On the e±ciency of employment subsidies in limiting the e®ects of labour market rigidities

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Abstract

This paper focuses on the economic complementarities between labour market institutions, precisely ¯ring costs, employment subsidies and a particular feature of European labour markets, the minimum wage. We investigate a matching model with endogenous job destruction in the tradition of Mortensen and Pissarides [1994]. Workers may be either unemployed, employed in a stable or a subsidised job. Three aspects of the subsidy are studied: its duration, its amount and the proportion of jobs concerned. We show that its e±ciency varies according to the way it is ¯nanced, the level of ¯ring costs and is lower than without a minimum wage.

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JEL-Codes: J38, J58, J68.

PROVISIONAL VERSION

1 Introduction

During the last twenty years, most industrialised countries have experienced a growing rate of unemployment, especially long-term unemployment. This increasing rate of unemployment is often attributed to the institutional rigidities of the labour market which hinders its functioning. The Eurosclerosis phenomenon has developed following the various rules adopted after the Second World War. These institutional rigidities prevent labour demand and labour supply from adjusting, and several economists favour a labour market reform to cure this problem. Nevertheless, the "rigid" economies are characterised by politico-economic complementarities. Thus, according to Saint-Paul [1993,1997], labour market institutions like ¯ring costs or minimum wage have created a status quo bias as their removal raises electoral costs[1]. However, they may reduce the job seekers' welfare.

Job security particularly appears to have adverse e®ects because it deters ¯rms from hiring, as the latter see it as an irreversible decision because of the costs they incur in the case of worker ¯ring if the economic situation deteriorates (Bertola [1990], Bentolila and Bertola [1990], Bentolila and Saint-Paul [1994]). On the contrary, ¯ring costs allow to stabilise labour demand if the case arises. The mean e®ect of these costs on unemployment level is thus indeterminate and the empirical studies' results are not clear cut. The recent matching models with endogenous job destruction emphasize the same kind of conclusion showing that job creations and destructions are reduced by such adjustment costs whatever their kind - lump-sum payments or administrative procedures (for the former see Mortensen and Pissarides [1998a] and for the latter, Garibaldi [1998]). Most authors agree on the fact that they unambiguously lead to a lengthening of unemployment duration (for recent surveys, see OECD [1996,1999]).

The policy of subsidies like hiring subsidies or decreases in taxes on low wages o®er the possibility to o®set the negative e®ects of these rigidities on the ¯rms' hiring behaviour as they induce them to rise their labour demand. They may also permit to postpone labour market reform as they limit the adverse e®ects of ¯ring costs. Saint-Paul [1997] argues that these policies provide a useful tool for labour market liberalisation on the margin. They reduce the negative e®ects of job security while preserving their advantages. The existence of permanent contracts often constitutes a motivation's source for workers. As the contract is lasting, they are given an incentive to invest in their employment relationship and are less threatened by precariousness (Piore [1986], Lindbeck [1994]). Employment subsidies thus allow to redistribute more equally employment opportunities between "insiders" and "outsiders" and o®er outsiders the possibility to get back some power during wage bargaining as they improve their employability in the long run.

[1]Saint-Paul builds up a theory considering that the median voter is an unskilled worker. The latter supports ¯ring costs even if they limit job creations as they allow him to keep his job and to extract a rent. The lower is his degree of unemployment exposure, meaning the more the labour market is rigid, the more he will favour it.

When implementing a policy on a particular market, it is necessary to account for not only the political complementarities as told earlier but also for the economic ones existing between various labour market institutions. Snower and Orszag [1999] attribute the high unemployment rates prevailing in some European countries to the fact that they have not made the most or even were not aware of these economic complementarities. Bélot and Van Ours [2000] show indeed that the consequences of labour market reforms depend upon the interactions with the other institutions. The employment subsidies effects may vary according the institutional setting in which they take place.

The purpose of this paper is thus to assess the comparative efficiency of a subsidy programme according to the institutional setting in which it is implemented and according to its financing using a matching model with endogenous job destructions similar to Mortensen and Pissarides [1994]. We will especially focus on the European countries, and particularly on France where a minimum wage and high firing costs coexist. These last institutions are complements as shown by some recent studies[2]. The introduction of these interactions between firing costs and minimum wage is thus likely to affect the consequences of employment subsidies.

Theoretical works devoted to employment subsidies using matching models usually conclude to their efficiency in dealing with unemployment duration and its frequency (Mortensen [1996], Millard and Mortensen [1997] and Mortensen and Pissarides [1998b]). These authors nevertheless draw up a ranking of these programmes according to their efficiency. Millard and Mortensen [1996], calibrating their model on the United Kingdom find out that a subsidy policy combined with a reduction of firing cost substantially decreases unemployment and raises the economic welfare. Mortensen [1996] evaluates simultaneously the effects of a hiring, a training and a wage subsidy. Hiring and training subsidies decrease sufficiently unemployment duration to offset the increase in its occurrence[3], whereas wage subsidies reduce both unemployment duration and frequency at the same time. Finally, Mortensen and Pissarides [1998a] are in-

[2] Bertola and Rogerson [1997] notice that job turnover rates between United States and European countries are quite similar in spite of institutional differences. They explain this convergence of results to the combination of high firing costs and wage levelling out measures for the latter. In fact, following an adverse shock of goods demand in the United States, firms immediately adjust their labour force, firing costs being low. In Europe, the end of the wage distribution being truncated, firms, despite the high firing costs, decrease their labour demand as they are not able to give some of their employees a decent wage. Job destruction is thus more important than if wages were in a position to adjust. Cahuc and Zylberberg [2001] study the comparative effects of firing costs under several minimum wage regimes. They find out that when a minimum wage prevails, the employment effects of firing costs are less favourable than those observed by Mortensen and Pissarides [1998b], especially when the minimum wage is high and applies to all jobs because wages cannot decrease and limit the job regulations effects.

[3] Hiring subsidies lead to a downward shift of the job creation curve thus increasing labour market tightness (and reducing unemployment duration) and the reservation products of firms (and then, the number of jobs destroyed, measuring unemployment frequency).

terested in the consequences of these policies in a segmented labour market (by skills) and show that wage and employment subsidies increase employment and wages, particularly of less skilled workers. They take note of, as previously, that hiring subsidies have an ambiguous effect on unemployment.

Our model differ from previous models by the inclusion of a minimum wage. The introduction of this institution modifies the complementarities existing between job security and employment subsidies. Moreover, we study the effects of several parameters of the subsidy policy like the proportion of job seekers placed in a programme or its duration. The models previously mentioned were only considering an increasing in the amount of the subsidy and implicitly assumed that it was offered indefinitely to all workers. We take into account the fact that the subsidy may generate a deadweight effect as firms create the job only to benefit from the subsidy as long as it lasts. We define an extra condition, not identified by previous models, of transformation of subsidised jobs into stable jobs (similar to the one defined by Cahuc and Malherbet [2000] or Cahuc and Postel Vinay [1999] in a different setting). Moreover, we examine several financing options for employment policy and show that the latter has an impact on the policy efficiency in fighting unemployment. The analysis is structured as follows. In section 2, the model is described. Then, we study the labour market equilibrium. For this purpose, we determinate the job creation and destruction conditions. Sections 4 and 5 respectively display the qualitative and quantitative results of the model. Section 6 concludes.

2 The model

The model developed here is similar to the matching model with endogenous job destructions of Mortensen and Pissarides [1994],[1998a] and extended by Cahuc and Malherbet [2000] who introduce an intermediate state[4].

2.1 General labour market setting

In the general model of Mortensen and Pissarides, job search by job seekers and job posting by firms both have costs. Labour market information is incomplete and looking for an efficient matching is costly for all the players involved. Job and worker matching is viewed as a production process and takes the form of a matching function, jobs and workers being the inputs and the matches, the output. The matching function is assumed to present the usual properties. It exhibits constant returns to scale and can be written as $m(u;v)$ with u, the rate of unemployed workers and v, the rate of vacancies (measured as shares of the labour force normalised to one). m is increasing in u and v, which implies that the number of matches increases when the number of vacancies or job seekers rises. In addition, $m(0;v) = m(u;0) = 0$; there cannot be hiring if one of the

[4] They differenciate stable employment from temporary employment in the presence of a tax on firings.

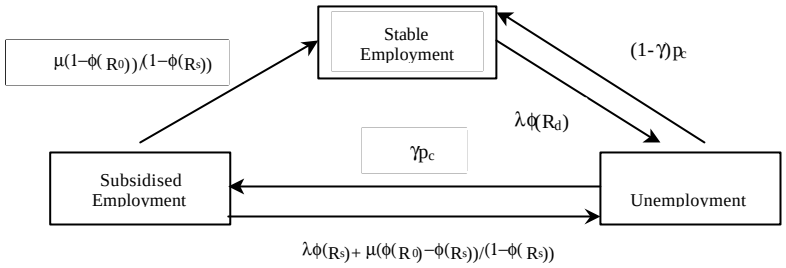

Figure 1: Labour market °ows

argument is equal to zero (no vacancies or no job seekers in the labour market). Let $\mu = v=u$; be a measure of labour market tightness. The rate at which vacant jobs are ¯lled is de¯ned as:

$$h(\mu) = m(u;v)=v = m(\frac{u}{v};1) = m(\frac{1}{\mu};1)$$

$@h=@\mu < 0$, which implies that the rate at which a vacancy is ¯lled is decreasing with labour market tightness. The rate at which job seekers exit from unemployment also depends on labour market tightness: $p_c(\mu) = m(u;v)=u = \mu h(\mu)$: The probability of getting a regular job is a function of the probability for the ¯rm of ¯lling a vacancy with a worker whose skills suit the job o®ered. The probability of reemployment is increasing with tightness indicator: $@p_c=@\mu > 0$: Flows into employment are determined by: $m = h(\mu)v$.

The state decides to implement a proportional subsidy policy and subsidises a share ° of the new jobs created to give ¯rms an incentive to hire the less productive workers. This policy is justi¯ed by the existence of the involuntary unemployment generated by the combination of a minimum wage and ¯ring costs. At the opposite of the matching model developed by Pissarides in 1990, the job destruction rate is not considered as exogenous but as endogenous. Firms having ¯lled their vacancies are subject to productivity shocks, arriving from time to time at rate ¸: These shocks reduce or increase the match productivity. Firms and workers then de¯ne a reservation productivity below which they decide to end the match. As soon as the productivity of a particular job falls below this critical threshold, the match is destroyed. The reservation productivity depends on the hiring procedure of the job seeker: the reservation productivity is R_s for the unemployed workers having bene¯ted from a subsidised job and R_d for the job seekers hired by the ¯rm with a long-term contract. The reservation productivity necessary for the ¯rm to turn a subsidised job into a permanent one is R_0.

Job seekers ¯nd out a subsidised job at rate $°p_c$, and get a regular job at rate, $(1 ¡ °)p_c$. A share, ¹; of the subsidised jobs ends as the government decides

during each time period. Among the destroyed subsidised jobs, a share, $\frac{1 - \copyright(R_0)}{1 - \copyright(R_s)}$; of the programme participants has a sufficient productivity to become regular workers and a share, $\frac{\copyright(R_0) - \copyright(R_s)}{1 - \copyright(R_s)}$; enters unemployment again (the denominator is due to the fact that only workers having a productivity higher than the reservation productivity of a subsidised job have remained employed following the preceding shock). R_0 is defined as the reservation productivity of the firm for subsidised jobs ending on a government decision. It differs from R_d because employers can then hire their employees without costs. Finally, a share, $\lambda\copyright(R_s)$; of the jobs supposed to continue (still benefiting from government funding) ends because of an insufficient productivity of the recipients. In the steady state, all stocks have to be constant, which implies the following equilibrium constraints concerning unemployment, regular employment, n or subsidised employment, r:

$$\rho\frac{[\copyright(R_0) - \copyright(R_s)]}{1 - \copyright(R_s)} + \lambda\copyright(R_s)\Big] r + n\lambda\copyright(R_d) = up_c \qquad (1)$$

$$\rho\frac{[1 - \copyright(R_0)]}{1 - \copyright(R_s)} r + (1 - \theta)up_c = n\lambda\copyright(R_d) \qquad (2)$$

$$\theta p_c u = \lambda\copyright(R_s)r + \rho r(1 - \copyright(R_s)) \qquad (3)$$

Using the equations (1) and (3), we obtain the following expression for equilibrium unemployment:

$$u = \frac{\left[\lambda\copyright(R_d)(\rho + \lambda\copyright(R_s))\right]}{\mu h(\mu)\theta\lambda[\copyright(R_d) - \copyright(R_s)] - \theta\rho\frac{\copyright(R_0) - \copyright(R_s)}{1 - \copyright(R_s)} + \rho + \lambda\copyright(R_s) + \lambda\copyright(R_d)(\rho + \lambda\copyright(R_s))\Big]} \qquad (4)$$

This Beveridge curve equation shows that the unemployment rate depends not only on the reservation productivities for the various jobs and labour market tightness but also on the probability for a job seeker to be registered in a subsidy programme (θ) and on the duration of this subsidised job ($1/\rho$).

2.2 Firms' behaviour

We will assume as Mortensen and Pissarides ([1994],[1998a]) that jobs are hit by productivity shocks arriving at rate λ: The match productivity, x; which takes values on the unit interval, is distributed according to the distribution function $\copyright(:)$. Some job seekers have a too low productivity to induce firms to hire them because of the existence of labour market rigidities. This assumption of an insufficient worker's productivity may be explained by the fact that this analysis applies to a particular segment of the labour market where workers are unskilled or have been unemployed for a long period. In fact, worker's productivity is supposed to decrease with the duration of their unemployment spell, this phenomenon being attributed to the skill deterioration following a lasting period out of the labour market (workers are not in a position to upgrade their knowledge and lose their working habits). The subsidy policy thus constitutes

a mean to compensate for the low productivity of these workers in reducing their hiring costs for ¯rms.

The asset value of a stable job (indexed by d) for the ¯rm having hired a worker with productivity x, is de¯ned as:

$$\pm J_d(x) = x - w(1+\iota) + \lambda \int_0^{1} \max(J_d(\varepsilon); V - T)\, d\Phi(\varepsilon) - J_d(x) \qquad (5)$$

with ±, the discount rate.

The value of having a ¯lled job depends on the instantaneous gains, corresponding to the di®erence between worker productivity and gross wage. Firms pay payroll taxes indexed on their wage bill. This value is also a®ected by the gains of the future period: the ¯rm experiences a productivity shock " with the arrival rate ¸ and then faces a trade-o®. It may either ¯re the worker incurring ¯ring costs or keep him earning $J_d(")$. To take this decision, it accounts for the productivity value after the shock.

We will assume that the wage paid by ¯rms is exogenous. This refers to a situation where the minimum wage applies to all jobs (Cahuc and Zylberberg [2000]). Subsidised workers are indeed often paid the minimum wage. The presence of a minimum wage may explain why ¯rms are reluctant to hire low productivity job seekers as they are not allowed to decrease wages with worker's productivity. Job security not only a®ects the ¯rm's decision to maintain the worker on his job but also its hiring policy. The turnover costs will take two forms: a hiring cost generated by the fact that the ¯rm must look for a worker whose skills suit the job o®ered but also a ¯ring cost when it decides to ¯re the latter. Let, T; be the ¯ring cost paid by the ¯rm. It does not equal the sum received by the worker in the case of a separation, T_w, because a share of the sum paid by the ¯rm is given to a third actor, in this setting, the government. $T_g = T - T_w$ corresponds to the administrative procedures or the monetary costs applying to ¯rings[5].

If an employment subsidy is introduced, the ¯rm has now the opportunity to hire workers whose productivity was too low to be hired at the prevailing wage in the presence of ¯ring constraints. The subsidy ¾ is wage proportional and is

[5]This ¯ring costs splitting up in two parts is linked to the contributions of Lazear [1990] and Burda [1992]. These last authors have shown that in the absence of minimum wage, the part of the ¯ring cost paid to the worker does not a®ect labour market equilibrium as the equilibrium wage adjusts and falls (for a study of this result in a matching setting with endogenous job destruction see the two-third model of Mortensen and Pissarides [1998]). On the other hand, the part received by the government or an other administration, modi¯es labour market equilibrium. Nevertheless, when a minimum wage exists, the result according to which wage decreases by the amount of the ¯ring costs received by workers, no longer holds. The payment received by workers in°uences labour market equilibrium as equilibrium wage cannot adjust to take into account the discounted amount of ¯ring costs.

paid during several periods. We will assume that the subsidies are exclusively devoted to new ¯rms to avoid an opportunist behaviour of the ¯rms[6]. In the case of a subsidy payment, the value of a ¯lled job (indexed by S) thus becomes:

$$J_S = \int_{R_0}^{1} J_{SH}(x)d\Phi(x) + \int_{R_s}^{R_0} J_{SB}(x)d\Phi(x) - \Phi(R_s)(V - \&T) \qquad (6)$$

The subsidised job may take di®erent forms: it may have a high productivity su±cient to become a stable job at the conclusion of the subsidy period (J_{SH}), or its productivity may be too low and the subsidised worker must go back to unemployment (J_{SB}). The last job category refers to the subsidised jobs whose productivity is not high enough to be maintained at the end of a productivity shock, the ¯rm thus paying ¯ring costs ($\Phi(R_s)(V - \&T)$). The discounted value of a subsidised job with high productivity is de¯ned as follows:

$$\pm J_{SH}(x) = x - \overline{w}(1 + \rho - \gamma) + \left[\int_{R_0}^{1} J_{SH}(\varepsilon)d\Phi(\varepsilon) + \int_{R_s}^{R_0} J_{SB}(\varepsilon)d\Phi(\varepsilon) - \&T\Phi(R_s) - J_{SH}(x)\right] + \theta[J_d(x) - J_{SH}(x)] \qquad (7)$$

The subsidy adds to the ¯rm's gains of the current period in reducing the wage costs of its labour force. The duration of the subsidy payment ($1/\theta$) depends on the government's will. The latter decides when the bene¯ting ¯rm will end receiving the subsidy. If the ¯rm separates from the worker although it is entitled to the subsidy, it incurs ¯ring costs[7]. These costs will be assumed lower than those associated with a regular job and will di®er from the latter by a & factor: Following a productivity shock, the job may become less productive and even be destroyed if the productivity falls below a threshold under which the ¯rm is not interested in continuing the employment relationship. To take this decision, the ¯rm compares the gains generated by the pursuit of the job at the new productivity with those linked to the worker's ¯ring without costs. The productivity threshold of the ¯rm is thus R_0, it is higher than R_d because the employer bears no cost in the case of a separation. If the worker's productivity is higher than this threshold productivity, he will remained employed, which is the case here because the subsidised job is endowed with a high productivity.

The subsidised job newly created may also have a low productivity and takes the following form:

[6] In fact, the subsidy must not be paid to the ¯rms having recently proceeded to ¯rings. This could induce a replacing of the old workers by the workers bene¯ting from the subsidy, an e®ect identi¯ed as turnover e®ect by empirical studies. In the real world, it exists restrictions on the delivery of subsidies: ¯rms cannot have ¯red workers in a recent past.

[7] In fact, in France, when a ¯rm hires a job seeker with a CIE (particular employment contract) and decides to break the contract for unjusti¯ed motives (in the absence of a negligence or in the case of serious di±culties), the subsidies received must be paid back.

$$\delta J_{SB}(x) = x - \bar{w}(1+\tau-\sigma) + \lambda\left[\int_{R_0}^{1} J_{SH}(\epsilon)d\Phi(\epsilon) + \int_{R_s}^{R_0} J_{SB}(\epsilon)d\Phi(\epsilon) - \varsigma T\Phi(R_s) - J_{SB}(x)\right] + \mu[V - J_{SB}(x)] \quad (8)$$

The essential difference with the preceding value function is that, at the end of the subsidised period, the employment relationship will terminate, the job having an insufficient productivity to be turned into a stable one. The subsidised worker will then become unemployed at the rate μ. As previously, the productivity of the subsidised job may change following a productivity shock. The employment subsidy thus offer to the most disadvantaged job seekers an opportunity to restore their employability as their productivity may be increased during the payment of the subsidy. Indeed, these subsidies unlike the lump-sum subsidies studied in previous models (Mortensen and Pissarides [1998b] and Mortensen [1996]) allow the less endowed unemployed workers to show their ability in the firm and to benefit from a training through the learning by doing. They thus improve their reemployment probability even if the duration of their employment relationship does not exceed the duration of the subsidy. The latter may be used by the employer as a trial period to screen between unemployed workers and to test their abilities. Firms are then less demanding in their hiring criterions as they are aware of the fact that they will have the possibility to fire the worker without costs when the government decides to put an end to the subsidised job. As far as lump-sum subsidies are concerned, the hiring decision is also affected but these subsidies do not favour the maintain of the employment relationship in the longer term. They only marginally act on firms' behaviour during the hiring procedure. They may be convenient for non completely excluded job seekers whereas the employment subsidies aim at particularly disadvantaged unemployed workers. The combined use of these tools may thus cover the various groups across job seekers' population.

Finally, the firm's value of posting a vacancy is:

$$\delta V = -k + (1-\gamma)h(\theta)(J_d - V) + \gamma h(\theta)(J_S - V) \quad (9)$$

with k, the per period cost of a vacant job borne by the firm. J_S is defined by the equation (6) and J_d represents the gains distribution for a stable job, $J_d = \int_{R_d}^{1} J_d(x)d\Phi(x) + (V - T)\Phi(R_d)$.

During a time period, firm sees a job seeker's application for its job offer at the rate $(1-\gamma)h$ and is proposed a subsidised worker by the Public Employment Service at the rate γh. This assumption may also apply to the situation prevailing in France. Some firms first decide to hire a worker and in a second time ask for information to know if this hiring may benefit from a subsidy. This assumption also accounts for the fact that the government chooses to subsidise

only a fraction of the new hirings to target its policy on the less employable workers.

2.3 Workers' behaviour

Being included in a programme does not constitute a particular state on the labour market, in the sense that the unemployed worker is not temporarily excluded from the labour market as long as the programme lasts as it is the case for vocational training programmes or temporary public employment programmes. In fact, when the worker is hired as a subsidised one, he becomes a worker of the ¯rm and does not occupy a particular position[8]. The expected discounted lifetime income of an unemployed person is the following:

$$\pm U = \frac{1}{2}\overline{w} + (1 \text{ ¡ } °)p_c(W_d \text{ ¡ } U) + °p_c(W_S \text{ ¡ } U) \qquad (10)$$

with ½; the replacement rate of unemployment bene¯ts.

An unemployed worker receives, during the current period, unemployment bene¯ts indexed to the wage previously received. This assumption ¯ts the French unemployment bene¯t system[9]. During the next period, he ¯nds a regular job at the rate $(1 \text{ ¡ } °)p_c$, and obtains a di®erential gain of $W_d \text{ ¡ } U$, and enters a programme at the rate $°p_c$, and earns then $W_S \text{ ¡ } U$ (W_S being the worker's gains associated to a subsidised job being de¯ned by an equation similar to equation (6)). The value function of an employed worker having a stable job is written as:

$$\pm W_d(x) = \overline{w} + \text{¸}\left[\int_0^1 \max(W_d(\text{®}); U + T_w)d\text{©}(\text{®}) \text{ ¡ } W_d(x)\right] \qquad (11)$$

The gains of being a regular employee equal the wage of the current period, but also the earnings during the next period. To choose to stay or to leave the ¯rm during the next period, the worker compares his earnings if he keeps his job in the case of a shock of productivity ® to those realised if he enters unemployment (if he becomes unemployed and receives redundancy payments). In the case of a subsidised job, we again can distinguish two value functions respectively for a low and a high productivity job:

$$\pm W_{SB}(x) = \overline{w} + \text{¸}\left[\int_{R_0}^{1} W_{SH}(\text{®})d\text{©}(\text{®}) + \int_{R_s}^{R_0} W_{SB}(\text{®})d\text{©}(\text{®}) \text{ ¡ } (U + \&T_w)\text{©}(R_s) \text{ ¡ } W_{SB}(x)\right] \qquad (12)$$
$$+ \text{¹}\,[U \text{ ¡ } W_{SB}(x)]$$

[8] Especially, in France, when a job seeker participates in a subsidy programme, he enters the ¯rm with the same contract as the other workers already employed by this ¯rm. The only di®erences is due to the amount of the subsidy and the degree of job protection.

[9] This is the case in most industrialised countries, particularly in France. Indeed, the unemployed workers receive at the beginning of their unemployment spell the AUD (allocation unique dfgressive) for two years (this allowance is reduced every four months). Then, they are granted the ASS (allocation spfci¯que de solidarit) which is independent of their previous labour income.

$$\pm W_{SH}(x) = \varpi + \beta\left[\int_{R_0}^{1} W_{SH}(\varepsilon)d\Phi(\varepsilon) + \int_{R_s}^{R_0} W_{SB}(\varepsilon)d\Phi(\varepsilon) - (U + \&T_w)\Phi(R_s) - W_{SH}(x)\right] + \lambda[W_d(x) - W_{SH}(x)] \quad (13)$$

When a shock with productivity ε hits the firm, the worker whatever his job productivity takes his decision concerning the future of the match comparing his earnings inside the firm to his gains as unemployed increased by the redundancy payment received in the case of the contract breach ($\&T_w$). If his subsidised job comes to an end (at the rate λ) and the worker does not have a sufficient productivity to have his job turned into a stable one, he goes back to unemployment. On the other hand, if his match productivity is above the reservation threshold (W_{SH}), his employment relationship with the employer becomes a permanent one protected by high firing costs.

2.4 The budgetary constraint of the government

The state must balance its receipts and its outlays when implementing its labour market policy. We assume that outlays exclusively consist of active and passive spending on the labour market. Passive spending mean the benefits paid to the unemployed whereas active spending are defined as programmes to help the return of the unemployed on the labour market. The fiscal policy is restricted to payroll taxes on wages paid by employers. The assumption is made that only firms bear the cost of the public employment policy. The budgetary constraint of the government is the following:

$$(1 - u)\varpi' = u\theta\varpi + \gamma v h(\mu)(\varpi - \bar{z}) \quad (14)$$

The government thus faces a trade-off: it must allocate its receipts among job seekers' compensation and the implementation of active programmes to improve the reemployment rate of the recipients. This budgetary constraint is simplified in comparison with the situation existing in France where active labour market policies and unemployment benefits are managed by different institutions. The insurance part of unemployment compensation is ruled by the UNEDIC, an organisation with equal representation of labour unions and firms. The unemployment benefit financing relies on payroll taxes paid by employers and employees. As far as active programmes are concerned, the Labour Ministry is involved and a share of the employment policy budget is affected to these policies. We will study several scenarii of subsidy policy financing: either an increase in the payroll taxes or a decrease in the replacement rate. This last possibility refers to the actual tendency of several European countries to reform the unemployment benefit system, its duration being limited and the active policies substituting for the payment of unemployment benefit when the unemployment spell has reached a given duration. This system was already existing in Sweden but Switzerland adopted it recently for the whole pool of its job seekers whereas the United Kingdom applied it only to the young unemployed persons in the New Deal's setting.

After having de¯ned the behaviour of the various actors, we are interested in the equilibrium prevailing in the labour market when there is an employment subsidy and institutional rigidities such as ¯ring costs and minimum wage.

3 Labour market equilibrium

This section ¯rst identi¯es one job creation condition and several job destruction conditions. These conditions will then allow us to de¯ne the equilibrium prevailing on the labour market.

3.1 Determination of job destruction conditions

The various matches surpluses obtained by the two actors are respectively for a stable job and a subsidised job:

$$\begin{aligned} S_d(x) &= J_d(x) + W_d(x) - V + T - U - T_w \\ S_S(x) &= J_S(x) + W_S(x) - V + \&T - U - \&T_w \end{aligned}$$

According to the joint rationality assumption of the two actors, the surplus of continuing the match for the two parties involved must be higher than those associated with separation. Moreover, the agents being individually rational, the separation occurs only when the future value of the match is lower than the separation cost for each agent. The various surpluses are monotonous increasing functions of the productivity shock, which means that job destruction satis¯es the reservation property (Mortensen and Pissarides [1994]). So, there exists a single value of the reservation product which satis¯es the job destruction condition, the latter implying a nil surplus. A nil surplus is equivalent to a nil share of surplus under the assumption of joint rationality. For workers bene¯ting from a long lasting contract in the ¯rm, the reservation product of the match, R_d satis¯es the following condition:

$$W_d(R_d) - U - T_w = J_d(R_d) - V + T = 0$$

According to the job creation condition, $V = 0$. Firms o®er new vacancies until the discounted value of holding one equals zero, this result being linked to the pro¯t maximisation behaviour of the ¯rm. Thus, the job destruction condition amounts to $J_d(R_d) = -T$: Using the equation (5), accounting for the fact that $J_d'(x) = \frac{1}{r+\lambda}$ and integrating by parts, we get the following stable jobs destruction condition:

$$R_d + \frac{\gamma}{r+\lambda} \int_{R_d}^{1} (1 - \Phi(x))dx = \overline{w}(1+\zeta) - rT \qquad (15)$$

This relationship corresponds to the equality between the sum of the lower return on the match acceptable by the ¯rm (the ¯rst term in the left side) and

of the employer's will to maintain the match in the case of a negative shock on productivity (if the ¯rm experiences a negative shock, it can keep the job hoping a positive shock will occur during the next period) and, the opportunity cost of the job. The ¯rst term in the right side refers to the job cost for the ¯rm whereas the second one represents the cost of the contract breach (the ¯ring costs paid). Thus, ¯ring costs reduces the reservation product of ¯rms because of the cost incurred by the latter when employers and workers separate. This equation allows us to de¯ne the productivity threshold of permanent jobs for ¯rms.

The reservation productivity of the ¯rm di®ers in the case of a subsidised job. We will thus establish several job destruction conditions according to the type of contract signed between the ¯rm and the worker as Cahuc and Postel-Vinay [1999] do. As far as subsidised job is concerned, the employer and the employee decide to terminate the match only if the surplus value falls below those of ¯ring costs, which leads to the following condition: $J_s(R_s) = -T$. The reservation threshold value is inferred from the equation (8) and from the fact that $V = 0$[10]:

$$R_s + \frac{\gamma}{\gamma+\beta+r}\int_{R_s}^{R_0}(x - R_s)d\Phi(x) + \frac{\gamma}{\gamma+\beta}\int_{R_0}^{1}(x-1)d\Phi(x) = \qquad (16)$$
$$(1+\lambda-h)\overline{w} - [\beta+\gamma(1-\Phi(R_0))]T - \gamma(1-\Phi(R_0))J_{SH}(1)$$

Indeed, the values of a low and a high productivity subsidised jobs may be written as follows (using the equations (7) and (8) and the fact that $J_{SB}(R_s) = -T$):

$$J_{SH}(x) = \frac{x-1}{\beta+\gamma} - J_{SH}(1) \quad et \quad J_{SB}(x) = \frac{x-R_s}{\beta+\gamma+r} - T$$

Using these two relationships, we get the equation (16) de¯ned above (for a detailed presentation see Cahuc and Malherbet [2000]). The reservation productivity is higher for a stable job than for a subsidised job provided that the amount and the duration of the subsidy is su±ciently large. If the case arises, the subsidy comes in reduction of the wage costs of the ¯rm and the latter is thus given a further incentive to keep its worker. The employment subsidy alters the job destruction condition in diminishing the value of the reservation productivity for the ¯rms having hired unemployed workers in the case of a subsidy programme. After the productivity shock, a subsidised job is preserved only if its productivity is higher or equal to R_s. The ¯ring costs paid in the case of a contract breach during the period of subsidy receiving, also reduce this reservation productivity as does the fact that this job may become highly productive. R_0, equals the ¯rm's productivity when it decides whether or not to turn the subsidised job into a stable one following the subsidy period. Knowing

[10] This condition means that new jobs are created as long as their value di®ers from zero (Mortensen et Pissarides [1994,1998a]).

that it will not incur ¯ring costs if it ¯res the worker at the end of this last period, the ¯rm faces the following destruction condition: $J_d(R_0) = 0$. We thus deduce this condition:

$$R_0 = R_d + (\pm + \psi)T \tag{17}$$

The reservation threshold of the ¯rm at the end of the subsidy period is higher than the productivity required for the continuation of the employment relationship in the case of a permanent job. Indeed, the ¯rm anticipates that if it ¯res the worker following the end of the subsidy payment, it will not have to pay any compensation and the job value is thus reduced by this amount. The transformation condition for turning a subsidised job into a regular one is thus stricter than the conditions to ful¯ll to continue a permanent or a subsidised job as the job is no more protected by ¯ring costs or a reduction in wage costs. We also have to de¯ne the value of the subsidised job with the highest productivity to solve the whole system, $J_{SH}(1)$. Its equation is de¯ned as:

$$(\pm + \iota + \psi\theta(R_0))J_{SH}(1) = 1 - w(1 + \gamma + \tau) + \frac{\psi}{\psi + \pm + \iota}\int_{R_s}^{R_0}(x - R_s)d\theta(x) + \frac{\psi}{\psi + \pm}\int_{R_0}^{1}(x - 1)d\theta(x$$
$$- T(\iota + \alpha\psi\theta(R_0)) + \iota\frac{1 - R_d}{\psi + \pm}$$

3.2 Determination of the job creation condition

Firms supply vacant jobs until their expected value reaches zero ($V = 0$): From the equations (7), (8) and (9) we obtain the following job creation condition:

$$k = \eta h(\theta)\left[\frac{1}{\psi + \pm + \iota}\int_{R_s}^{R_0}(x - R_s)d\theta(x) + \frac{1}{\psi + \pm}\int_{R_0}^{1}(x - 1)d\theta(x) - \alpha T\theta(R_0) + (1 - \theta(R_0))J_{SH}(1)\right]$$
$$+(1 - \eta)h(\theta)\left[\frac{1}{\psi + \pm}\int_{R_d}^{1}(x - R_d)d\theta(x) - T\right]$$

This equation states a decreasing relationship between labour market tightness and the reservation productivity of ¯rms having hired an unemployed worker under a regular contract or with a subsidised option. When the reservation productivity increases, job destructions are more numerous and job creations decrease. Firms anticipate that the new jobs created will have a shorter duration which limits job creations. Thus, when ¯rms are more demanding concerning workers' productivity, labour market tightness decreases. This curve corresponds to the job creation curve of the Mortensen and Pissarides' [1994] model. The government uses the programme participation rate to favour job creation by ¯rms. The proportional subsidy does not directly intervene in the

job creation condition but nevertheless, a®ects the surplus sharing between workers and ¯rms.

The model equilibrium is obtained the following way: the equations (15), (16) and (17) allow us to deduce the reservation productivities of the stable and subsidised jobs $R_d^¤; R_0^¤$ and $R_s^¤$. Finally, the job creation condition (18), the equilibrium conditions between the entry and exit °ows of unemployment, subsidy programme and stable jobs (1), (2) and (3) determine the equilibrium vacancy rate $v^¤$, the equilibrium unemployment rate $u^¤$, the stable employment rate $n^¤$ and the subsidised employment rate $r^¤$ of this segment of the labour market. In the next section, we will assess the theoretical e®ects of the various parameters of employment policy.

4 The qualitative impact of the implemented policy

The government may use the di®erent parameters of the employment policy to increase the employment level in the economy. At ¯rst, it may modify the job seekers participation rate and thus alter the distribution of the new jobs created between subsidised jobs and regular jobs. The equilibrium of the labour market is a®ected the following way: increasing the number of job seekers included in a programme leads ¯rms to create more vacancies as subsidised jobs give ¯rms a greater surplus than non subsidised jobs (see equation (18)). This is not only due to the amount of the subsidy but also to the fact that the costs borne in the case of a separation are less important (subsidised jobs are less protected than permanent jobs). The job creation curve shifts upwards inducing an increasing in labour market tightness and in the various reservation products. The proportion of subsidised jobs has no direct e®ect on the job destruction conditions, but an indirect e®ect through the budgetary constraint in the case of a tax ¯nancing. As the government places more job seekers into subsidy programmes, it increases its spending and raises the tax rate incurred by ¯rms. This brings about a shift upwards of all the jobs destruction curves (corresponding to equations (15), (16) and (17)). Indeed, following the rise in the wage burden, the job surplus becomes less consequent and it is thus less pro¯table for ¯rms to preserve their employment relationship. The net e®ect on reservation thresholds is unambiguously positive whereas the e®ect on the tightness is indeterminate. Nevertheless, at this stage, we do not include the positive e®ects of subsidised job creation on global employment and the reduction in the costs of unemployment bene¯ts generated by the employment subsidies if they are e±cient. Moreover, the second e®ect is not present if the programmes are not ¯nanced by taxes but instead by reductions in the replacement rate.

The policy maker may also a®ect the amount of the subsidy received by ¯rms to encourage them to hire the most disadvantaged unemployed workers in the labour market. As we have already mentioned, the lengthening of the unemployment spell is likely to decrease workers productivity. If job seekers

stay a long time out of employment, they are not in a position to upgrade their skills and moreover, they lose their self-con¯dence. A subsidy programme thus o®ers the opportunity to a ¯rm to employ workers whose productivity is not high enough to get hired at the prevailing wage in the economy. Moreover, ¯ring restrictions prevent ¯rms from hiring less productive workers as they anticipate that due to these costs, the match is likely to last. If the amount of the subsidy is increased, the job destruction condition for subsidised job is modi¯ed. The reservation product necessary for the match to continue decreases and the job destruction curve of these jobs shifts downwards (cf. equation (16)). Thus, labour market tightness is higher. Nevertheless, in the case of a tax ¯nancing, this shift entails a rise in payroll taxes and the regular job destruction condition and the transformation condition for subsidised jobs move upwards as does the subsidised jobs condition (see equations (15), (16) and (17)). The move of the latter curve is then indeterminate. The job creation curve remains unchanged because the subsidy does not directly act upon it. An increase in the subsidy thus translates in a rise in R_0 and R_d in the case of a tax ¯nancing and a fall of R_s and an indeterminate e®ect on tightness. In the case of a replacement rate ¯nancing, the two ¯rst productivities are left unchanged, and only the shift of the job destruction curve for subsidised jobs subsists.

Finally, the government may decide to shorten the duration of the spell during which ¯rms receive the subsidy. The duration of the subsidised job must be su±cient to allow the job seeker to learn the skills characterising his job but must not exceed a given duration beyond which the unemployed worker is locked in his programme and does not look for a job on the regular jobs market. Moreover, in the long run, the ¯rm is likely to only accept subsidised workers and to integrate the policy into its hiring behaviour, substituting a subsidised worker to an other (the so-called "windfall e®ect"). A rise in the rate at which subsidised jobs end brings about a shift upwards of the job destruction curve de¯ned by equation (16) thus inducing a raise in the reservation product R_s and a fall in labour market tightness. An increase in the rate at which subsidised jobs come to an end also entails a move downwards of the job creations curve (de¯ned by 18). A reduction in this kind of job duration diminishes the expected pro¯ts of such a job and leads ¯rms to reduce the number of their vacancies. The net result of these shifts is a reduction in labour market tightness and an ambiguous evolution of the subsidised job productivity. Moreover, the reduction in the duration of the subsidy payment infers a decrease in the payroll taxes in the case of a tax ¯nancing and so a fall in the various labour market reservation productivities.

As in most enunciated cases, we cannot conclude on the policy parameters impact on the various labour market equilibrium values, we are going to make a simulation to see the magnitude of these di®erent e®ects. Moreover, we will assess the e±ciency of employment subsidies according to the level of job security. If the ¯ring costs prevailing in the economy are important and the minimum wage is high, the ¯rst reduce job destructions but also hinder job creation. It is thus appropriate to introduce a subsidy policy to give ¯rms an incentive to

hire and to limit the negative effect of job security. On the other side, if this legislation is not developed, a proportional subsidy is also useful. Firms are thus less likely to end the match during the subsidy period as they incur substantial costs. This reduces job destructions and favour the mutual commitment between workers and firms. Moreover, it offers low wage workers an additional source of revenue. We will appraise in the next section the relative efficiency of employment subsidies according to the level of firing costs, high or low and to the different financing choices for employment policy.

5 The quantitative impact of the policy

The matching function takes the form of a Cobb-Douglas function, $M = mV^{\alpha}S^{1-\alpha}$; with $\alpha = 0,5$ following Mortensen and Pissarides [1998b]. The scale factor m takes the value 1,13 which corresponds to a mean duration of unemployment of fifteen months according to the situation prevailing in France (INSEE[1999]) before finding out a job for a tightness of $\mu = 0,5$: The time unit is the year. The arrival rate of the shock λ is equal to 0,1. The model is calibrated for an unemployment rate of 15%, this rate representing the situation of the less skilled workers in the French labour market (European Commission [2001]). The discount rate r is fixed at 0,05. The unemployment benefits are supposed to be proportional to the market wage with a replacement rate, $\rho = 0,76$;which is the rate prevailing in France. Moreover, the cost of posting a vacancy depends on the wage paid by the firm. Like Cahuc and Malherbet [2000], we will assume that this cost reaches 0,5 w, w being the wage of this labour market segment. We have calibrated the model to find out the value of the minimum wage in the economy and of the taxation rate. We will consider two alternative cases for the firing costs: high firing costs $T_H = 2\overline{w}$ and low firing costs $T_L = 0,5\overline{w}$ to evaluate the relative efficiency of the subsidy policy according the institutional setting in which it takes place. The cost of breaking the contract for the employers employing a subsidised worker is assumed to amount $\delta = 0,1$ because we are not able to evaluate the precise value of firing costs as we do not know when the contract breach occurs (this assumption was made in Cahuc and Malherbet [2000]):

The way the policy is financed has an impact on its efficiency. The consequences of the employment subsidy are indeed more favourable when its cost is charged through reductions in the replacement rate instead of increases in the payroll taxes. This result is linked to the fact that following policy implementation, the taxes paid by firms are increased which induces a rise in the reservation product of stable jobs and in the productivity of transformation of subsidised jobs into stable ones and this holds, whatever the policy parameter considered (except policy duration).

5.1 the case of a tax financing

We are first going to study the effects of an employment subsidy with a tax financing. If the government increases the number of subsidised jobs created, the

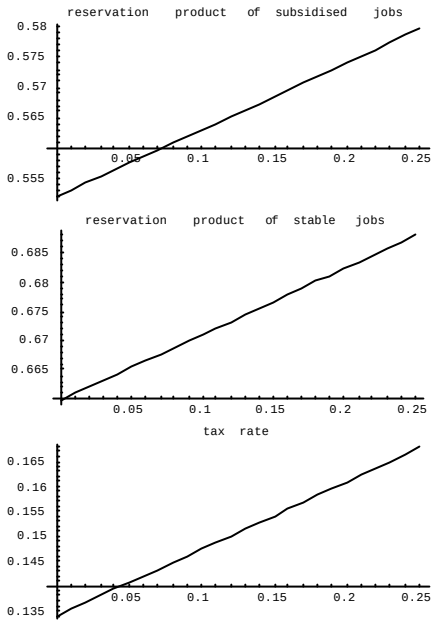

Figure 2: a rise in the proportion of subsidised jobs with low ¯ring costs in the case of tax ¯nancing

unemployment rate rises consequently and the number of vacancies decreases. The fall in the reservation threshold of subsidised jobs is not su±cient to o®set the rise in the reservation productivities of unsubsidised ¯rms (cf. ¯gure 2). A rise in job destructions occurs that the additional job creations entailed by the implementation of the subsidy are not enough to compensate for. This result is partially due to the existence of a minimum wage but is hardly a®ected by high ¯ring costs. If labour market tightness is lower in a rigid labour market, the di®erence of increase in the unemployment rate is not outstanding (0;5 percentage points higher).

Di®erences are now more sizeable if one studies a rise in the subsidy amount. If ¯ring costs are high, an increase in the share of the wage subsidised by the government systematically entails a rise in the unemployment rate, the number of subsidised jobs and a proportional decrease in the number of regular jobs (see ¯gure 3). The number of vacancies posted rises but job destructions more than o®set their positive e®ect on unemployment. The di®erences in results compared to previous models partly lie in the fact that ¯rms are not able to transfer to workers a part of the subsidy burden through a decrease in the bargained wage and are thus led to adjust their labour demand, some workers becoming too costly (through an increase in their reservation product). If ¯ring restrictions are low, an increase in the subsidy starts to slowly reduce the unemployment rate before increasing it, above a threshold of nearly 20% of

Figure 3: an increase in the subsidy with high ¯ring costs in the case of tax ¯nancing

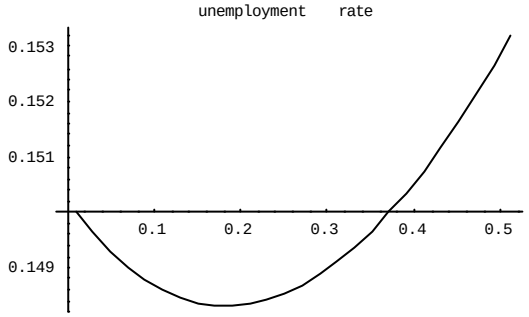

Figure 4: an increase in the subsidy with tax ¯nancing, ¯ring costs being low

the wage (see ¯gure 4). Indeed, for a low amount of the subsidy, the reservation products of stable jobs and transformation are hardly a®ected by a rise in the latter whereas the reservation productivity of subsidised job strongly decreases. The consequences on employment are thus, at least during the ¯rst period, favourable.

Finally, if the government decides to reduce the duration of subsidised jobs, the reservation productivity of the ¯rm for these jobs varies di®erently according to the level of ¯ring costs. If the latter are high, it rises whereas in the opposite case, it falls. With the decrease in contract duration, the policy cost reduces thus entailing a fall in the reservation productivities of the various types of jobs. Nevertheless, when ¯ring costs are consequent, this fall in the wage cost is not su±cient to o®set the decrease in the continuing job value. The latter is less advantageous as the subsidy is paid during a shorter period. Whatever labour market rigidity, a reduction in the time passed in a programme induces an increase in employment and a decrease in the reservation products for permanent jobs and ending subsidy jobs (however this variation is of limited magnitude). Nevertheless, the magnitude of this e®ect is increased by labour market °exibility.

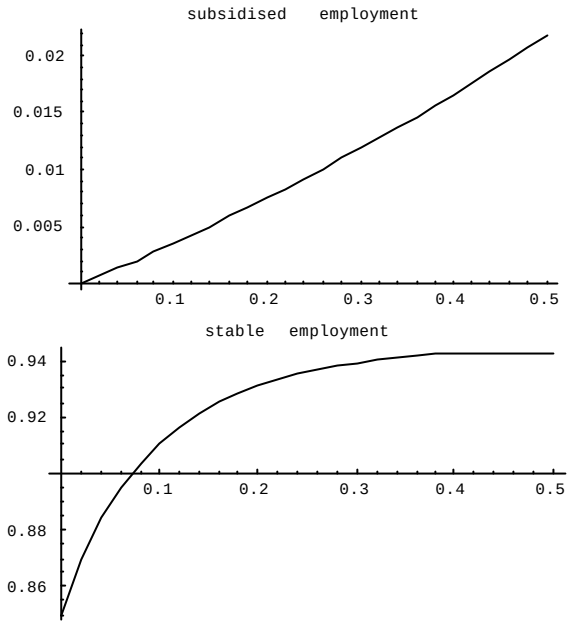

Figure 5: the consequences of a rise in the proportion of job seekers bene¯ting from the subsidy on employment with high ¯ring costs and tax ¯nancing

5.2 the case of a replacement rate ¯nancing

We have then focused on the case of policy ¯nancing by a reduction in the replacement rate of unemployment bene¯ts. This option comes within the scope of the general setting of a labour market reform as advocated by the OECD. Several countries indeed have adopted some measures to "activate" their passive spending to favour a recovery of employment growth. In this setting, the subsidy policies are e±cient to reduce the unemployment rate prevailing in this particular segment of the economy and their e±ciency is strengthened by a rigid labour market. If ¯ring costs are high, an increase in the share of subsidised hirings brings about a strong rise in the level of regular employment (a rise in 6 percentage points if the latter reaches 1/3 of the jobs created) (see ¯gure 5).

However, the e±ciency of such a policy is limited to a given threshold. Above this threshold, a rise in ° translates into regular employment reaching an upper limit or even decreasing in the case of a °exible market. The job seekers placement into subsidised jobs in the case of low ¯ring costs increases employment to a less extent as the latter raises at best of one percentage point for a job placement rate of about 1=4 and then falls (cf. ¯gure 6). In this case of replacement rate ¯nancing, the negative e®ect on the reservation products due to the payroll tax does no longer exist as the unemployed workers bear the cost of employment policy through a reduced replacement rate. Nevertheless, this policy does not diminish the welfare of job seekers because it o®ers the possibility to decrease the unemployment rate. The reduction in spending which

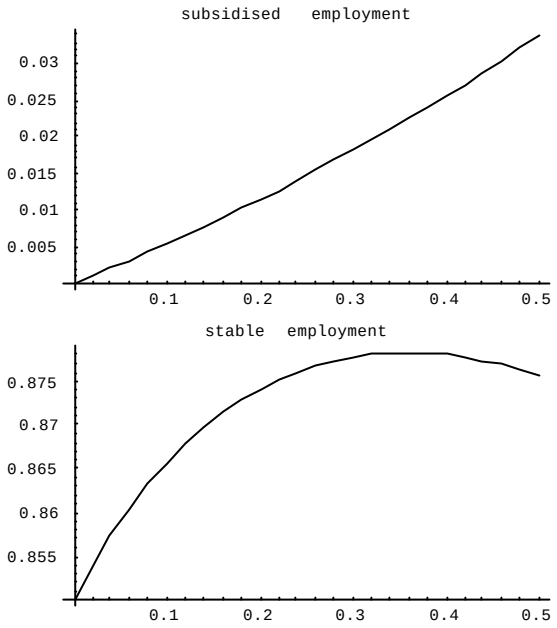

Figure 6: the consequences of a rise in the proportion of job seekers bene¯ting from the subsidy on employment with low ¯ring costs and bene¯t ¯nancing

occurs is su±cient to preserve or even increase the amount of unemployment bene¯ts. The reservation productivity of stable jobs remains unchanged and the policy implementation allows less skilled workers to ¯nd out a job because the reservation productivity for a subsidised job, $R_{s,}$ is lower than the productivity associated to the continuation of a regular job, R_d. Firms thus create more jobs, the mean reservation product in the economy falling following the increase in the share of subsidised jobs.

If the government decides to favour less skilled job seekers hirings by raising the amount of the subsidy paid to ¯rms, it entails a decrease in the unemployment rate and a rise in the regular employment rate. It is interesting to note that if the subsidy policy is adopted, the decrease in the unemployment level is not only due the rise in subsidised employment, regular employment also rises (see the ¯gures 7 and 8). This result stems from the fact that the cost of a vacant job decreases with the employment subsidy and from the fact that among subsidised jobs, some will become regular job after the ending of the subsidy payment. The subsidy e®ect is thus not limited to a windfall e®ect as some workers are retained in their jobs at the end of the subsidy programme.

An increase in the value of the subsidy generates a decrease in the reservation productivity of ¯rms bene¯ting from subsidised jobs and consequently a fall in the unemployment rate. This fall is more pronounced when ¯ring restrictions

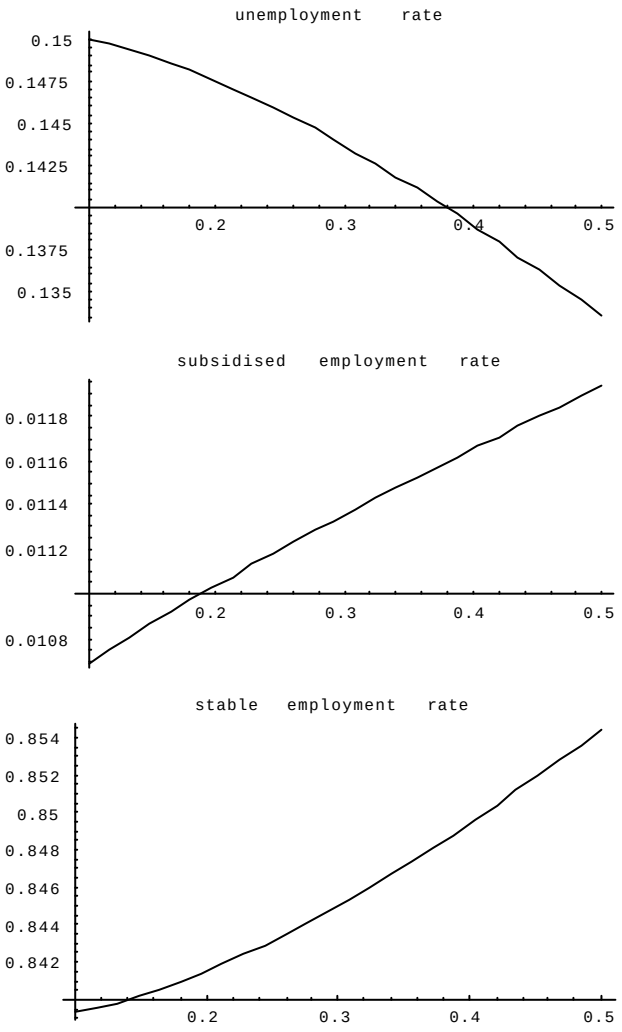

Figure 7: the employment effects of an increase in the proportion of firms benefiting from the subsidy with low firing costs and a replacement rate financing

are larger. In fact, the latter decrease job destruction, the mean reservation productivity in the labour market being lower, the number of matches preserved is more important. The more rigid is the labour market, the more the replacement rate of unemployment bene¯t increases (7 percentage points against 24).

A reduction in the duration of the programme has the opposite e®ect to those of a subsidy increase. If the measure is e±cient as it is the case here, diminishing its duration has a negative impact on employment through its action on the subsidised jobs reservation productivity. A rise in the rate at which the policymaker ends the programme leads to a fall in the subsidised job profitability. The subsidy will be received during a shorter period and thus ¯rms will be more demanding as far as productivity is concerned. The subsidised job destruction rate then increases as does the unemployment rate of this labour market segment.

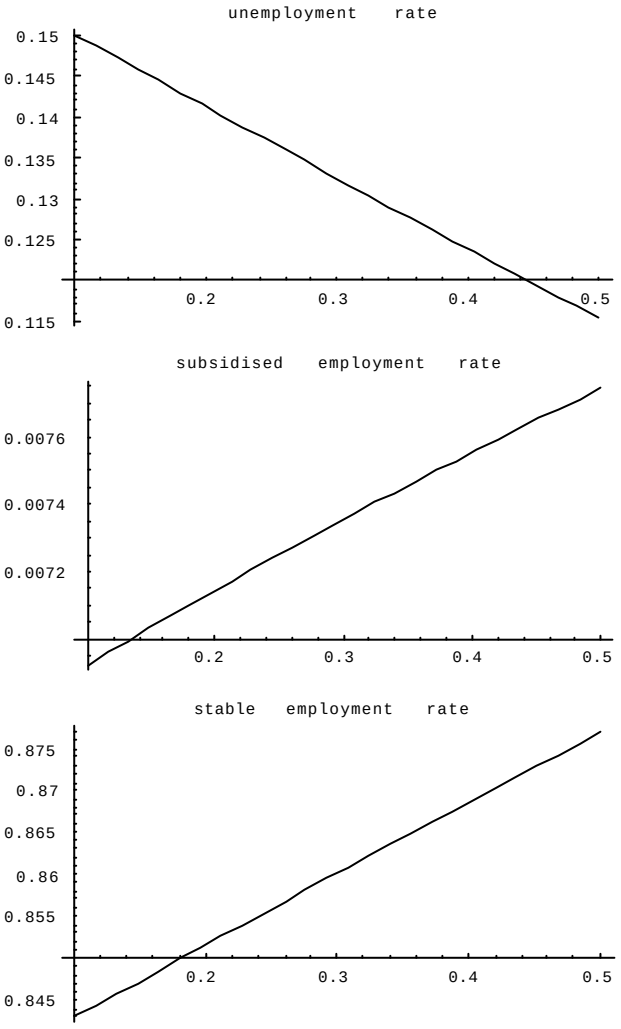

Figure 8: the employment effects of an increase in the proportion of firms benefiting from the subsidy with high firing costs and a replacement rate financing

6 Conclusion

As a conclusion, we should say that the institutional setting in which the policy is implemented is a crucial element for its e±ciency. Employment subsidies in a rigid labour market do not have the same consequences as in a °exible one. If some conditions are ful¯lled, this policy may constitute a useful tool to ¯ght unemployment and, particularly, the adverse consequences of long term unemployment as they o®er the opportunity for less productive workers to get a job on the regular labour market. The employment policy is a mean for unemployed workers to restore their productivity. So, instead of removing all rigidities on the labour market which may bring some welfare to workers, the government may choose to implement policies avoiding their negative e®ects. According to Gregg and Manning [1997], ¯ring costs, indeed, give workers some power to o®set the monopsony power of employers on the labour market. Moreover, these costs represents an e±cient mechanism of insurance for workers (for a recent analysis in a matching setting see Pissarides [2001]). These former authors judge then that there is an "optimal" level of regulation which is not complete deregulation.

The qualitative conclusions of the model con¯rm the fact that the choice of which policy parameter to use matters. If the government increases the number of subsidised jobs, it entails a shift of the job creation curve downwards, the creations of subsidised jobs being less costly than those of stable jobs. In the case of ¯nancing through payroll taxes, an additional e®ect appears. The stable job destruction curve and the transformation curve move upwards, the ¯nancing of employment subsidies leading to an increase in the taxes borne by ¯rms. Wages cannot adjust to limit this e®ect as a minimum wage prevails in the economy. The e®ect of a rise in the amount of the subsidy di®ers, it shifts downwards the job destruction curve for subsidised jobs. The e®ect arising on the other productivities is the same as previously, in the case of a tax ¯nancing. Finally, a reduction in the duration of the period of subsidy payment brings about an increase in the reservation productivity of the ¯rms bene¯ting from the subsidy. It a®ects both the job creation and the job destruction curves. The analytical results being indeterminate, we have investigated the net e®ects thanks to a simulation including some features of the French labour market.

The main results of the simulation of the model are the following. We have shown that ¯nancing employment policy through increases in payroll taxes may have averse e®ects on unemployment either in the case of a rise in the number of vacancies bene¯ting from a subsidy or in the amount of this subsidy. Shortening the duration of the period during which the subsidy is received by ¯rms is then e±cient as the policy does not succeed in reducing unemployment. These policy adverse e®ects may be attributed to the existence of a minimum wage which prevent wages from adjusting to the rise in taxes. This wage rigidity explains the di®erence with the results obtained by previous models. In this case, the rise in reservation products is so large that it o®sets the positive e®ects of the subsidy on job creations. The only case where the policy may be e±cient,

is when the government rises the amount of the subsidy and the ¯ring costs are low. Nevertheless, this e±ciency is limited and decreases above a given threshold. These results may partly contribute to explain the reduced e±ciency of subsidies implemented in some European countries.

If the government decides to ¯nance employment policy through reductions in the replacement rate - in accordance with the OECD recommendations as concerns the activation of passive spending - the results are far more encouraging. The e±ciency of employment subsidies is raised by labour market rigidity. In both cases, low and high ¯ring costs, stable and subsidised employment increases up to a given threshold. If ¯ring costs are low, the stable employment curve is hump-shaped when the share of subsidised jobs rises. If ¯ring restrictions are important, permanent employment increases and then remains constant. The same conclusions apply if the amount of the subsidy is raised to induce ¯rms to hire low productivity job seekers, the decrease in the unemployment being less consequent than in the last case. The net e®ect of the employment policy is not reduced to a pure windfall e®ect, because workers may keep their jobs at the end of the subsidy period if they have reached a su±cient productivity. The next step to this analysis is to di®erentiate the consequences of this policy according to the duration of employment spells experienced by job seekers to account for the fact that negative duration dependance may be limited thanks to the training option of subsidy programme, which helps to restore their productivity.

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