Minimum Income/Minimum Wage Schedule and the Occurrence of Poverty Traps : Some Evidence on the French Labor Market

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Abstract

The aim of this paper is to suggest an economic modeling of labor force participation microeconomic decisions in an inter-temporal framework characterized by the occurrence of minimum income/minimum wage mechanisms. We use the observed probabilities of transitions between different kind of jobs on the French labor market, for different categories of workers (age, gender, skills etc.), and the observed incomes associated with each kind of job, to identify the categories of workers that face inactivity or poverty trap problems. Results show (i) the occurrence of important inequalities between workers concerning "inter-temporal" return of working and, consequently, incentive to work, (ii) no obvious link between the occurrence of a static trap (work does not pay in the short run) and incentive-to-work problems. Moreover, these results stress that some workers do have an incentive to accept jobs that do not pay, while some others do not have any incentive to accept jobs that do pay.

JEL : J21, J22, J31,J32, J62

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1. Introduction

Theoretical and applied studies devoted to the analysis of incentives to work problems, and the corresponding economic policy recommendations, often rely on a static approach, which has already been criticized (see Chapman Bruce and *alii* [2001] for example).

We suggested in Laurent & L'Horty [2002] a dynamic evaluation of benefits associated with job acceptance, that takes into account the inter-temporal nature of computations made by unemployed workers and the impact of current job acceptance on future job perspectives. In such a dynamic framework, which includes workers' mobility between jobs, we showed that a low monetary gain (even negative) associated with the return to employment is neither a necessary, nor a sufficient, condition to explain the existence of a low level of labor force participation stemming from incentive problems.

The aim of the present paper is to suggest an economic modeling of labor force participation microeconomic decisions in an inter-temporal framework characterized by the occurrence of a minimum income/minimum wage schedule. We use the observed probabilities of transitions between different kind of jobs on the French labor market, for different categories of workers (age, gender, skills etc.), and the observed incomes associated with each kind of job, to identify the categories of workers that face inactivity or poverty trap problems [1].

The empirical results of the paper allow us to stress that there is no obvious link between the occurrence of a static trap (work does not pay immediately) linked to the minimum income scheme, on one hand and, on the other, incentives-to-work and labor force participation problems ; in other words : *(i)* yes, minimum income *can* create a static trap, but *(ii)* no, this does not *necessarily* create incentive-to-work problems. The labor force participation argument generally advanced against minimum income schemes is thus weaker than expected [2].

We first depict the general framework and address some unsolved questions to the standard static labor force participation approach ; the following sections present the modeling and the role played by the main parameters. The last section deals with empirical results on the French labor market.

2. General framework and questions

2.1. Static analysis

From a static viewpoint, labor supply depends on the marginal disutility of work and the earnings increase associated with a transition between two states on the labor market : inactivity and employment, or part-time and full-time work, for example.

[1] From a theoretical point of view, Burdett K. and Smith E. [2002], demonstrate that such traps can occur within a simple matching model, resulting in low wage low skill workers. Snower D. J. [1996] explains how a country can fall into a "low-skill, bad-job trap", in which workers acquire insufficient training and firms provide insufficient skilled vacancies. Balckaby, David and *alii* [1999], investigates ethnic differences in labor market transition.

[2] Eissa Nada and Liebman Jeffrey B. [1996] analysis of U.S. labor force participation response to the Earned Income Tax Credit (EITC), leaded to the same conclusion but in a less general framework.

An individual who is offered an opportunity to work more – going from non-employment to part-time employment, for example – compares what he/she will gain in refusing the offer with what he/she will gain in accepting ; the result of this comparison depends on the difference between earnings associated with each of the two situations.

In such a framework, if the difference between net incomes utilities, associated with high and low activity levels, is small relative to the marginal disutility of work, we can say that one get an incentive-to-work problem : work simply does not pay enough to induce an unemployed worker to accept a job offer.

2.2. French minimum income /minimum wage mechanism

This section proposes a quick overview of the three main components of the French minimum income/minimum wage schedule :

National Minimum Income (RMI)

	RMI / month
Single	€ 405
Couple	€ 405 + 50%= € 607
Couple with *n* children	€ 607 + $n \times 20\%$

In the long run, one has a perfect substitution between Minimum Income and wages, meaning that + 1 € obtained from wages implies –1 € from RMI.

Local monetary assistance (Lma ; mainly restricted to RMI recipients and locally funded : town, county)

Depends mainly of the town, but in average :

	Lma / month
Single	€ 136
Couple	€ 150
Couple, 1 child	€ 300
Couple, 2 children	€ 370
Couple, 3 children	€ 450

Minimum Wage (Smic) is € 5.4 / hour (after withholding net income), thus :

Full-time Job (39h/week) => € 969 / month
Part-time Jobs (20h/week) => € 484 / month

One notices immediately that a single unemployed person with RMI and local aids earns € 541/month *i.e.* more than a 20h/week part-time job worker ; in this case, such individuals should refuse part-time job offers and, consequently, one get an incentive-to-work problem : low skills/low wages unemployed workers are *voluntarily* unemployed because they prefer to get RMI than part-time jobs ; workers are "trapped" :

(i) as work "does not pay" they prefer to remain unemployed with RMI, but

(ii) long term unemployment implies loss of ability and a decreasing probability of finding a better job that would pay

This is the so-called "inactivity" or "poverty trap" : people does not accept jobs that do not pay enough, progressively getting trapped into long run unemployment with decreasing probabilities to find better jobs – due to loss of ability – ending with very low level of qualification and minimum income. Following the standard static economic analysis depicted before, the appropriate economic policy that both solves this incentive-poverty trap problem and avoids negative impact on labor demand and employment, is to lower the minimum income level in order to "make work pay" .

The main limit of this approach is that it narrows the incentive-to-work question to a comparison of the immediate gains associated with work and non-work – whereas consumption/leisure choices are by nature inter-temporal.

2.3. Data analysis : questioning the static analysis

The 1998 INSEE survey on Minimum Income recipients (RMI) provides some elements that raise questions about the standard static analysis.

(i) First of all, nearly a third of the beneficiaries of minimum income support who return to work, claim to have no financial gain : 12.1% claim to be losing ; 20.4% claim they are not gaining anything.

(ii) Secondly, although the beneficiaries of the minimum income support generally claim that they are looking for a minimum wage full-time job, a majority have accepted a part-time job : among the 26% of January 1997 minimum income recipients who held employment one year later, nearly two-thirds have a part-time job (in 90% of cases this part-time-job is "involuntary", and people would strictly prefer to work more).

(iii) Finally 28% of those who received the National Minimum Income and now have a job, qualify it as "*a first step towards a real job*" (33% claim it is "*a job while waiting for something better*" and 39% claim that it is a "*real job*").

If one adds to the above observations the fact that we have observed in France, a significant increase in the share of low-wage part-time jobs in global employment, which shifted from 10% to 15% through the 90's, one can complain that the standard analysis does not give any answers to two important economic questions :

- from the early 90's we had in France a significant growth of low-wage part-time jobs : if these jobs do not pay…why do some people accept such jobs ?
- it seems, from the Annual National Minimum Income (RMI) Survey, that some workers accept jobs that do not pay, but others do not : why do "identical" rational utility maximizing workers make different decisions ?

The main goal of this paper is to give an economic solution to this French labor market puzzle ; the starting idea is that workers are forward looking : if some RMI-unemployed workers accept "low wage part-time jobs" that do not pay immediately, it is because they think that such a decision will pay in the future; if some other people do not accept the same jobs it is because they think that, for them, it will never pay in the future. Testing this hypothesis, implies departing from the standard *static* analysis to develop a *dynamic* inter-temporal analysis of the "incentive-to-work" problem : this is the aim of the paper.

3. Dynamic analysis

3.1. General framework

Following the static analysis, in order to accept *versus* refuse a job offer, an unemployed worker only considers the immediate benefit of the job *i.e.* the difference between the corresponding wage and the sum of monetary subsidies lost by accepting the job – National Minimum Income (RMI) plus Local Monetary Assistance .

A dynamic analysis suggests that, to accept *versus* refuse a job offer, a worker will not only take into consideration the immediate benefit of the job, but also the fact that job tenure increases the probability of access to "better" jobs tomorrow and, therefore, implies higher future expected wages.

The shift from a static approach of the incentive-to-work problem, to a dynamic one, highlights the importance of the trade-off between current and futures incomes :

– a negative immediate monetary gain, associated for example with accepting a part-time job, can be outweighed by very favorable job perspectives ; in this case, unemployment incomes are higher than employment ones (static trap), but this gap does not imply any incentive-to-work problem, *i.e.* no dynamic trap : work does not pay in the short run, but pays in the long run

– symmetrically a strictly positive immediate gain associated with a part-time job acceptance can be over-compensated by unfavorable job perspectives : in this case one does not have a static trap but a dynamic one and incentive problems : work pays immediately, but does not pay in the long run

The main interest of such a dynamic approach is that it still includes all the components of the static approach, but adds new ones linked to the adoption of an inter-temporal viewpoint : immediate – positive or negative – work benefits and perspectives for future improvements (accumulation of human capital, increasing probability of access to a "better" job, increasing rights to retirement benefits, etc.) are all taken into consideration and, consequently, a low immediate monetary gain can be compensated by favorable wage perspectives. Such an approach, breaks the "classic" link between static trap and work incentive problems, and claims that *a positive static trap is not necessary damaging in terms of incentive to work*.

As a first approximation, one can identify five main components that will play a key role in the trade-off computations made by an unemployed worker who faces, for example, a part-time job offer :

- the total amount of net incomes earned if remaining unemployed
- the immediate wage associated with the job
- the probabilities of getting some better jobs in the future
- the wages associated with these future jobs
- the agent's preference rate for the present

The last parameter gives the discount rate he/she uses in his/her arbitrage ; the higher the preference rate for the present, the lower the weight attached to future incomes, the higher the weigh attached to immediate earnings *i.e.* the higher the discount rate [3].

3.2. Modeling

Let us consider a single RMI unemployed worker facing a part-time job offer (let's say 20 hours/week) that does not pay, and who needs to make a decision *i.e.* to choose between two strategies – accept *vs* refuse – concerning the job offer ; the problem for him is not to compare the immediate earnings these strategies bring about, but rather to compare the present values of the flows of incomes – current and future – associated with the two strategies (*i.e.* the sums of present and expected discounted incomes).

To make this calculation, the agent needs to know the probabilities of accessing to other jobs in the future, conditioned on the strategy he chooses immediately *i.e.* all the possible transitions on the labor market, associated with a decision made in the current period. For example, a RMI unemployed worker facing a part-time job offer, in order to make his decision to accept *vs* refuse the job, will consider the probability of getting a full-time lucrative job if he accepts the part-time job, and will compare it to the same probability if he refuses the job offer ; if the former probability is high enough relatively to the latter, he can accept the part-time job despite the fact that it does not pay immediately.

Such probabilities, called transition probabilities [4], give a summary of internal labor market flows : from unemployment to part-time or full-time employment, from part-time to full-time employment or unemployment etc. Formally, these transitions can be summarized by a single matrix that gives all the probabilities of transitions between different situations on the labor market : full-time job, part-time job, unemployment. In the example below, we distinguished unemployment and three employment situations : full-time job (more than 35 hours/week), long part-time jobs (between 20 hours and 35 hours/week) and short part-time jobs (less than 20 hours/week) ; the matrix gives all the probabilities of switching, during one period of time, from one situation to any other one.

Situation in date T+1 Situation in date T	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment
Job ≥ 35 h	0.75	0.15	0.07	0.03
20h ≤ Job < 35h	0.35	0.50	0.10	0.05
Job < 20h	**0.32**	0.20	0.38	**0.10**
Unemployment	**0.15**	0.18	**0.30**	**0.37**

One can see from the table above that a present unemployed worker, will remain unemployed next year with a probability of 0.37, but will find a full-time job with a probability of 0.15 and a short part-time job with a probability 0,3 ; in this example, it is easier for a worker who already has a short part-time job, to find a full-time job (the probability is 0.32 against 0.15), even if this

[3] If one notes as r the discount rate, or the preference rate for the present, that belongs to]0, ∞[, the present value of x € earned in t years, is $x/(1+r)^t$.

[4] see for example Magnac T. and Robin J.-M. [1994], Stewart M. B. and Swaffield J. K. [1999], Dickens R. [2000], Cappellari L. [2002].

worker may return to unemployment with a probability of 0.1. Of course the sum of probabilities over a whole line is equal to unity.

Let us now turn to the monthly earnings associated with each possible situation on the labor market ; they can be summarized by a vector that gives the average earnings in each case. For example if the average weekly labor time for long part-time job workers is 24 hours – meaning that average daily labor time is 24/5 h – and that people belonging to this category are paid on the average 20% above the minimum income, the monthly (23 days) corresponding wage will be : $(24\text{h} / 5) \times [5.4€ \times (1 + 20\%)] \times 23 = 715$ €

A similar computation gives the monthly wage for full-time job workers, while unemployed single earnings correspond to the sum of National Minimum Income and Local Monetary Assistance *i.e.* € 541 as seen before.

For short part-time job workers, we need to distinguish two cases :

(i) Let us assume first, and for example, that average weekly labor time for this kind of workers is 15 hours and that people belonging to this category are paid, as before, on the average 20% above the minimum income ; a calculation similar to the previous one gives immediately an average earning of €447 ; as this income is greater than the National Minimum Income (€405), such workers will not receive any euros from National Minimum Income policy nor from Local Monetary Assistance (which is mainly for National Minimum Income recipients). The average earnings of this category of workers is thus €447.

(ii) Let us now assume that average weekly labor time for this kind of workers is no longer 15 hours, but rather 10 hours. A new calculation gives immediately a monthly average income of €298 ; as this amount stands under the National Minimum Income, workers of this kind *(i)* will receive a €107 national subsidy to take them to the €405 level of the National Minimum Income, *(ii)* will be eligible for Local Monetary Assistance programs, thus adding an average of € 136 to their income, which reaches €541.

The situation depicted below correspond to case *(i)* above :

Job ≥ 35 h	R_{FT}	€ 1132
20h ≤ Job < 35h	R_{LT}	**€ 715**
Job < 20h	R_{ST}	**€ 447**
Unemployment	R_U	**€ 541**

One can notice, in this example, the occurrence of a strictly positive static trap, meaning that work does not pay, at least immediately : $R_U - R_{ST} = €94 > 0$. The important question is thus the following one : does work pay in the long run ? Does an unemployed worker have an interest in accepting a short part-time job that does not pay immediately, because it will pay in the long run through the interplay of transitions on the labor market ? If the answer is yes, we do not have any incentive problem or dynamic trap, despite the occurrence of a static trap.

The transition matrix and the corresponding earnings vector, allow us to calculate the payment associated with strategies *"I accept short part-time jobs"* (S_A) and *"I refuse short part-time jobs"* (S_R) ; the payments $P(\cdot)$ corresponding to each of these strategies are simply evaluated by calculating the discounted expected value of the present and future incomes implied by the

application of each strategy ; the discount rate used for the computation indicates how the individual weights immediate gains and future gains. Eventually, the comparison of the respective returns gives the answer to our question : if the payment of the strategy *"I accept short part-time jobs"* is greater than the return corresponding to the other strategy, one has no incentive problem nor dynamic trap : work does pay, at least in the long run.

Table 1 below provides a quick overview of all the results concerning the occurrence of static *vs* dynamic traps, that we can possibly get by comparison of the payments corresponding to the two possible strategies depicted above.

	$R_{ST} > R_U$ Work pays immediately	$R_{ST} < R_U$ Work does not pay immediately
$P(S_A) > P(S_R)$ Work pays in the long run	No Static trap No Dynamic trap	Static trap No Dynamic trap
$P(S_A) < P(S_R)$ Work does not pay in the long run	No Static trap Dynamic trap *i.e.* incentive pb	Static trap Dynamic trap *i.e.* incentive pb

Table 1 : Static/dynamic traps configurations

4. Further considerations

4.1. Transitions : a call for a distinction between different types of workers

One of the main interests of the dynamic analysis suggested above is to underline the key role played by transitions on the labor market, while a static approach of incentive-to-work problems only focuses on the difference between current earnings associated with work and unemployment. This "new" framework suggests a track to solve the so-called French labor market puzzle and to give some explanations to the two questions set forth in 2.3.

(i) Why do some people accept short part-time jobs if they do not pay ? Because they "think differently" *i.e.* in a "dynamic" and not a "static" way : in an inter-temporal framework a job can pay in the long run, even if it does not pay immediately.

(ii) Why do "identical" rational utility maximizing workers make different decisions concerning job acceptance ? Because they are characterized by different probabilities of transitions on the labor market or/and different discount rates.

The second point is quite straightforward : if two identical unemployed RMI workers, facing identical job offers, do not make the same decision (to accept or to refuse the job), it is because the computations they do to make their decisions – *i.e.* the evaluations of the monetary expected returns associated with the two strategies – does not lead to the same conclusion : $P(S_A) > P(S_R)$ for one of the workers, but the opposite for the other ; for identical workers and a same job offer, such a result can only originates in discount rates and/or differences in the probabilities of transitions.

Let us first analyze the role played by the transition matrix and return later to the role devoted to the discount rate. It seems rather reasonable to assume that the probabilities of transitions in the labor market, from one employment situation to another, are not identical for all individuals. For

example the probabilities of getting a full-time job when you have a part-time job – upward probabilities – are not the same if you are young or old, low skilled or high skilled, male or female, foreign or French, leaving in a big city or in a rural area etc. ; more precisely one can have the feeling that upward probabilities for a high skills-young-French-urban-man are much more higher than for a low skills-old-foreigner-rural-woman. This fact can help to explain why the former accepts part-time jobs that do not pay immediately (but will pay in the long run) while the latter is reluctant to do the same (simply because, for *her*, it will never pay).

This intuition is in fact a call to distinguish between different kinds of workers, characterized by specific transition matrixes, reflecting different choices of human capital accumulation (low skills *vs* high skills) as well as geographical development inequalities (urban *vs* rural areas) and discrimination phenomena in the labor market (men *vs* women, French *vs* foreigners) ; it is thus straightforward that the optimal strategy for one type of worker is not necessarily optimal for another type and, thus, that one needs to analyze the incentive-to-work problem specifically for each category of workers.

4.2. Discount rates

Heterogeneity of discount rates is the other side of the coin that explains the occurrence of different job decisions among unemployed workers. Let us assume here, for simplicity, that the set of transition probabilities is such that the higher the current weekly hours of work, the higher the probability of getting a "better" job and the lower the probability of returning to unemployment or "bad" jobs[5] ; in such a situation one understands perfectly that an unemployed worker facing a short part-time job offer may accept the offer, even if it does not pay immediately – or may infer a cost – because it opens up perspectives for improvements in the future.

But, for this to work, the individual must be characterized by a low time-preference rate (low discount rate), and it is only under this additional condition that the individual values future earnings enough to endure the current loss of income associated with the job offer : in this case, the cost corresponding to the loss of income is simply seen as an investment, the discounted return of which is expected to be greater than the initial cost, thanks to a sequence of future upward transitions on the labor market.

On the other hand, and symmetrically, an unemployed worker with a strong time-preference rate does not value future expected incomes enough to accept the temporary cost associated with job acceptance (corresponding to the static trap *i.e.* the fact that short part-time job incomes are lower than those associated with unemployment) ; in this case, *even if he perfectly knows* the perspectives for future job improvements, the individual does not accept the job offer, because he cares mainly about current earnings, and is not concerned enough with future wages.

One sees that – for such given transition probabilities – the greater the discount rate of an individual *i.e.* his time-preference rate, the greater the risk of having an incentive problem and the lower the labor force participation.

4.3. Relation between static and dynamic traps : the ICM static trap

[5] Expressions "better" job and "bad" job only refer here to the following implicit ranking : short part-time job < long part-time job < full-time job ; this ranking means that one assumes that people generally prefers to work more in order to get higher wages.

Until now, we saw that – in a dynamic framework – three main components drive the conclusion concerning the incentive-to-work issue *i.e.* the occurrence of a dynamic trap and labor force participation problems :

(i) the size of the static trap *i.e.* the gap between current earnings corresponding to unemployment *vs* short part-time employment situations : $R_U - R_{ST}$

(ii) the transition matrix

(iii) the time preference rate *i.e.* the discount rate used by an agent to evaluate the present discounted value of his inter-temporal flow of earnings

One key point here is that, for given *(ii)* and *(iii)*, the higher is *(i)*, the higher is the probability for a dynamic trap to occur. The result is quite straightforward : if the size of the static trap is too large, future perspectives of job/wage improvements are unable to outweigh the negative effect of the static trap on labor force participation.

This remark stresses the existing link between static and dynamic traps : for a given transition matrix and discount rate, there always exists a critical value of the static trap such that, under the critical value there is no incentive problem or dynamic trap, but beyond that value an incentive problem and a dynamic trap arise ; for the next sections of the paper, we will use the expression "Incentive Compatible Maximal static trap" – or, to make it shorter, "ICM static trap" – for the maximal value of the static trap that does not involve dynamic trap occurrence.

One can note that the higher is discount rate, the lower is the ICM static trap ; furthermore, in the particular case where the discount rate is infinite, the ICM static trap value tends to zero : in such a case future earnings do not have any influence on the present value of the discounted flow of incomes and, consequently, every strictly positive static trap is a dynamic trap (labor force participation problems).

5. Testing for static *vs* dynamic traps occurrence on the labor market

5.1. Empirical background and choices

In order to test the occurrence of work incentive problems, on the French labor market, and the relevance of the distinction between static and dynamic trap, we need first :

(i) to obtain for different categories of workers, their real transition matrix and the associated average earnings vectors

(ii) to identify the main types of workers whose transition matrixes are really different

Concerning the first point we used the French Labor Force Surveys (INSEE [6]), for years 2000 and 2001, restricted to private sector wage earners except apprentices, government assisted workers and students. With this database one knows, for the same set of people, the number of workers at each date, in each of the four employment situations – unemployment, short part-time jobs, long part-time jobs and full-time jobs – and the number of people that shift, during the year, from one specific situation to any other one ; we can thus compute the probability transition from, say, situation *A* to *B*, as the number of workers that move from *A* to *B* between

[6] National Statistics and Economic Studies Institute

2001 and 2000, divided by the total number of people belonging to *A* at time 2000 [7]. Doing this for the 16 components of the matrix, we get the whole transition matrix.

Average earnings corresponding to the different job situations, are available from the database [8]. For short part-time job and unemployment, we computed average earnings as described in section 3.2.: for short part-time jobs, we used either the corresponding average income from the database or the €541 earnings associated with inactivity, depending whether or not the former is higher than the €405 National Minimum Income [9].

We built transition matrix for different workers categories, corresponding to the intersection of three of the five following criteria [10]:

- gender : male *vs* female
- skills : high school diploma (or more) *vs* no high school diploma
- age : young (under 35) *vs* old (over 35)
- nationality : French vs foreigners
- marital situation : single *vs* not single

We introduced the last criterion to test the idea that some individual characteristics – like sociability, ability to work with other people, team spirit etc. – that cannot be summarized by a single criterion, can be appreciate both on the labor market and on the "marriage" market ; in this case the personal ability to find a job is logically correlated with the ability to get out of the "single situation".

After some comparison it turns out quickly that the three leading criteria that drive the properties of the transition matrix are eventually, gender, age and skills ; we thus selected these three criteria, to define eight types of workers, each of them being characterized by specific transition matrix and earnings vector (*cf.* appendix).

5.2. Computations and results

The problem now is *(i)* to compute, for each of the eight selected types of workers, the present discounted values $P(\cdot)$, corresponding respectively to the strategies S_A ("*I accept short part-time job offers*") and S_R ("*I refuse short part-time job offers*") and *(ii)* to compare the two results ; following our speculations, one expects to find $P(S_A) > P(S_B)$ *i.e.* no incentive-to-work problems (no dynamic trap) for some types of workers, and $P(S_A) < P(S_B)$ *i.e.* labor force participation problems and a dynamic trap for other categories.

The easiest way to make such comparisons is to compute, for each type of workers, the value of the ICM static trap and simply compare it to the effective value of the static trap : $R_U - R_{ST}$. One can then present all the results in a very simple way by figuring the values (Static Trap, ICM Static Trap) for each categories of workers, on a single 2D graph, with the static trap value on the X-

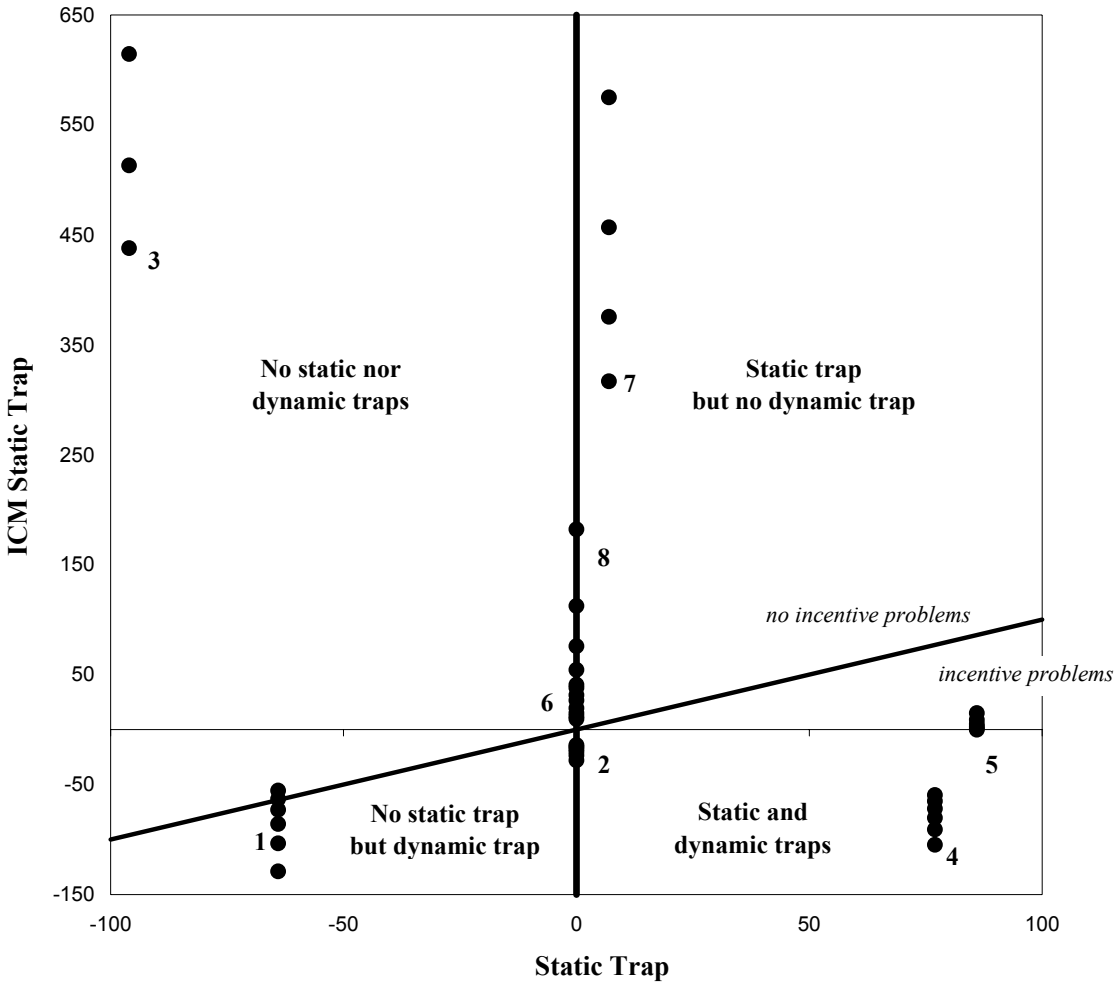
[7] When computing the denominator, we logically excluded all the people that do not want to move upward *i.e.* the "voluntary part-time jobs workers".
[8] Earnings include all monetary bonuses associated to jobs
[9] In order to simplify, we work here as if all the Rmi unemployed workers were single ; this helpful assumption is not, of course, fully realistic even if, in France, more than 65% of the Rmi recipients are single.
[10] Given the size of the sample – more or less 45 000 people – it becomes tricky to cross more than 3 criteria, if one want to get significant transitions probabilities.

axis and the ICM static trap value on the Y-axis. If the corresponding dot lies above the 45° line, then the real value of the static trap is lower than the computed value of the ICM static trap : there is no incentive-to-work problem nor dynamic trap ; on the other hand, if the (Static Trap, ICM Static Trap) dot, lies below the 45° line, it means that the real value of the static trap exceeds the ICM static trap value : we thus have a dynamic trap and incentive-to-work problems.

Graph 1 presents the results we got for the eight selected types of workers depicted in table 2.

	Gender		**Age**		**Skills**	
Type	*Men*	*Women*	*Young*	*Old*	*≥ High school*	*< High School*
1	✓		✓		✓	
2	✓		✓			✓
3	✓			✓	✓	
4	✓			✓		✓
5		✓	✓		✓	
6		✓	✓			✓
7		✓		✓	✓	
8		✓		✓		✓

Table 2 : characteristics of the different types of workers



Graph 1 : Static *vs* Dynamic traps on the French labor market

One notices immediately that each category of workers is not represented by one single dot, but rather by a set of six dots [11], that reflects the specific role played by the discount rate ; in fact, one need to remember [12] that the discount rate is one of the main parameters that determines the present discounted value associated with job acceptance strategies and, consequently, the value of the ICM static trap. It is thus straightforward that, for each category of workers, one gets as many ICM static trap values as discount rate levels. Theoretically, we can thus get, for a particular type of workers, three kind of results :

- no dynamic trap *i.e.* no incentive problems, whatever the level of the discount rate
- dynamic trap *i.e.* incentive problems, whatever the level of the discount rate
- dynamic trap *vs* no dynamic trap depending of the level of the discount rate

[11] Upper dots corresponding to categories n°3 and 7 lies out of the graph : computed ICM static trap values corresponding to type 3 workers lies between €438 and €1308 ; between €317 and €1081 for type 7.

[12] See part 4.2.

To investigate the occurrence of these different cases, we computed – for each category – the ICM static trap values corresponding to six different levels of the time preference rate, from 1% to 50%, namely : 1%, 10.8%, 20.6%, 30.4%, 40.2% and 50%.

As seen before, the 45° line, divides the graph in two parts :

- above the line, the real static trap is lower than the computed ICM static trap value and one has no incentive problems *i.e.* no dynamic trap
- the opposite arises in the area located under the 45° line, characterized by the occurrence of a dynamic trap and incentive problems.

Identically, the Y-axis divides the graph in two parts :

- on the left side of the axis one has a negative static trap[13], meaning that $R_{ST} > R_U$: work pays immediately
- on the right side of the axis, symmetrically, one has a positive static trap, meaning that $R_U > R_{ST}$: work does not pay immediately

This eventually allow us to divide the graph in four areas, corresponding to the four traps configurations depicted in table 1.

5.3. Comments

The main point to emphasize, is that all the static/dynamic traps possible configurations occur, as appears on table 3 below :

Workers characteristics							**Traps configuration**		
	Gender		**Age**		**Skills**		**Static Trap**		**Dynamic Trap**
Type	*Men*	*Women*	*< 35*	*> 35*	*≥ High school*	*< High School*	$R_U > R_{ST}$	$R_U = R_{ST}$	$P(S_A) < P(S_R)$
1	✓		✓		✓				✓ *
2	✓		✓			✓		✓	✓
3	✓			✓	✓				
4	✓			✓		✓	✓		✓
5		✓	✓		✓		✓		✓
6		✓	✓			✓		✓	
7		✓		✓	✓		✓		
8		✓		✓		✓		✓	

(*) occurrence of the dynamic trap depending of the discount rate

Table 3 : Summary of the results

(i) For three categories of workers (nos. 6, 7 and 8 *i.e.* all women categories except young skilled women) one does not have any incentive-to-work problem despite the occurrence of a static trap. For these categories of people, a part-time job does not pay in the short run – or even is costly – but pays in the long run thanks to upward job transitions on the labor market ; these results clarify those obtained from the 1998 INSEE survey on minimum income recipients,

[13] In this case we will now say that we do not have a static trap, keeping the term Static Trap to qualify positive static trap only.

stressing that more than 30% of beneficiaries of the minimum income support, who return to work, claim to have no financial gain (see section 2.3) . Contrary to the standard static incentive-to-work approach, the dynamic framework suggested here, throws a bridge between observed facts and theoretical economic analysis.

(ii) For one category of workers (n°1 *i.e.* young skilled men) one does have an incentive-to work-problem despite the fact that a part-time job pays in the short run (no static trap). A careful analysis of the corresponding transition matrix (see appendix), allow us to find some explanation to this surprising result ; one can note that, for these kind of people, the probability of getting a full-time job is higher for an unemployed than for a short part-time worker : the probability to shift from unemployment to full-time is around 52% against 42% (*i.e.* $1/5^{th}$ less) if coming from a short part-time job.

We suggest the following explanation : for young skilled men it is better to refuse short part-time jobs, that pay immediately, because if they do accept such job offers they can be trapped in short part-time jobs : *(i)* because they "waste" time that could be better used to find a full-time job, *(ii)* because they signal to employers their lack of self-confidence regarding their capacity to find a full-time job. To make it short : *it is better for young skilled men to spend their time to search a lucrative full-time job, than to waste it by accepting a part-time, low-wage, job*.

Symmetrically, for unskilled workers it is better to accept short part-time jobs, that do not pay immediately : because the lack of diploma, employers do not observe their abilities and part-time job is thus a way to signal their own productivity ; *such workers see part-time jobs as a first step that will allow them to move upward*.

(iii) For four categories of workers static and dynamic results matches :

- for three categories (n°2, 4 and 5 *i.e.* unskilled men and young skilled women), the static trap is too large to be balanced by future upward transitions on the labor market[14] : we thus have both static and dynamic traps.

- for one category – n°3 *i.e.* old skilled men – one have no static nor dynamic trap.

A quick analysis of the transitions matrixes help to understand the difference between categories 6, 7 and 8 (no dynamic trap despite a static trap) on one side and 2, 4 and 5 on the other side (both static and dynamic trap). Let us consider, for example, categories 2 and 6 : the static trap is the same and equal to zero, meaning no difference between earnings associated respectively to unemployment and part-time job ; despite this fact, the optimal strategy is not the same for the two types of workers : type 6 picks S_A *i.e.* accepts part-time jobs that do not pay in the short run (no incentive to work problem) but type 2 picks S_R *i.e.* refuses part-time jobs that do not pay in the short run (incentive to work problem).

This phenomena highlights the key role played by the transition matrix in a dynamic framework. For type 6 workers, the probability to get a full-time job when coming from unemployment is low (23%) ; thus the best way to get a full-time job is first to accept a short part-time job (*i.e.* to pick strategy S_A), that will give you a high probability to get a long part-time job (44%), that will give you a high probability to get a full-time job (34%) : in other words if you want to reach the top of the scale you need to climb step by step. For type 2 workers, the probability to get a full-time job when coming right from unemployment is quite high (42%) and, moreover, higher than when coming from short part-time job (35%) ; thus, for

[14] Equivalently we could say that, for such workers, the probabilities of upward transition are not high enough relatively to the size of the static trap.

this type of unemployed workers, the best way to get a full-time is to refuse short part-time job (*i.e.* to pick strategy S_R), in order to jump directly from unemployment to full-time job.

(iv) The discount rate plays an important role concerning the level of the computed value of ICM static trap (for the third category of workers this value goes from €438 to €1308) and is thus a potentially important parameter, to analyze incentive-to-work problems ; furthermore, one can notice that for the first type of workers the occurrence of a dynamic trap depends of the level of the discount rate.

(v) Finally, concerning the robustness of the results, one can notice that two kind of measurement errors can affect the graphic 1 presented above :

- measurement errors concerning the evaluation of the static trap : for example we assumed in the paper that all kinds of local monetary assistance were restricted to Rmi recipients ; this assumption is almost true but, it remains that – in some county or towns – some low-wage workers can get a local monetary assistance (at a low level) even if they are not Rmi recipients ; we thus probably over-estimate the size of the static trap. On the other side, we did not take into account the "value" of leisure (or the disutility of work), in our computation, and this probably drives us to under-estimate the size of the static trap.

Impacts on graph 1 of this kind of errors, is easy to visualize : over-estimates of static traps simply tend to move all dots toward the left *on an horizontal axis*, while under-estimates of static traps act in an opposite way ; one can see on graph 1 that only important errors, could change the main qualitative results obtained in the paper.

- measurement errors concerning the evaluation of transitions matrixes ; these kind of errors tends to move all dots *on a vertical axis*. The interpretation is quite straightforward : an under-estimate of upward probability transitions tends to under-estimate the discounted value of future incomes and thus, the value of the ICM static trap, with no effect on the observed static trap ; all dots stand thus at a lower vertical level than they should be, resulting in a misleading interpretation that tends to over-estimate the importance of incentive to work problems and dynamic traps occurrence.

The main part of the qualitative results presented in the paper should resist to small perturbations in transition matrixes ; nevertheless, the location of dots is quite sensitive to probability transitions errors (more than to static trap evaluations) and we cannot exclude that some categories of workers switch from one area to another one (especially categories1, 2 and 6).

6. Conclusion

Let us first remember some of the main theoretical conclusions of the paper ; from a static point of view, the incentive of an unemployed worker to accept a part-time job offer, is high when :

(i) the net wage associated with the job is high

(ii) replacement incomes are low (minimum income, unemployment benefits, social programs, etc.)

(iii) the marginal disutility of work is low and/or the valuation of the fact of working is high

A dynamic modeling stresses that the incentive to accept a job offer is reinforced when the following additional conditions are satisfied :

(iv) the time preference rate is low

(v) transition probabilities to better jobs are high

The stronger conditions *(i)* to *(iii)* hold, the lower the static trap, and the quicker short part-time jobs pay ; the stronger conditions *(i)* to *(v)* hold, the lower the dynamic trap, and the higher the incentive to work.

It is thus straightforward that one can get a static trap without any dynamic trap, if conditions *(i)* to *(iii)* are such that a job does not pay immediately, but that the conditions *(iv)* and *(v)* are "strongly" satisfied and do more than counterbalance the influence of *(i)-(iii) :* for example, a low discount rate, associated with strong probabilities of transitions to better jobs, can outweigh the fact that a job does not pay in the short run and thus encourage an unemployed worker to accept such a job.

Symmetrically, a dynamic trap can occur without any static trap if conditions *(i)* to *(iii)* are such that a job pays immediately, but conditions *(iv)* and *(v)* are "strongly" unsatisfied and do more than counterbalance the *(i)-(iii)* impact.

It is important to underline that the dynamic analytical framework suggested in the paper is general enough to include the effect on work incentive of few other parameters, neglected here in order to simplify the presentation. For example one can note that the higher the number of years before retirement, the higher should be the incentive to accept a job offer [15] ; the lower the agent's risk aversion, the higher the work incentive [16] etc.

From a more fundamental point of view, the aim of this paper was to stress the weakness of a purely standard static economic approach of labor force participation analysis and, on the other hand, to propose a useful analytical background to develop an inter-temporal approach of incentive-to-work problems.

Concerning the first point, the results presented above lead directly to a conclusion that does not suffer from any ambiguity : there is no obvious link between the occurrence of a static trap and incentive-to-work problems *i.e.* the occurrence of a dynamic trap ; for four of the eight categories of workers analyzed, one find either a static trap but no dynamic trap, or no static trap but a dynamic one. This remark underlines the inherent limits of the static approach ; to the question "*Is the minimum income system responsible for labor force participation problems?* " the correct answer should emphasize that the occurrence of a Minimum Income scheme is not a sufficient condition, nor a necessary condition, for incentive problems to arise : some workers can accept jobs that do not pay immediately (because they will pay in the future), and some others can refuse part-time jobs even if they do pay immediately (to avoid to be trapped in part-time employment).

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[15] The older, and thus closer to retirement age, an individual is, the more he has incentive to stay unemployed, because the return on investment associated with S_A is not large enough to induce him to accept a short part-time job that does not pay immediately ; on the other hand, young workers should be more likely to make the "investment" of accepting a "bad" job.

[16] Even if we did not develop this point, workers risk aversion – corresponding to the concaveness of the utility function of payments – plays an important role : the more risk-averse an individual is, the more it is in his interest to adopt strategy S_R securing certain payment (national minimum income), rather than strategy S_A associated with uncertain payment (high return if the upward job transition process works, but low payment if it does not work) ; one can note that, in order to simplify the analysis, we have disregarded in the paper the influence of risk aversion by supposing a linear utility function.

Turning now to the second point, we do think that the dynamic modeling proposed in the paper offers a very simple way to test *(i)* the occurrence of labor force participation problems in different countries and, *(ii)* if they originates in minimum income schemes. Moreover, one of the main interest of the suggested approach is its capacity to distinguish between different kind of workers, and to analyze labor force participation decisions from a specific microeconomic point of view ; this can be useful to economic policy makers.

Appendix

Transition matrix and average earnings according to workers categories

– probabilities are %, earnings = average income (€), minimum income in bold –

Men, < 35, skilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	96.43	0.28	0.00	3.28	1663
20h ≤ Job < 35h	47.18	32.90	4.34	15.59	812
Job < 20h	42.56	31.39	15.08	10.98	605
Unemployment	52.33	4.77	0.99	41.91	**541**

Men, < 35, unskilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	93.91	0.52	0.06	5.51	1144
20h ≤ Job < 35h	46.74	25.75	0.92	26.59	638
Job < 20h	34.91	33.71	9.64	21.74	**541**
Unemployment	41.85	4.89	0.90	52.36	**541**

Men, > 35, skilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	97.85	0.08	0.03	2.04	2762
20h ≤ Job < 35h	63.13	33.28	0.00	3.59	1248
Job < 20h	26.39	48.51	14.35	10.75	637
Unemployment	30.46	5.74	2.53	61.27	**541**

Men, > 35, unskilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	97.39	0.30	0.05	2.25	1492
20h ≤ Job < 35h	41.03	38.56	2.84	17.57	637
Job < 20h	21.12	43.92	14.43	20.53	464
Unemployment	32.12	6.18	1.00	60.70	**541**

Women, < 35, skilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	93.10	1.39	0.28	5.24	1377
20h ≤ Job < 35h	53.78	31.12	3.42	11.68	694
Job < 20h	35.16	41.73	7.77	15.33	455
Unemployment	42.52	9.97	2.60	44.90	**541**

Women, < 35, unskilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	86.90	2.97	0.58	9.55	981
20h ≤ Job < 35h	34.31	41.18	4.65	19.86	586
Job < 20h	19.60	43.67	15.83	20.91	**541**
Unemployment	23.06	11.62	3.30	62.02	**541**

Women, > 35, skilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	96.79	0.78	0.09	2.34	1881
20h ≤ Job < 35h	54.59	33.31	5.44	6.65	816
Job < 20h	23.53	47.38	18.65	10.44	534
Unemployment	21.17	7.46	3.13	68.25	**541**

Women, > 35, unskilled

Situation in date *T*+1 Situation in date *T*	Job ≥ 35 h	20h ≤ Job < 35h	Job < 20h	Unemployment	Earnings
Job ≥ 35 h	94.65	1.12	0.31	3.92	1194
20h ≤ Job < 35h	37.33	43.59	4.50	14.58	586
Job < 20h	12.56	39.74	35.36	12.33	**541**
Unemployment	15.89	9.74	4.64	69.73	**541**

References

Atkinson Anthony B.; Micklewright, John [1991], "Unemployment Compensation and Labor Market Transitions: A Critical Review", *Journal of Economic Literature,* Volume 29, Issue 4, December, pp. 1679-1727

Balckaby, David and *alii* [1999], "Ethnic Differences in Labour Market Transitions: An Exploration Using the British Household Panel Survey", *Applied Economics Letters*, Volume 6, Issue 7, July, pp. 463-466

Bell Linda A and Freeman Richard B. [2001], "The Incentive for Working Hard: Explaining Hours Worked Differences in the US and Germany", *Labour Economics*, Volume 8, Issue 2, May, pp. 181-202

Burdett Ken and Smith Eric [2002], " The Low Skill Trap", *European Economic Review,* Volume 46, Issue 8, September, pp. 1439-1451

Cappellari Lorenzo [2002], " Do the 'Working Poor' Stay Poor? An Analysis of Low Pay Transitions in Italy", *Oxford Bulletin of Economics and Statistics,* Volume 64, Issue 2, May, pp. 87-110

Cappellari Lorenzo and Jenkins Stephen J.[2002], "Who Stays Poor? Who Becomes Poor? Evidence from the British Household Panel Survey", *Economic Journal*, Volume 112, Issue 478, March 2002, Pages C60-67

Chapman Bruce and *alii* [2001], "Unemployment Traps and Age-Earnings Profiles: Estimates for Australia in 2000", *Australian Journal of Labour Economics,* Volume 4, Issue 3, September, pp. 174-191

Dickens Richard [2000], "Caught in a Trap? Wage Mobility in Great Britain: 1975-1994", *Economica,* Volume 67, Issue 268, November 2000, pp. 477-497

Duncan Kevin [2000], "Incentives and the Work Decisions of Welfare Recipients: Evidence from the Panel Survey of Income Dynamics, 1981-1988", *American Journal of Economics and Sociology,* Volume 59, Issue 3, July, pp.433-449

Eissa Nada and Liebman Jeffrey B. [1996], "Labor Supply Response to the Earned Income Tax Credit", *Quarterly Journal of Economics,* Volume 111, Issue 2, May, pp.605-637

Finnie Ross and Gray David [2002], " Earnings Dynamics in Canada: An Econometric Analysis", *Labour Economics*, Volume 9, Issue 6, December, pp. 763-800

Gensler Howard J. and Walls W. David [1997], "Labor Force and Welfare Program Participation: The Effects of Welfare", *American Journal of Economics and Sociology,* Volume 56, Issue 2, April, pp. 229-241

Greenberg David H. and *alii* [1995], "Making Work Pay for Welfare Recipients", *Contemporary Economic Policy,* Volume 13, Issue 3, July 1995, pp.39-52

Laurent, T. et Y. L'Horty [2002], «Revisiting the "Making Work Pay" Issue : Static vs Dynamic Inactivity Trap on the Labor Market », "*Welfare Reform: A comparative assessment of*

french and US experiences", International social security series, eds Transaction Publishers, New Brunswick and London

Layte Richard and Callan Tim [2001], "Unemployment, Welfare Benefits and the Financial Incentive to Work", *Economic and Social Review,* Volume 32, Issue 2, July, pp.103-129

Magnac Thierry and Robin Jean-Marc [1994], "An Econometric Analysis of Labour Market Transitions Using Discrete and Tenure Data", *Labour Economics*, Volume 1, Issue 3-4, September, pp. 327-346

Pearson Mark and Scarpetta Stefano [2000], "An Overview: What Do We Know about Policies to Make Work Pay?", *OECD Economic Studies,* Volume 0, Issue 31, pp.11-24

Schmid Gunther and Reissert Bernd [1996], "Unemployment Compensation and Labour Market Transitions", *International handbook of labour market policy and evaluation,* pp. 235-276

Snower Dennis J. [1996], "The Low-Skill, Bad-Job Trap", *Acquiring skills: Market failures, their symptoms and policy responses*, pp. 111-124

Stewart Mark B. and Swaffield Joanna K. [1999], "Low Pay Dynamics and Transition Probabilities", *Economica,* Volume 66, Issue 261, February, pp. 23-42

Summers Lawrence H. and Clark Kim B.[1990], "Unemployment Insurance and Labor Market Transitions", *Understanding unemployment,* MIT Press ed., pp.187-227

Wadsworth Jonathan [1992], "Unemployment Benefits and Labour Market Transitions in Britain", *Centre for Economic Performance Discussion Paper: 73,* April, p.19