4 months;

assume that outflows from unemployment pool follow a normal distribution;

SS = 15% of SNMG for each beneficiary;

$$A = 0;$$

$$T = 0;$$

$UIF_{t-1}$  is not invested ( $\cong r = 0$ );

Population growth of 2.5% in 1995, 2.2% thereafter;

Perfect compliance, such that all those affiliated with Social Security (i.e. all those in the formal sector) comply with the payroll tax.



## REFERENCES

- Atkinson, T., and J. Micklewright. 1991. "Unemployment Compensation and Labor Market Transitions: A Critical Review." *Journal of Economic Literature* 29: 1679-727.
- Barr, N., ed. 1994. *Labor Markets and Social Policy in Central and Eastern Europe: The Transition and Beyond*. The World Bank, Washington, D.C.: Oxford University Press.
- Boeri, T. 1994. "'Transitional' Unemployment", *Economics of Transition* 2 (1): 1-25.
- Burda, M. 1988. "Wait Unemployment in Europe." *Economic Policy* 7: 391-426.
- 1992. "A Note on Firing Costs and Severance Benefits in Equilibrium Unemployment." *Scandinavian Journal of Economics* 94: 479-89.
- 1993. "Unemployment, Labor Markets, and Structural Change in Eastern Europe." *Economic Policy* 16: 101-37.
- Commander, S. and F. Coricelli, eds. 1995. *Unemployment, Restructuring, and the Labor Market in Eastern Europe and Russia*. Washington, D.C.: World Bank.
- 1993. "Output Decline in Hungary and Poland in 1990/1991: Structural Change and Aggregate Shocks" in M. Blejer and others (eds.) *Eastern Europe in Transition: From Recession to Growth?* World Bank Discussion Paper No. 196.
- Commander, S., J. Kollo, and C. Ugaz. 1994. "Firm Behavior and the Labor Market in the Hungarian Transition." World Bank Working Paper No. 1373.
- Commander, S. and R. Yemtsov. 1995. "Russian Unemployment: It's Magnitude, Characteristics, and Regional Dimensions." World Bank Working Paper No. 1426.
- Franz, W. 1990. "Hysteresis Effects in Economic Relationships." *Empirical Economics* 15: 109-27.
- Hamermesh, D. 1992. "Unemployment Insurance for Developing Countries." World Bank Working Paper No. 897.
- Jackman, R. 1994. "Economic Policies, Employment and Labor Markets in Transition in Central and Eastern Europe." ILO/UNDP "Economic Policy and Employment" project.
- Jackman, R., C. Pissarides, and S. Savouri. 1990. "Labor Market Policies and Unemployment in the OECD." *Economic Policy* 10: 450-83.

Jackson, M., J. Koltay, and W. Biesbrouck. 1995. *Unemployment and Evolving Labor Markets in Central and Eastern Europe*. Aldershot, U.K.: Avebury.

Lehmann, H. 1995. "Active Labor Market Policies in the OECD and in Selected Transition Economies." World Bank Working Paper No. 1502.

Worden, K. 1992. "For UIM: An Unemployment Insurance Trust Fund Model." The World Bank.

Worden, K., and W. Vroman. 1991. "Solvency Provisions in State Unemployment Insurance Laws." The Urban Institute.

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