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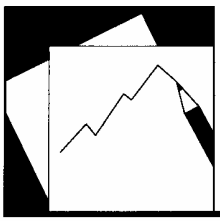

IMF Working Paper

Reforming Employment Protection Legislation in France

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Reforming Employment Protection Legislation in France

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Abstract

Over the last 15 years, the reforms of employment protection legislation (EPL) in European countries have mainly eased hiring and firing restrictions for temporary employment while leaving the strict EPL provisions for regular or permanent contracts unchanged. Recent reforms in France follow this pattern. Using a search-matching model, we argue that this type of partial reform is inefficient: easing restrictions on temporary jobs fosters both job creation and job destruction, but strict EPL discourages both. The overall impact on equilibrium unemployment is thus ambiguous, depending on the characteristics of the specific labor market. Simulations of the model, calibrated for the French labor market, suggest that the job destruction effect is stronger, thus raising the unemployment rate.

JEL Classification Numbers: J23, J41, J64

Keywords: Unemployment; Job creation; Fixed-duration contracts; Employment protection; Search-matching model

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I. INTRODUCTION

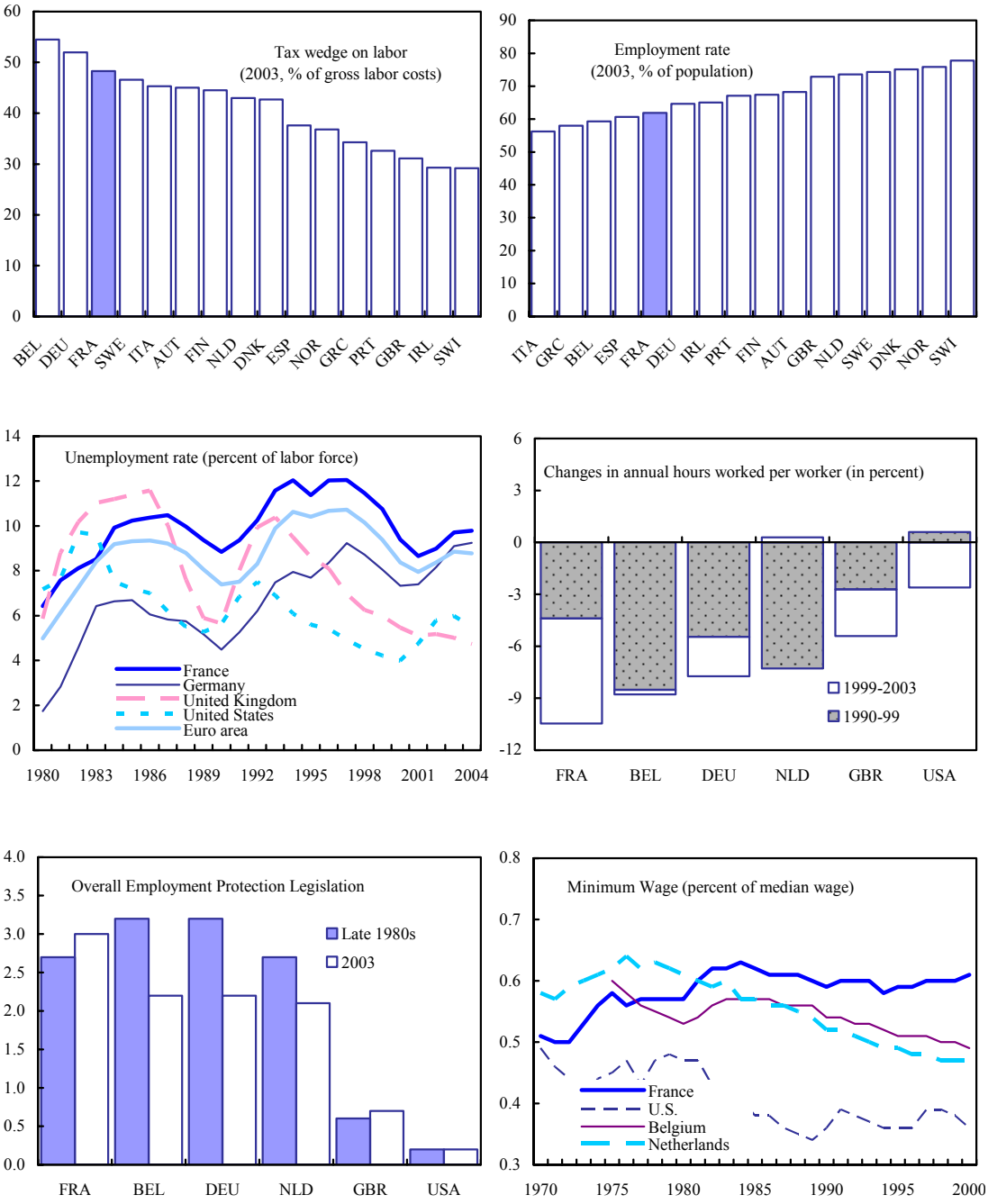
Unemployment has remained high in France for the last two decades, despite some improvements during the late 1990s. In particular, the unemployment rate has risen since 2001, though mostly for cyclical reasons, to about 10 percent recently. This has prompted the government to adopt an emergency plan for employment (*le plan d'urgence pour l'emploi*) and set the reduction of unemployment as the top government priority.

In the past, policies to address high structural unemployment have focused mainly on active labor market programs, leaving labor market rigidities largely untackled. Remedial actions have relied on employment subsidies, earned income tax credits, and cuts in social security contributions—all at a considerable cost to the budget. Attempts were made to reduce unemployment through work redistribution efforts, such as shortening the workweek. Despite these efforts, the French unemployment rate remains higher than the euro area average. Meanwhile, the tax wedge on labor remains wide, permissible work hours are constrained, employment protection is strict, and minimum wage policy prices workers with low productivity out of employment (Figure 1).

Recent studies suggest that employment protection legislation should be reformed to enhance job creation. A number of recent reports, some sponsored by the government, offer various reform proposals. The de Virville report (2004) suggests relaxing legal restrictions on the use of fixed-term contracts. Cahuc and Kramarz (2004) recommend merging permanent and fixed-term contracts into a single contract, with severance pay based on the duration of employment. Similarly, Blanchard and Tirole (2003) and Cahuc and Malherbet (2002) propose reducing firing costs associated with legal and administrative procedures and introducing a system of experience rating into the unemployment benefit system. Most recently, the OECD country report (2005) also recommends narrowing the difference between permanent and fixed-term contracts either by introducing a single contract with lower employment protection, or by reducing the legal and administrative costs of terminating permanent contracts and easing the use of fixed-duration contracts.

In August 2005, a new employment contract, *le contrat nouvelle embauche,* or CNE*,* became effective. The CNE is a special employment contract with a trial period of up to two years. Termination of such a contract during the trial period is not subject to the administrative and legal procedures that apply to permanent open-end contracts (*contrats à durée indéterminée*, or CDI), and severance pay is based on the duration of employment. At the end of the two-year trial period, a CNE would have to be converted to a CDI if not terminated. With no firing restrictions, a CNE contract compares favorably to a regular CDI contract. With a duration-based severance pay and no hiring restrictions, it also compares favorably to a fixed-duration contract (*contrat à durée déterminée,* or CDD) (see Section II). However, the use of CNE contracts is restricted to small enterprises with fewer than 20 employees. Most recently, the government attempted to extend the same approach to young workers (less than 26 years old) with the *contrat première embauche*, but this policy initiative had to be withdrawn after weeks of nationwide protests from unions and students.

Figure 1. France: Labor Market Performance and Institutions
France and Selected Countries



Sources: OECD and Fund staff calculations.

This paper analyzes the unemployment effects of reform proposals offered by recent reports, with a view to assessing the effectiveness of the CNE in promoting job creation and lowering the structural unemployment rate. It uses a search-matching model with hiring and firing restrictions to identify the channels through which changes in employment protection legislation (EPL) affect hiring and firing decisions and aggregate labor market variables, such as unemployment. This approach recognizes the frictions and imperfect information that exist in labor markets. With its focus on the job creation and destruction decisions of the firm, as well as on the job search behavior of the worker, it provides a useful framework for studying impacts of labor market policies (Pissarides and Mortensen, 1999).

Section II of this paper summarizes the key characteristics of French employment legislation. Section III briefly reviews the theoretical and empirical literature on the impact of EPL on the labor market, with a focus on studies related to France. The analytical framework is discussed in Section IV. Section V presents the simulation results from the calibrated model. Section VI concludes by noting policy implications.

II. EMPLOYMENT PROTECTION LEGISLATION (EPL) IN FRANCE

Employment protection for workers hired under permanent contracts is very strict. Under the current law on layoffs for economic reasons (*licenciement économique*), these workers are protected against unemployment resulting from company restructuring. Although severance pay does not appear to be particularly higher than in other European countries and the notice period (one or two months depending on seniority) is relatively short,[2] a dismissal for economic reasons can be costly, as it is subject to complex and lengthy administrative procedures and various legal restrictions.[3] In particular, justifications for dismissals of permanent workers due to economic reasons are strictly defined. Economic dismissals are allowed for preserving firms' competitiveness, but not for improving firms' competitiveness or profitability. The economic burden on firms is further increased by their legal obligation to find new jobs for the redundant workers.

Collective dismissals for economic reasons are subject to even more complex administrative procedures. In case of a collective dismissal, firms have to negotiate with the joint production committee. If the collective dismissal involves more than 10 workers, an employment preservation plan (*plan de sauvegarde de l'emploi*) is required, which sets out measures for helping outside-firm job searches, creating new activities, and improving training programs. Large firms (with more than 1,000 workers) also have to offer reclassification leave, which is

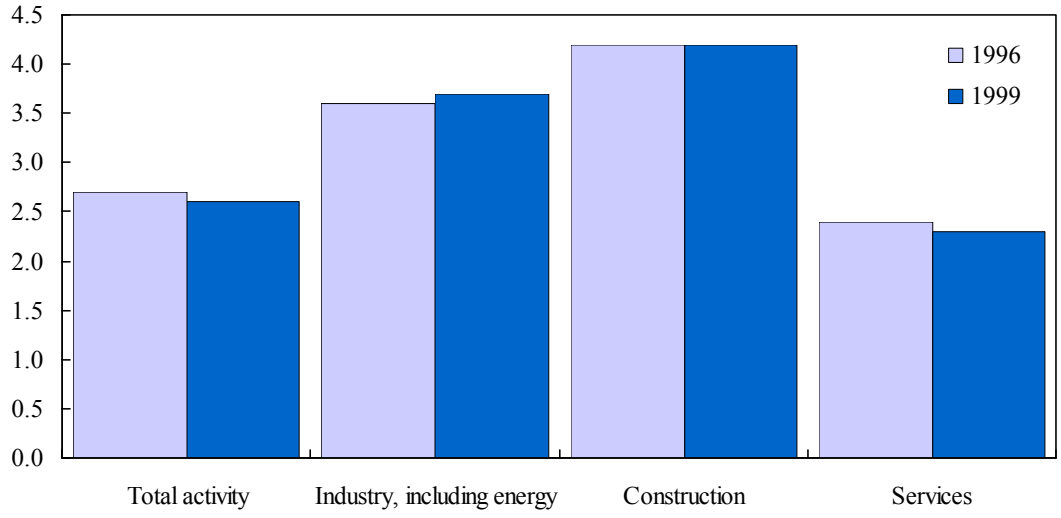
[2] For example, for an employee with five years of seniority, severance pay is half of the monthly gross salary per year in the case of a dismissal for "personal" reasons and one month of salary in the case of a dismissal for "economic" reasons (OECD, 2005).

[3] Kramarz and Michaud (2004) estimate that, for dismissals due to personal reasons, the average firing cost involving a worker with CDD is equivalent to 14 months' wages and significantly higher in case of a collective dismissal. This suggests that dismissals due to economic reasons can be more costly, since, in the case of a dismissal for personal reasons, the firm and the worker often reach an agreement with high severance payments, thus avoiding the complex administrative and legal dismissal procedures.

about four to nine months. During this leave period, firms are required to provide the redundant workers with training and assistance in finding a job.

Workers hired on fixed-duration contracts (CDDs) do not have the same employment protection, but the use of these contracts is rather restricted.[4] The layoff of workers with CDDs involves a severance payment and a notice period but does not require a costly administrative and legal process. However, CDDs can be used only for temporary increases in production activities or for replacement of employees on leave. They cannot be used to fill permanent positions linked to permanent production activities. CDDs can be renewed only once, with the maximum duration usually limited to 18 months (including renewal).[5] At the end of a CDD, the worker will either be hired on a regular CDI or receive a severance payment equivalent to 6 percent of the total salary received during the employment period. In the case of an early termination of a CDD, the firm has to pay for the entire period specified by the contract. Consequently, although the maximum duration allowed is 18 months, the average effective duration of CDDs (less than 3 months) is shorter than in other European countries (where they are about 6–12 months) (Figure 2). Furthermore, when a CDD is terminated for economic reasons, the firm is not allowed to hire another worker under a CDD for 6 months.

Figure 2. France: Average Duration of Temporary Contracts by Sector
(In months)



Source: OECD (2005).

[4] CDDs were introduced in 1979. CDDs are also used for special employment programs targeting the young and the long-term unemployed. The worker is then qualified for unemployment benefits, which start at 57.4 percent of the previous gross salary (or 40 percent of the gross salary plus a fixed sum) but decrease over time, depending on the age and experience of the worker. This implies that workers can alternate between CDDs and unemployment spells, receiving unemployment benefits during the latter.

[5] The maximum duration can be extended to 24 months in very special cases.

Overall employment protection in France has increased since the late 1980s, due both to new legislation and jurisprudence (Figure 1). Specifically, the EPL concerning permanent labor contracts has been strengthened, as procedures for economic dismissal have become more complex, legal restrictions on economic dismissals have been tightened, and the burden on firms to help redundant workers to find new jobs has increased (OECD, 2005).

With stricter EPL for permanent contracts, the use of fixed-duration contracts has risen, leading to growing labor market segmentation and unequal treatment of workers. The share of workers hired with CDDs in total dependent employment (those who earn wages) has risen to 15 percent from less than 5 percent in the mid-1980s, accounting for about 80 percent of the new hires (Cahuc and Postel-Vinay, 2001). Therefore, while a majority of workers benefit from high employment protection, a growing number of them—mainly young workers—find themselves alternating between unemployment and short fixed-duration contracts, and experiencing growing difficulty in obtaining a permanent or high-productivity job.[6] Indeed, the recent increase in the unemployment rate has fallen disproportionally on the young and those with few skills, who are most likely hired with CDDs (Table 1 and Figure 3).

Table 1. France: Unemployment Rate in France, 2002-04 1/

(In percent)

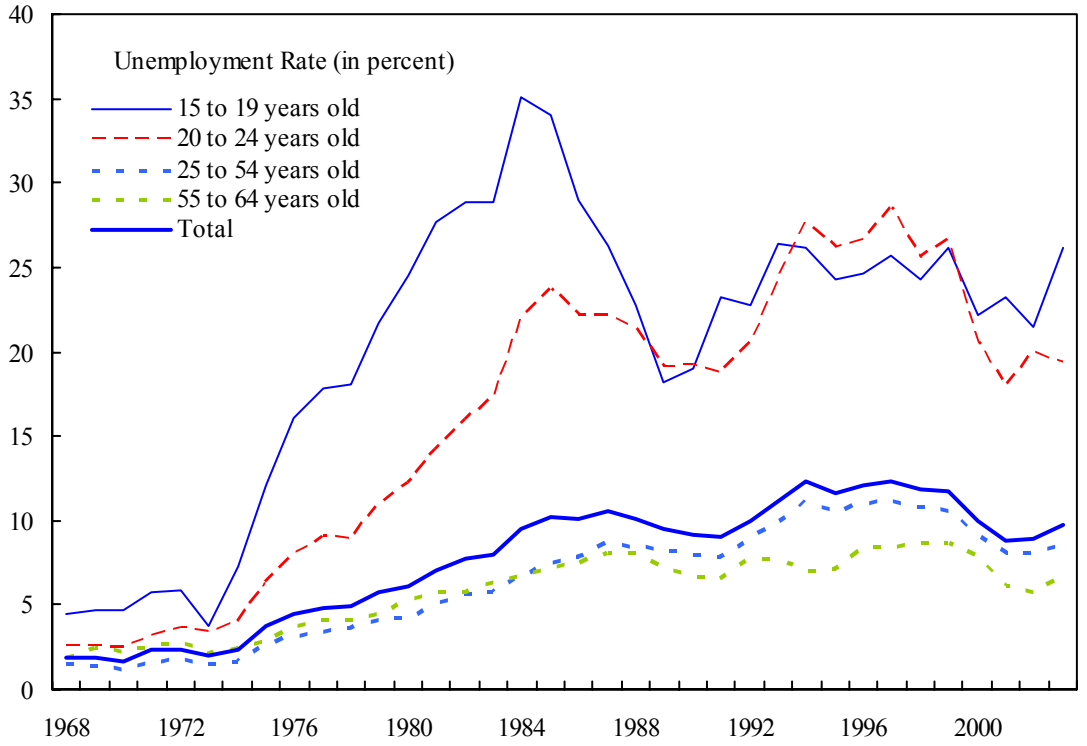
	2002	2003	2004	Increase During 2002-04
According to age:				
15-24 years	19.1	21.2	22.7	3.6
25-49 years	8.2	8.9	9.1	0.9
50 years or more	6.5	7.2	7.1	0.6
According to professional skills:				
Managers	3.6	4.1	4.8	1.2
Mid-level professionals	4.3	5	5.9	1.6
Skilled workers	8.8	9.1	10.2	1.4
Low-skilled workers	9.9	10.8	12.3	2.4
Total	8.8	9.7	9.9	1.1

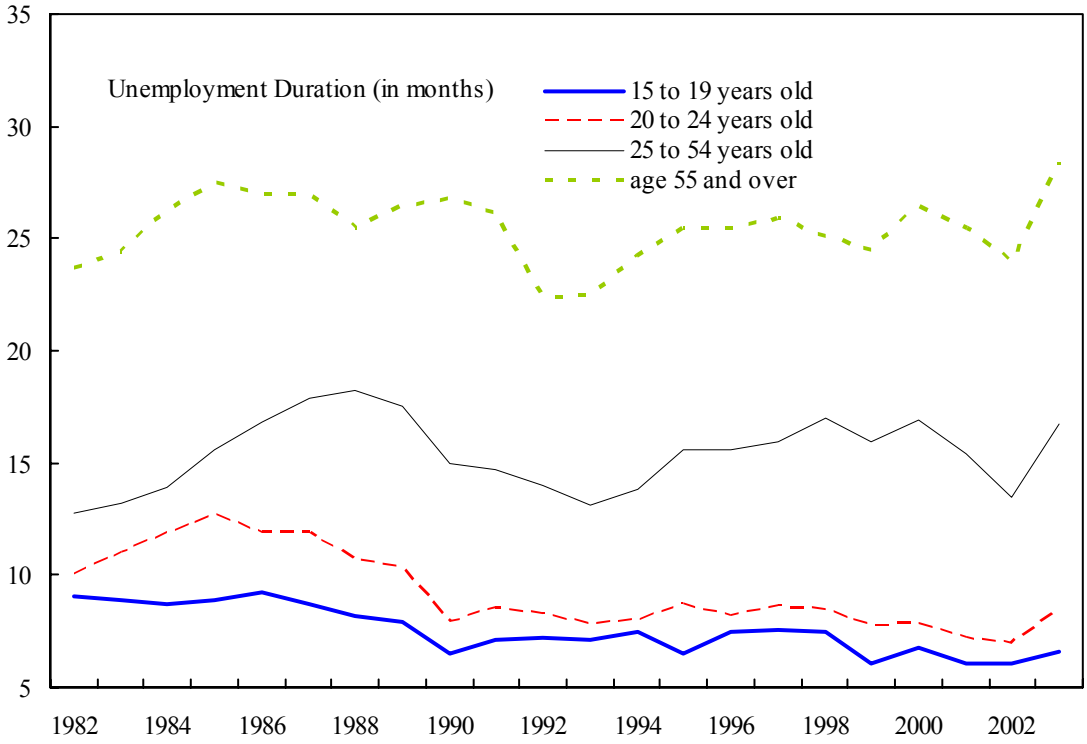
Source: *Institut National de la Statistique et des Etudes Economiques, Enquêtes sur l'emploi* .

1/ Annual average, International Labor Organization definition.

[6] This phenomenon is shared by a large number of European countries.

Figure 3. France: Unemployment Rate and Duration by Age





Source: OECD.

III. Literature Review

The impact of EPL on employment and unemployment has been the subject of a vast, somewhat inconclusive literature. It is generally accepted that strict EPL inhibits labor market flexibility by reducing firms' ability to adjust the workforce during changing economic conditions. However, its impact on unemployment has long been debated among economists and policymakers. In theory, strict EPL leads to a low separation rate but long unemployment duration, and therefore has an ambiguous effect on the overall unemployment rate. Firing restrictions are often justified by the need to protect workers from arbitrary actions of firms and to provide some stability in employment (Blanchard and Tirole, 2003). Some even argue that hiring and firing restrictions may promote long-lasting relationships between workers and the firm and encourage investment in human capital. Others assert that strict EPLs can have negative effects on job creation, because they weaken firms' ability to take advantage of the opportunities offered by new technologies and access to new markets, which often require a change in the skill composition of the workforce (Pierre and Scarpetta, 2005). Moreover, there is growing evidence that such EPLs may reduce certain groups' access to jobs, including women, the young, and those with few skills.

There is a consensus, however, that the effects of EPL are contingent on the initial characteristics of the labor market. Simulations of calibrated models for a typical European labor market find that the effect of strict EPL on job destruction is stronger than its effect on job creation, resulting in higher unemployment (Blanchard and Landier, 2001, and Cahuc and Postel-Vinay, 2001). Strict EPLs were introduced in many EU countries in the 1970s when unemployment was low; hence the impact was limited. When labor market conditions changed in the 1980s and 1990s, the dynamic between economic shocks and EPL changed, too. Blanchard and Wolfers (2000) find that EPL accounts for part of the increase in unemployment and unemployment persistence in a sclerotic labor market characterized by high unemployment. Moreover, recent empirical studies by OECD (2004) and Elmeskov, Martin, and Scarpetta (1998) find that strict EPL raises the structural unemployment rate and its persistence in the OECD countries.

One branch of the literature concerns the impact of partial reforms of EPL. Over the last 15 years, in France, as well as in many other European countries, employment protection was reduced significantly for workers hired under temporary contracts—the majority of the newly employed—but maintained for those hired under regular contracts. Some contend that this type of partial reform may enable a gradual build-up of support for reform and serve as an intermediate step toward a complete reform. The argument is that, from the political economy point of view, persistent high unemployment could also be the result of the lack of political support for reforms to reduce unemployment, since political decisions are likely to reflect the interests of the employed majority rather than the unemployed minority (Saint-Paul, 2000).

Many studies find this type of partial reform an ineffective way to reduce unemployment, with negative implications for workers' welfare and productivity.[7] Cahuc and Postel-Vinay (2001) conclude that achieving labor market flexibility by promoting temporary jobs without lowering in parallel high firing costs for permanent workers is ineffective in fighting unemployment and inefficient in improving aggregate welfare. Similarly, Blanchard and Landier (2001) argue that the effects of such a partial reform of employment protection may be perverse, with the main effect being a high turnover in fixed-duration workers, leading, in turn, to higher unemployment. Looking at French data for young workers since the early 1980s, they conclude that the reforms have substantially increased turnover, without significantly reducing unemployment duration, and have had negative welfare implications for the young workers. Evidence from other countries, including Spain and Sweden, also suggests that, as a result of partial reform, firms have strong incentives to hire workers at the entry level on short fixed-duration contracts and little incentive to provide them a permanent job at the end of the contract. This practice increases job turnover but not necessarily overall employment or productivity. In Spain, net job creation began to rise and unemployment began to fall significantly only after the government reformed the EPL for permanent contracts in the mid-1990s (Box 1).

IV. Analytical Framework

The model used here is based on Dolado, Jansen, and Jimeno (2005), which extends the standard Mortensen and Pissarides (1994) search-matching model with hiring and firing restrictions. Unlike the traditional models of aggregate labor supply and demand, search-matching models recognize job market frictions and the need to reallocate workers across productive activities in the face of economic shocks. They explicitly model uncertainties associated with future shocks, expectations of firms and workers, and wage-determination mechanisms. In this model, decisions taken by firms and workers are mutually consistent. This type of model is often used to study the influence of alternative labor market institutions and policies on wages and unemployment, particularly the impact of EPL on unemployment in European countries.[8]

To best capture the main characteristics of EPL in France, our model introduces the following assumptions: (a) firms can fill a position by hiring a worker from the pool of unemployed, either under a permanent CDI contract (i=1) or a fixed-duration CDD contract (i=2); (b) the termination of a CDI is costly, with firing cost K_1, which is treated as pure waste and not as a transfer to workers; and (c) CDDs can be terminated at lower cost K_2, but the use of CDDs is restricted by government regulations.[9]

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[7] Cahuc and Carcillo (2006); Pierre and Scarpetta (2005); Dolado, Garciá-Serrano, and Jimeno (2002); Blanchard and Landier (2001); Cahuc and Postel-Vinay (2001); and Cahuc and Zylberberg (1999).

[8] Blanchard and Landier (2001), Cahuc and Postel-Vinay (2001), Dolado, Garciá-Serrano, and Jimeno (2002), and Cahuc and Zylberberg (1999).

[9] These EPL characteristics are shared by many European economies.

Box 1. Reforming Employment Protection Legislation: The Experiences of Spain and Sweden 1/

Spain. Before 1984, Spain's EPL was one of the most rigid in Europe. When the unemployment rate reached 20.1 percent in 1984, the Spanish EPL was reformed by easing the use of fixed-term contracts for nonseasonal productive activities while keeping the rigid EPL for permanent contracts. The use of fixed-term contracts was extended to hire workers performing regular activities, and the dismissal costs for these contracts were reduced substantially. Subsequently, the proportion of fixed-term workers in total dependent employment surged, exceeding 30 percent in 1993, as firms used fixed-term contracts for regular jobs. The unemployment rate, after falling initially, began to rise again in 1990, exceeding 24 percent in mid-1994.

The reforms of 1994, 1997, and 2001 led to the reimposition of some restrictions on the use of fixed-term contracts and, most important, the creation of a new permanent contact with lower firing costs. The government also introduced significant rebates of social security contributions for workers under the new permanent contracts. Between 1994 and 2001, the unemployment rate fell by nearly 10 percentage points.

Dolado, Garciá-Serrano, and Jimeno (2002) conclude that the partial reform of EPL in Spain before 1994 was not an effective way to lower the unemployment rate. The unexpected perverse effects stemming from the segmented labor market led to lower investment in human capital, lower labor productivity, higher wage pressure, and a more unequal distribution of unemployment.

Sweden. In the early 1990s, Sweden experienced a macroeconomic downturn unparalleled in the postwar period. The unemployment rate rose from less than 2 percent in 1990 to more than 8 percent in 1993. In 1994, a reform of EPL was introduced. This reform was repealed a year later, and the duration of fixed-term contracts was raised. The subsequent reform in 1997 significantly relaxed the use of fixed-term contacts but left untouched the restrictive EPL for permanent contracts.[2] Employment in fixed-term contacts increased substantially over most of the 1990s, reaching 16 percent of total dependent employment by 2000. Among the other Nordic countries, only Finland has exhibited a similar growth in fixed-term contracts.[3]

Holmlund and Storrie (2002) find that these partial reforms of EPL significantly increased the inflows into unemployment. The annual inflows rose from 5 percent of the labor force at the end of the 1980s to 11 percent during 1990–2000. About 50 percent of the rise in inflows was accounted for by larger exits from fixed-term jobs. To the extent that there was a trend rise in fixed-term employment during the entire business cycle, it is conceivable that this contributed to an increase in the equilibrium unemployment rate through higher worker separation rates. The Swedish evidence also indicates that there is a wage penalty (about 10 percent) associated with fixed-term workers.

1/ Based on Dolado, Garciá-Serrano, and Jimeno (2002) and Holmlund and Storrie (2002).
2/ According to the OECD, Swedish EPL is fairly restrictive, although it does not stand out as extreme by European standards.
3/ The Finnish experience was more dramatic than the Swedish one, with greater increases in fixed-term contracts and unemployment.

Job creation and job destruction are endogenously determined.[10] Each job is characterized by a fixed technology and produces a unit of a differentiated product. A job is created when a firm and a searching worker meet, agree to a match at a negotiated wage, and start producing.[11] Once a job has been created, production continues until a negative idiosyncratic productivity shock hits, at which point the productivity of the job moves to a low value. Jobs whose productivity fall below a productivity threshold ("the reservation productivity") are destroyed, while jobs with productivity above the threshold are continued. When a job is terminated, the firm must pay a pure-waste firing cost. When the firm and the worker separate, the worker moves from employment to unemployment, and the firm can either withdraw from the market or open a new job vacancy.

The model considers an economy populated by a fixed labor force (normalized to one). Workers are risk neutral, infinitely lived, and can be either employed and producing or unemployed and searching. For simplicity, there is no on-the-job searching.[12]

A. Matching Process

Job vacancies and unemployed workers meet according to a matching function $m(v,u)$, where v and u represent, respectively, the number of vacant jobs and the number of unemployed workers. The matching function is increasing in both arguments and assumed to be concave, with constant returns to scale. Moreover, $m(v,0)=m(0,u)=0$.

The rate at which vacant jobs are filled is given by

$$q(\theta) = m(v,u)/v = m(1, u/v) = m(1, \frac{1}{\theta}), \quad q'(\theta) \leq 0,$$

where $\theta = v/u$ can be interpreted as a measure of the tightness of the labor market from the firms' perspective: firms fill their vacancies easily when there are more unemployed workers than available jobs. During a small time interval dt, a vacant job is matched to an unemployed worker with probability $q(\theta)dt$, so that the average duration of a vacant job is $1/q(\theta)$. The probability that a vacant job will not be filled is $1-q(\theta)dt$.

The rate at which an unemployed worker meets a firm with a vacancy is given by

$$m(v,u)/u = \theta q(\theta).$$

[10] When the job destruction rate is exogenous, labor market tightness (the vacancy–unemployment ratio θ) is independent of the unemployment rate u.

[11] Opening a new job vacancy is not job creation; it is considered to be the opening of a job vacancy.

[12] Hence, worker flows and job flows are assumed to be the same. According to Mortensen and Pissarides (1994), the introduction of on-the-job searching should not alter the main results of the model.

Once the worker and the firm meet, a job is drawn from the distribution $F(\varepsilon)$, and the possibility that this job is offered with a fixed-duration contract CDD is α. The probability that an unemployed worker will not find a job is $1-\theta q(\theta)dt$, with an unemployment duration of $1/\theta q(\theta)$. It is easy to see that

$$d(1/q(\theta))/d\theta \geq 0$$
$$d(1/\theta q(\theta))/d\theta \leq 0.$$

Thus, unemployed workers find jobs easily when there are more jobs than available workers, and the firms fill their vacancies easily when there are more workers than available jobs.

In this model, the flow into unemployment results from idiosyncratic productivity shocks that hit occupied jobs (a CDI job or a CDD job) at the Poisson rate λ. Equilibrium unemployment is obtained when the flow into unemployment equals the flow out of it.[13] The flow into unemployment is the fraction of jobs that gets hit by a productivity shock below the productivity threshold ε_i^d (i=1,2), with the probability $F^i(\varepsilon_i^d)$. Therefore, the flow into unemployment (job destruction) is given by $\lambda F^1(\varepsilon_1^d)(1-\alpha)(1-u)$ for a CDI worker and $\lambda F^2(\varepsilon_2^d)\alpha(1-u)$ for a CDD worker, with labor force normalized to be unity.

Hence, for given matching probabilities and productivity thresholds, the steadystate flow equations are given by the following:

$$[(1-F^1(\varepsilon_1^h)]\theta q(\theta)(1-\delta)u = \lambda F^1(\varepsilon_1^d)(1-\alpha)(1-u) \quad (1)$$

$$[(1-F^2(\varepsilon_2^h)]\theta q(\theta)\delta u = \lambda F^2(\varepsilon_2^d)\alpha(1-u), \quad (2)$$

where δ is the share of unemployed CDD workers in total unemployment.

The steadystate unemployment can be solved as

$$u^* = \frac{\lambda F^2(\varepsilon_2^d)}{[1-F^2(\varepsilon_2^h)][(1-\delta)/(1-\alpha)]\theta q(\theta) + \lambda F^2(\varepsilon_2^d)}. \quad (3)$$

Equation 3 implies that, for a given arrival rate of productivity shocks (λ) and labor market tightness (θ), there is a unique equilibrium unemployment.

B. Firms

For the firms, the value of an unfilled vacancy (V) and the value of filled vacancies of productivity ε with contract type i are represented by the following equations:

[13] Alternatively, the steadystate condition can also be stated in terms of job flows instead of unemployment flows. Specifically, in the steady state, the rate of job creation (inflows into employment) equals the rate of job destruction (outflows from employment).

$$rV = -c + (1-\delta)q(\theta)\int_{\varepsilon_1^h}^{1}[J_1(x)-V]dF^1(x) + \delta q(\theta)\int_{\varepsilon_2^h}^{1}[J_2(x)-V]dF^2(x) \quad (4)$$

$$rJ_i(\varepsilon) = \varepsilon - w_i(\varepsilon) + \lambda F^i(\varepsilon_i^d)[V - J_i(\varepsilon) - K_i] + \lambda\int_{\varepsilon_i^d}^{1}[J_i(x)-J_i(\varepsilon)]dF^i(x),\ (i=1,2). \quad (5,\ 6)$$

A firm decides to fill a vacancy (hire a worker) when the value of a filled vacancy (V) exceeds the value of it when unfilled (J). Hiring starts when the value of a filled vacancy is higher than the value of an unfilled vacancy, with the *hiring threshold* determined by equating the two values. A job is terminated when its value falls below the value when vacant minus the firing cost, which determines the *firing threshold*. In steady state, free entry drives the value of an unfilled vacancy to zero.

C. Workers

A typical risk-neutral worker accepts a job when the value of the employment (W) exceeds the value of unemployment (U). Specifically, the worker earns $w(\varepsilon)$ when employed and producing at productivity ε and searches for a job when unemployed while receiving a real income of b. This real income could include unemployment insurance benefits and the imputed real return from unpaid leisure activities, such as home production or recreation.

For the workers with productivity ε under contract type i, the value of employment (W_i) and the value of unemployment (U_i) are given by the following Bellman equations:

$$rU_i = b + \theta q(\theta)\int_{\varepsilon_i^h}^{1}[W_i(x)-U_i]dF^i(x), \quad (i=1,2) \quad (7)$$

$$rW_i(\varepsilon) = w_i(\varepsilon) + \lambda F^i(\varepsilon_i^d)[U_i - W_i(\varepsilon)] + \lambda\int_{\varepsilon_i^d}^{1}[W_i(x)-W_i(\varepsilon)]dF^i(x), \quad (i=1,\ 2). \quad (8,\ 9)$$

D. Wage Determination

After a match is formed, wages are determined by a bargaining solution maximizing the weighted product of the worker's and the firm's surplus from a job match:[14]

$$[W_i(\varepsilon) - U]^{\beta}[J_i(\varepsilon) - V + K_i]^{1-\beta},$$

where $0 \leq \beta \leq 1$ can be interpreted as a relative measure of labor's bargaining power. Jobs with higher productivities offer higher wages. An employment contract between the firm and the worker is a wage w for each period of time that they are together and a separation rule that is contingent on the arrival of an idiosyncratic productivity shock. This contract is renegotiated whenever new information arrives. A symmetric Nash bargaining solution ($\beta=0.5$), where the

[14] In this setup, wages are renegotiated continuously.

total surplus/rent generated by a job match is equally shared by the worker and the firm, implies[15]

$$W_i(\varepsilon) - U = J_i(\varepsilon) - V + K_i. \tag{10}$$

E. Equilibrium

Hiring stops when the value of a filled vacancy falls below the value of an unfilled vacancy, and a job is terminated when the value of a job is below its value when vacant minus the firing cost. In steady state, free entry drives the value of an unfilled vacancy to zero. Hence, we have

$$\begin{aligned} &J_i(\varepsilon_i^h) = V \\ &J_i(\varepsilon_i^d) + K_i = V \\ &V = 0. \end{aligned}$$

The first two equations above determine the productivity thresholds for hiring and firing, which give the **job destruction conditions**:

$$\varepsilon_i^d = b - \frac{\lambda}{r+\lambda}\int_{\varepsilon_i^d}^{1}[1-F^i(x)]dx + \frac{\theta q(\theta)}{2(r+\lambda)}\int_{\varepsilon_i^h}^{1}[1-F^i(x)]dx + \{\theta q(\theta)[1-F^i(\varepsilon_i^h)] - r\}K_i \tag{11, 12}$$

$$\varepsilon_i^h = b - \frac{\lambda}{r+\lambda}\int_{\varepsilon_i^d}^{1}[1-F^i(x)]dx + \frac{\theta q(\theta)}{2(r+\lambda)}\int_{\varepsilon_i^h}^{1}[1-F^i(x)]dx + \{\theta q(\theta)[1-F^i(\varepsilon_i^h)] + r + 2\lambda\}K_i \tag{13, 14}$$

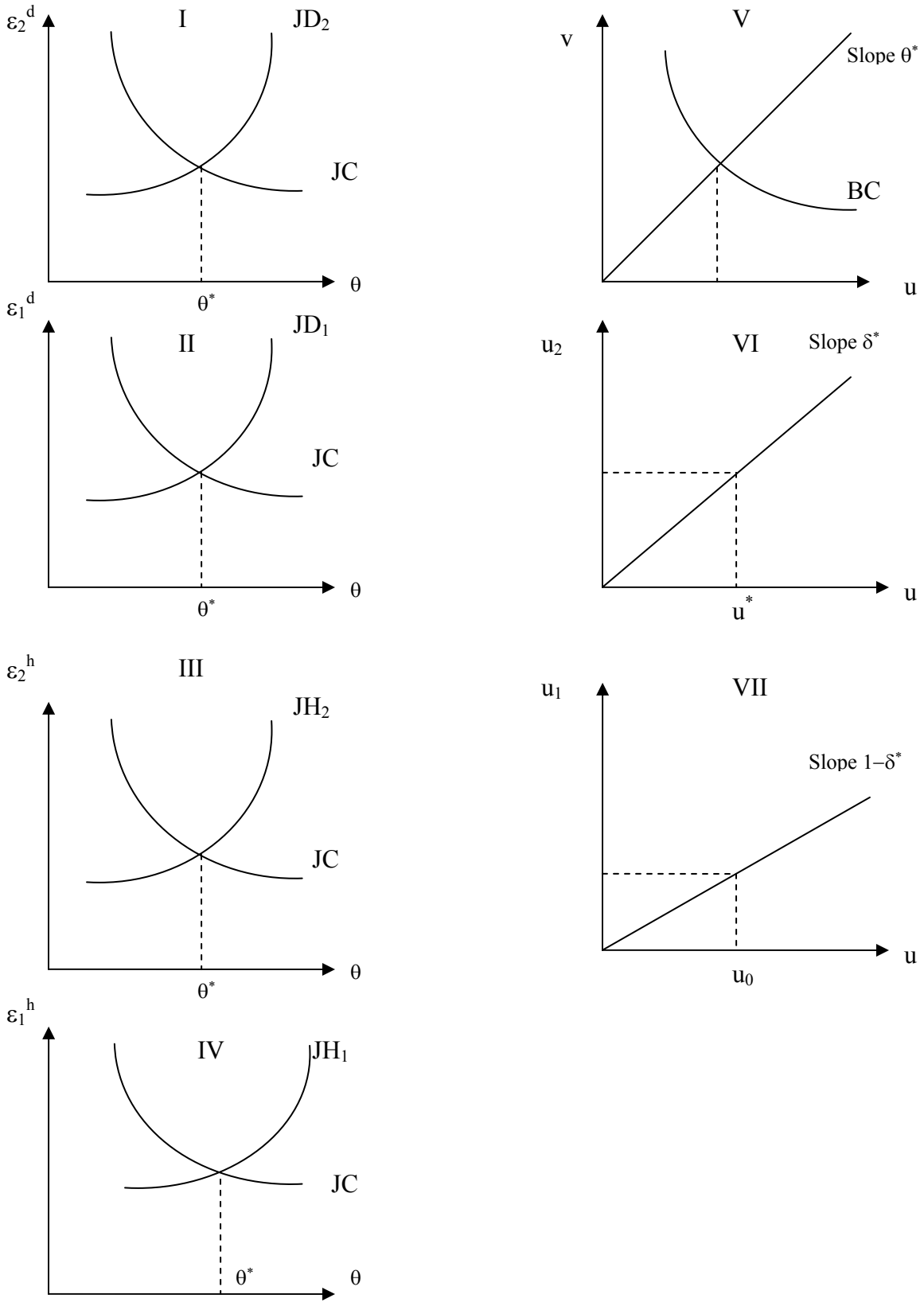
or

$$\varepsilon_i^h - \varepsilon_i^d = 2(r+\lambda)K_i. \tag{15, 16}$$

Equations 11 and 12 give the relationship between the firing thresholds and the labor market tightness (the *JD* curve), while Equations 13 and 14 give the relationship between the hiring thresholds and the labor market tightness (the *JH* curve). As shown in Dolado, Jansen, and Jimeno (2005), as labor market tightness increases, workers have a higher reservation value, and, therefore, the firing productivity thresholds rise. With a higher firing threshold, the initial hiring threshold also increases. Hence, both the *JD* and *JH* curves are upward sloped (Figure 4).

[15] This can be interpreted as the firm and the worker having the same bargaining power.

Figure 4. Model Diagram



The job creation condition is determined by V=0 (i.e., the free-entry condition; job creation stops when there is no rent left for firms), which can be written as follows:

$$\frac{c}{\theta q(\theta)} = \frac{\delta}{2(r+\lambda)} \int_{\varepsilon_2^h}^{1} [1 - F^2(x)]dx + \frac{1-\delta}{2(r+\lambda)} \int_{\varepsilon_1^h}^{1} [1 - F^1(x)]dx \quad . \tag{17}$$

This equation captures the relationship among tightness, the hiring threshold, and the (composition of) unemployment.

The job creation curve (*JC*) and the job destruction curve (*JD*) capture the relationships between the productivity thresholds for hiring or firing and labor market tightness (Figure 4). It can be shown that, as labor market tightness increases, workers have a higher reservation value, and, therefore, the firing productivity threshold rises. Hence, the job destruction curve is upward sloped. The job creation condition is determined by the free-entry condition: job creation stops when there is no rent left for the firm. The *JC* curve slopes downward.

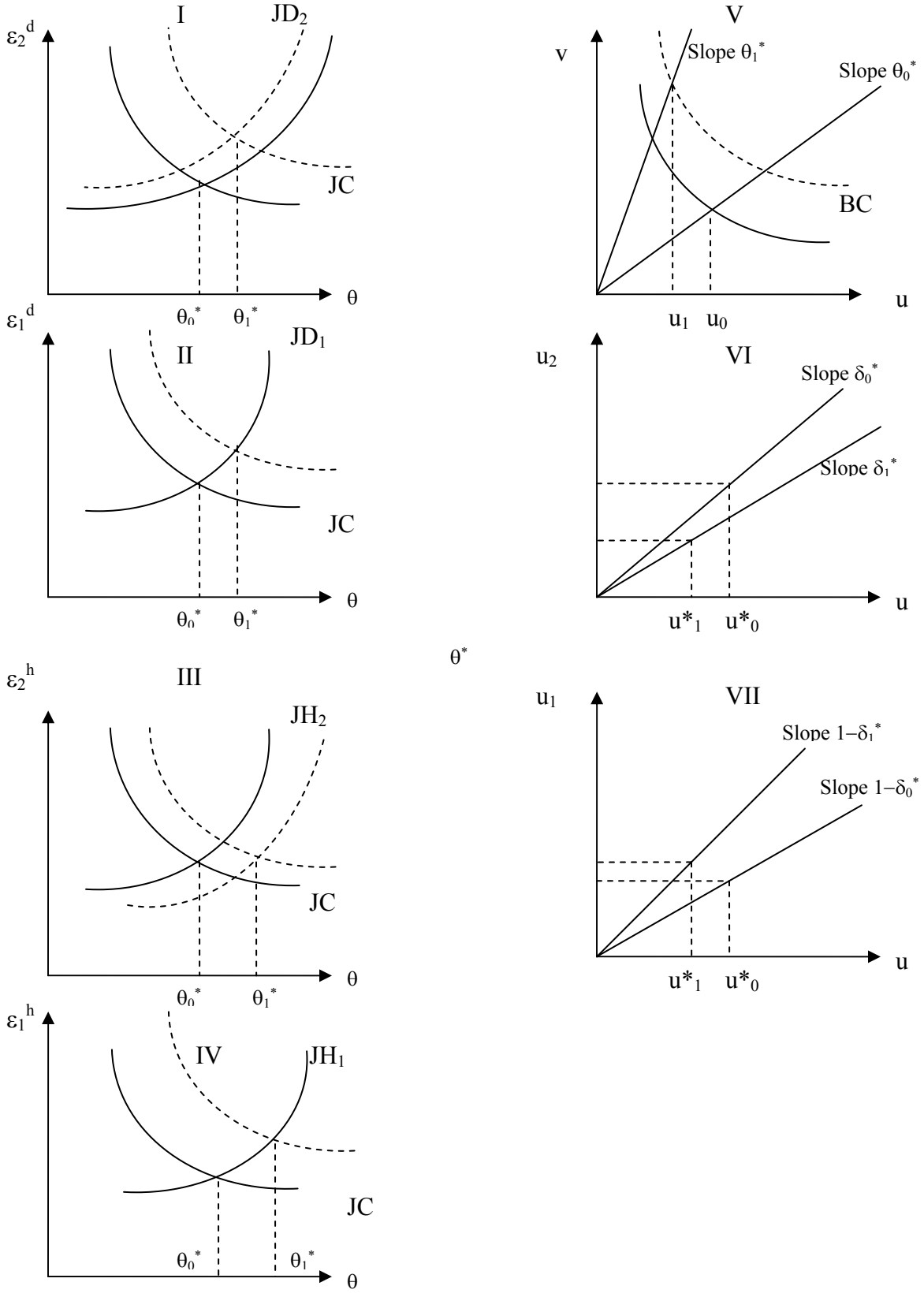
In the steady state, a system of six equations solves for six variables: hiring and firing thresholds for workers with different types of contract (ε_i^j, i=1,2 and j=d,h), labor market tightness (θ), and equilibrium unemployment (u^*). The productivity thresholds for hiring and firing each type of worker depend on labor market tightness, which, in turn, is determined by the job flows implied by these hiring and firing thresholds.

Reducing firing costs increases job destruction as well as job creation, with an ambiguous effect on steadystate unemployment (Figure 5):

- For given labor market tightness θ, reducing firing costs raises the firing threshold and lowers the hiring threshold. This increases the expected employment duration of a match (as the inaction area is increased, i.e., the firm hires and fires less frequently), and, hence, the expected surplus (rent) from filled vacancies rises. Thus, reducing firing costs results in more job destruction as well as more job creation (the *JD* curve shifts to the left, and the *JH* curve shifts to the right), with ambiguous effects on unemployment. These results are consistent with the findings of the literature.

- The effect of lower firing costs on θ depends on the difference between the expected surplus from hiring workers with CDD and the surplus from hiring with CDI. As shown in Dolado, Jansen, and Jimeno (2005), it is plausible that the latter is larger than the former. As a result, the share of workers with CDD in total unemployment would go up, and market tightness would decrease. The final impact on unemployment would depend on the changes in unemployment for these two types of workers, or the change in the unemployment duration.

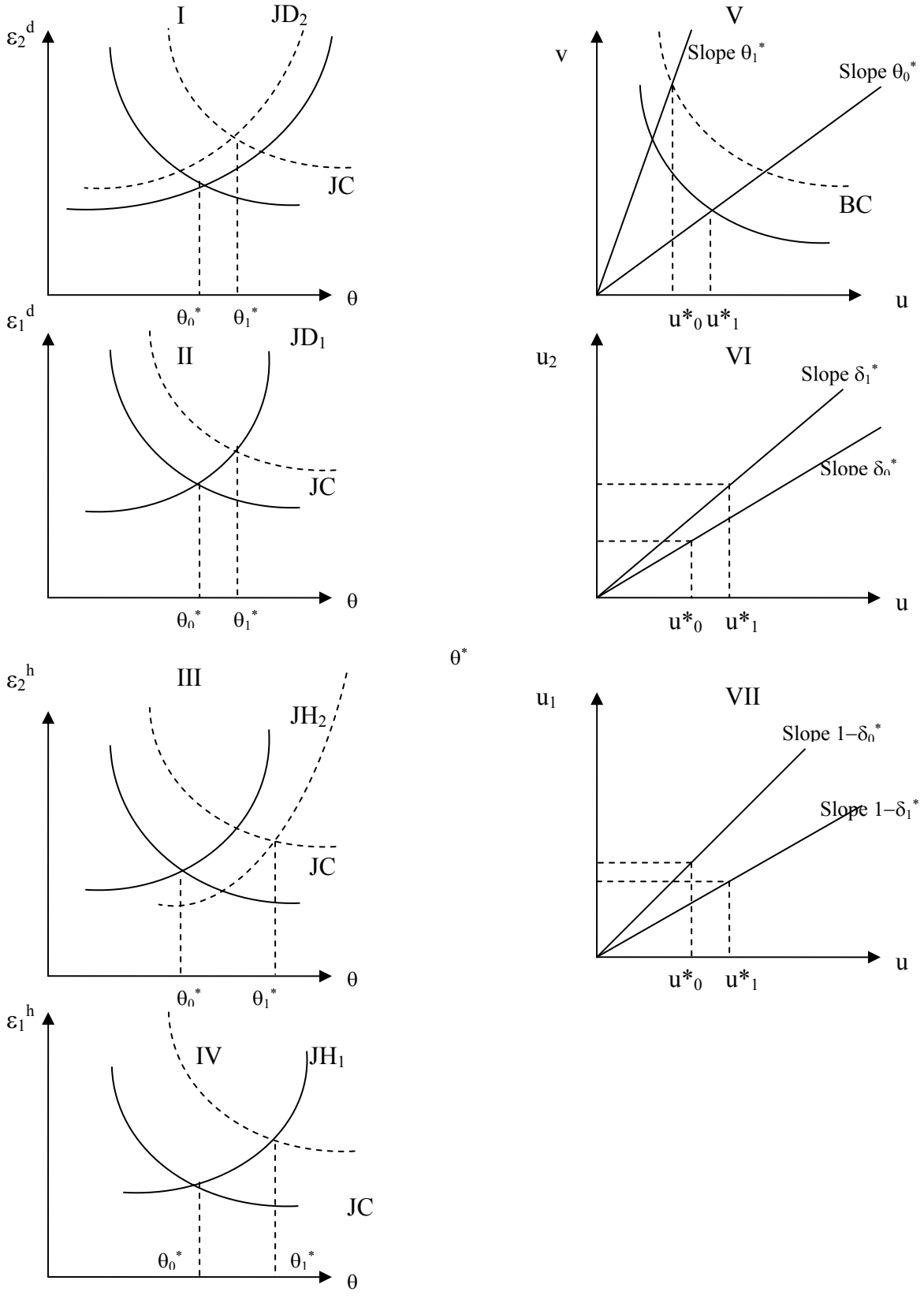
Figure 5. Reduction in Firing Costs K[1]



Facilitating the use of fixed-duration contracts encourages job creation, but at the same time it increases job destruction. Easing restrictions on CDDs raises productivity thresholds for both contracts and overall job market tightness. Since a CDD job (with lower firing costs) yields a higher surplus than a CDI job, increasing the CDD contracts fosters job creation. However, a tight labor market implies that workers will raise the minimum acceptable productivity of their jobs, leading to increasing wage pressure, which, in turn, leads to job destruction. The overall effect on unemployment depends, once again, on the relative strength of the job creation and job destruction effects (Figure 6).

In the next section, the model will be calibrated for France to evaluate the relative strength of these counteractive effects.

Figure 6. Increase in the Permitted Share of Fixed-Term Contracts



V. SIMULATION RESULTS

In this section, the model discussed in Section IV is calibrated for the French labor market and used to simulate the effects of various reform proposals, including (a) the impact of fewer firing restrictions on CDIs (scenario 1, captured by lowering K_1); (b) the impact of a less restrictive use of CDDs (scenario 2, captured by higher α, in line with the reform proposal in de Virville, 2004; and (c) the impact of a specific combination of fewer firing restrictions on CDIs and a merger of CDI and CDD (scenario 3: lower K_1 and lower α, in line with reforms proposed by Cahuc and Kramarz, 2004; and Blanchard and Tirole, 2003.

Parameters for simulations are chosen from existing studies (Table 2). We assume that the productivity of workers with CDDs is uniformly distributed in [0,1] and that the productivity of workers with CDIs is uniformly distributed in [1/3, 1]. Hence, the average productivity of CDD workers is lower than that of CDI workers. The utility of being unemployed (a proxy for unemployment benefits) is b=0.25, which represents half of a CDD worker's average productivity. The cost of holding a vacancy unfilled is set at c=1/3. The matching function $m(u,v)=M\,u^{\eta}v^{1-\eta}$ is assumed to be Cobb-Douglas, in line with recent studies on France (for example, Cahuc and Postel-Vinay, 2001). The base period is one quarter, and the quarterly interest rate is set at 0.01 percent. The arrival rate of productivity shocks is set at λ =0.081, as in Mortensen and Pissarides (1994). The policy variables are captured by firing costs K_1 and K_2 and by hiring restriction α. The base case with an unemployment rate of about 10 percent is calibrated by choosing K_2 while setting K_1=1 and α =0.2.

Table 2. France: Baseline Parameters

Parameters	Value
λ	0.081
b	0.25
c	1/3
r	0.01
M	1.0
η	0.5
K_1	1.0
K_2	0.2
α	0.2

The results of the simulation are summarized in Table 3. They suggest that lowering firing costs for CDIs by 50 percent would lower the unemployment rate by 1 percentage point. The results also confirm the main conclusions in Blanchard and Landier (2001) and Cahuc and Postel-Vinay (2001): a partial EPL reform that relaxes the use of CDDs while keeping EPL for CDIs unchanged would lead to a higher, not lower, unemployment rate. A reform along the lines of the proposal by Cahuc and Kramarz, which lowers the firing cost of CDIs to that of CDDs, thus effectively merging both contacts, would lower the unemployment rate by 2 percentage points (scenario 3). This effect would be even larger (about 3 percentage points) when firing restrictions are eliminated (scenario 4).

Table 3. France: Simulated Effects of Various EPL Reform Proposals

	Unemployment Rate (Percent)	Number of Vacancies per Unemployed
Base case		
Current situation ($K1$=1, $K2$=0.2, a=0.2)	10.3	0.71
	Deviation from the base case	
Scenario 1		
Reduce firing restrictions on CDI by 50% ($K1$=0.5, $K2$=0.2, a=0.2)	-0.9	0.91
Scenario 2		
Keep EPL on CDI unchanged, but relax the hiring restriction on CDD ($K1$=1, $K2$=0.2, a=0.5)	0.9	0.81
Scenario 3		
Lower firing cost on CDI and merge CDD and CDI ($K1$=$K2$=0.2)	-1.8	1.16
Scenario 4		
Merge CDD and CDI and eliminate firing restrictions ($K1$=$K2$=0)	-2.7	1.45

Source: IMF staff estimates.

These results are subject to some caveats. First, they depend on the specifications of the matching function, as well as the distribution function of productivity. For example, simulations using a CES matching function imply a much larger negative unemployment effect of a partial EPL reform (raising the unemployment by 2.5 percent instead of 1 percent when using a Cobb-Douglas matching function). Second, our model does not capture one key element of the French wage-setting mechanism, namely, the existence of minimum wages.[16] As shown in Cahuc and Zylberberg (1999), the impact of job protection policies on unemployment is strongly influenced by the wage-setting mechanisms. High and binding minimum wages prevent the internalization of high hiring costs (which is a key assumption of our model). Since high minimum wages may already price the low-skilled and young workers out of jobs, together with strict EPL, they can significantly lower these workers' chances of employment.

VI. Concluding Remarks

The new employment contract takes an important step toward reforming the employment protection legislation in France, but its effectiveness depends on further reforms. While it

[16] Minimum wages in France apply to most wage earners, irrespective of age and occupation. As the government relied on increases in minimum wages to sustain consumption, minimum wages in France began to rise sharply in relation to the median wage after the second half of the 1960s and have stayed high since the mid-1980s, compared with its neighboring countries and the United States.

will facilitate hiring, the CNE represents only a partial reform of the employment protection legislation. It introduces the needed flexibility for only up to two years and is limited to small enterprises and the young. Moreover, it is equivalent to a fixed-duration contract with no hiring and firing restrictions. Easing the restriction on fixed-duration contracts while keeping the strict firing restrictions on permanent contracts could undermine the effectiveness of the reform, as evidenced by the experiences from other countries such as Spain and Sweden in the early 1990s.

The effectiveness of the new labor contract in promoting job creation and reducing the unemployment rate will depend crucially on broadening its application and adopting supporting reforms. Simulations of a search-matching model, with hiring and firing restrictions calibrated to the French labor market, suggest that a reform that effectively merges existing contracts into a single one by lowering firing costs and legal uncertainty (e.g., as in the proposal by Cahuc and Kramarz, 2004), would lower the structural unemployment rate by 2 percentage points. This effect could be even larger (about 3 percentage points) when firing restrictions are completely eliminated. However, the magnitude of these estimates should be interpreted with caution, as they are sensitive to the choice of parameters and assume efficient employment services and minimum wages that are sufficiently low to allow internalization of hiring and firing costs.

Variable List

Policy variables

K_1	firing cost associated with permanent contracts (CDI)
K_2	firing cost associated with fixed-duration contracts (CDD)
a	hiring restriction for a CDD contract (i.e., the approval rate for a CDD)

Endogenous variables

v	the number of vacancies
u	the number of unemployed workers
u_1	the number of unemployed workers who were hired under CDIs
u_2	the number of unemployed workers who were hired under CDDs
δ	unemployment composition (u_2/u)
$\theta=v/u$	labor market tightness from firms' point of view
$m(v,u)$	the matching function that determines the rate at which job vacancies and unemployed workers meet
$q(\theta)= m(v,u)/v$	the rate at which a vacancy is filled
$F(\varepsilon)$	the distribution of productivity ε, from which a job is drawn
ε_i^d	the firing threshold for workers with contract type i
ε_i^h	the hiring threshold for workers with contract type i
$w(\varepsilon)$	wage of a worker with productivity ε
V	the value of an unfilled vacancy
$J_i(\varepsilon)$	the value of a filled vacancy of productivity ε with contact type i
$W_i(\varepsilon)$	the value of employment for the workers with productivity ε under contact type i
U_i	the value of unemployment for the workers with productivity ε under contact type i

Parameters

r	quarterly interest rate
λ	the Poisson rate at which a job-specific productivity shock arrives to occupied jobs
b	real income of un unemployed worker (i.e., unemployment benefits)
c	the cost of keeping a job vacancy unfilled
β	a measure for the union's bargaining power

i=1	the contract is a CDI
i=2	the contract is a CDD

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