TEMPORARY JOBS AND JOB SEARCH EFFORT IN EUROPE

by

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Abstract

Using longitudinal data on individuals from the European Community Household Panel (ECHP) for eleven countries during 1995-2001, I investigate temporary job contract duration and job search effort. The countries are Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. I construct a search model for workers in temporary jobs which predicts that shorter duration raises search intensity. Calibration of the model to the ECHP data implies that at least 68% of the increase in search intensity over the life of a 2+ year temporary contract occurs in the last six months of the contract. I then estimate regression models for search effort that control for human capital, pay, local unemployment, and individual and time fixed effects. I find that workers on temporary jobs indeed search harder than those on permanent jobs. Moreover, search intensity increases as temporary job duration falls, and roughly 84% of this increase occurs on average in the shortest duration jobs. These results are robust to disaggregation by gender and by country. These empirical results are noteworthy, since it is not necessary to assume myopia or hyperbolic discounting in order to explain them, although the data clearly also do not rule out such explanations.

JEL Classification: J21, J23.
Keywords: job search, temporary jobs.

I. Introduction

A considerable volume of economic research has been devoted over the last two decades to explaining and suggesting remedies for the stubbornly high unemployment rates in a number of European countries. Among the suggested policy remedies for reducing joblessness is the relaxation of systems of employment protection by allowing firms greater freedom to create temporary jobs. These reforms presumably reflect a desire to maintain protections for workers in permanent jobs while giving firms an incentive to create new, temporary jobs, which may ultimately become permanent. However, such policies may instead encourage firms to substitute temporary for permanent jobs (as found by Kahn 2010), and, if so, the overall exit rate from jobs may increase. The resulting higher turnover may even lead to higher equilibrium unemployment than before (Blanchard and Landier 2002; Cahuc and Postel-Vinay 2002). Moreover, temporary jobs are known to pay less, offer less training, and be less satisfying than regular jobs (Booth, Francesconi and Frank 2002; OECD 2002; Kahn 2007). Thus, reforms that encourage the creation of temporary jobs may not lower unemployment and also may not unambiguously raise employed workers' utility (Blanchard and Landier 2002; Cahuc and Postel-Vinay 2002).

Policy evaluations of reforms that encourage temporary jobs must take into account the degree to which they become stepping stones to higher paying, permanent jobs. And evidence on this question of whether temporary jobs are stepping stones to permanent jobs is mixed (Booth, Francesconi and Frank 2002; Autor and Houseman 2010). If workers are indeed seemingly trapped in temporary jobs, this outcome could have resulted either due to the lack of availability of permanent jobs or insufficient search effort on the part of workers. Of course, a greater supply of permanent jobs is likely to encourage greater search effort. But little is known about the search effort of those currently in temporary jobs. For example, do they anticipate the end of those jobs and begin searching in advance for future work, or do they wait until the last minute to begin their job search? A similar set of questions has been asked about unemployed workers whose unemployment insurance (UI) benefits are about to expire (Katz and Meyer

1990; Mortensen 1990; Boone and van Ours 2009), and to workers who have been given advance notice of layoffs (Addison and Portugal 1987; Swaim and Podgursky 1990; Ruhm 1992; and Jones and Kuhn 1995). The answers to these questions can have important implications for the transition from temporary to permanent jobs and therefore for evaluations of policies that allow firms to create temporary jobs.

In this paper, I use European Community Household Panel (ECHP) data to study the job search behavior of workers employed in temporary jobs in several European countries over the 1995-2001 period. The countries included are Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. The ECHP collects information on current job search effort among employed workers (as well as of course the unemployed). In addition, the surveys include data on the duration of one's employment contract if it is temporary, allowing one to determine the impact of contract duration on search effort. I first build a simple model of employed job search that draws from search models in Burdett (1979) and Mortensen (1990) with nonstationary reservation wages.[1] A key theoretical result is that the less time left on a temporary contract, the greater is one's search effort, a result that is not surprising. However, calibration of the model using observed transition rates to permanent work and to temporary work implies that at least 68% of the increase in search intensity over the life a 2+ year temporary contract occurs in the last six months of the contract. It is noteworthy that this result is obtained without assuming hyperbolic discounting or myopia on the workers' part, although it is also of course consistent with such behavior (see, for example, DellaVigna and Paserman 2005 or Paserman 2008). This result is similar to Mortensen's (1990) theoretical result that almost all of the reduction in an unemployed searcher's reservation wage occurs in the period before his/her unemployment benefits expire, a conclusion based on the formation of

[1] See van den Berg (1990) and Card and Hyslop (2005) for additional models of nonstationary reservation wages, which like Burdett (1979) and Mortensen (1990) do not consider variable search intensity. Mortensen's (1977) earlier paper on UI does build a model of search intensity and reservation wages which predicts that search intensity will increase over the duration of coverage by UI benefits. However, he does not calibrate the rate of increase of intensity.

bounds for the rate of change of reservation wages, derived using US data on the incidence of layoff unemployment (p. 77).

The spike in exits from unemployment upon benefit exhaustion previous research has found is consistent with this model (Katz and Meyer 1990; Boone and van Ours 2009). However, Boone and van Ours (2009) suggest that this finding could be due to the endogenous timing of the start of a new job which may have been chosen to correspond with benefit exhaustion rather than a sharp reduction in reservation wages. Since the ECHP has information on actual search activity, I am able to provide a more direct test of the search model than an examination of exits from unemployment would. Similar reasoning may apply to studies of the transition from temporary jobs to permanent employment or to unemployment, which also don't examine actual search activity (D'Addio and Rosholm 2005; Gagliarducci 2005).

I then estimate an individual fixed effects model of the impact of contract duration on search effort as measured in the ECHP data base. In general, those on temporary contracts search harder than those in permanent jobs, as one would expect. And search intensity increases going from the longest to the shortest duration temporary contracts, again as one would predict. Moreover, almost all of the increase in search intensity going from longest to shortest duration jobs occurs between the second shortest (6-12 months) and the shortest (less than 6 months) duration jobs, as predicted by the calibrated Burdett-Mortensen model. This finding occurs in data pooled across countries, separately by gender, and within countries analyzed individually in the aggregate and again by gender. The basic pattern thus is pervasive in European labour markets. Since I control for individual fixed effects, the findings cannot be explained by a possible correlation between an individual's fixed search propensity and likelihood of landing a long duration job.

It thus appears that workers are indeed forward-looking in their job search behavior; however, the optimizing strategy is to not start searching intensively early in the term of one's temporary job, like that of unemployed workers with limited duration unemployment benefits. Some countries have reformed their regulations of temporary employment contracts by

increasing their allowable duration (OECD 2004). Blanchard and Landier (2002) have shown that such reforms raise the threshold a worker must attain in order to be promoted from a temporary job to a permanent job. My findings suggest an additional reason why such reforms will reduce the transition rate to permanent jobs. Specifically, an implication of the results obtained here is that such policies will reduce the average search intensity of workers on temporary jobs, perhaps lessening the ultimate transition rate to a permanent job. For example, allowing firms to "roll over" their temporary contracts is likely to increase the worker's perceived duration of a given temporary job and will decrease both his/her search intensity substantially and, potentially, the likelihood of a transition to a permanent job. Thus, while earlier research on firm behavior under these recent reforms suggest that they reduce the supply of permanent jobs (Blanchard and Landier 2002), my results suggest that that also reduce the effective demand for such jobs by reducing search intensity.

II. A Simple Model of Temporary Jobs and Search Intensity

In this section, I write down a simple model that sheds some light on the impact of a temporary contract's remaining duration on the employed worker's search intensity. Like earlier models of search intensity such as Della Vigna and Paserman (2005) and Paserman (2008), I use a discrete time framework and assume that a jobseeker will receive a wage offer with some probability in any given period. Moreover, one can raise this probability by searching harder and this increased search effort (e.g. putting in more time or money to the search effort) will be costly. I allow the new job offer to be either a permanent job or a temporary job, although the jobseeker doesn't know in advance what kind of job if any will be offered by a contacted firm. To simplify the analysis, I assume that permanent jobs never end and temporary jobs last T periods. By assuming that permanent jobs never end, I am in effect assuming that firing costs are high enough to deter all firing in permanent jobs. This is a stylized assumption that makes the analysis simpler but does not affect the overall conclusions about incentives to search in

temporary vs. permanent jobs. As long as the probability of being able to continue in a job is lower in a temporary job than in a permanent job or in a temporary job with many periods left than with only one period left, then the qualitative conclusions of the model regarding search intensity will still hold. One can view conversions of temporary contracts into permanent jobs by a worker's incumbent firm as an outcome of the job search process. After presenting the formal search model and its calibration, I will discuss the implications of such conversions in more detail.

Let λ be the probability of receiving a permanent job offer and assume that the probability of receiving a temporary job offer is $a\lambda$, where $a>0$; following Mortensen (1990), assume that one can receive at most one job offer per period. I assume that the job seeker can affect λ at search cost $c(\lambda)$, and that search costs are quadratic:

(1) $c(\lambda)=.5\lambda^2$.[2]

Thus, by investing more resources in search costs, the job seeker raises the probability of receiving a permanent or a temporary job offer, and I make no assumptions about the relative probabilities of the two types of job offer. I only assume that greater search effort raises each probability. As in basic job search models such as those in Mortensen (1990), let the following value functions refer, respectively, the present value of being employed in a permanent job ($W(.)$), in a temporary job with n periods remaining ($V_n(.)$), or as an unemployed jobseeker (V_0), where the argument in the case of employees is the wage offer. Wages within a job are assumed constant, for convenience. Let B be the discount factor (i.e. $B=1/(1+r)$ where r is the discount rate). Further, let b be the value of unemployment benefits which are assumed for simplicity to

[2] These assumptions for search costs and the probability of an offer are made for convenience and are innocuous since we can parameterize search costs appropriately.

be available indefinitely, and assume that search is no more efficient while unemployed than while employed in a temporary job.[3]

It can be shown that the jobseeker will in all cases follow a reservation wage policy. However, because the value of a wage offer x in a permanent job is different from the value of a temporary wage offer of x, the jobseeker may select a different reservation wage for permanent offers vs. temporary offers. Therefore, let R_0, and $R_n(w)$ be the reservation wages for permanent job offers facing, respectively, unemployed searchers, and temporary job holders with n periods remaining in their temporary jobs, which are assumed to pay wage w; let T_0 and $T_n(w)$ be the corresponding reservation wages for temporary job offers.

We may now analyze the value functions for jobseekers in different situations. First, the value of being unemployed is:

$$(2)\ V_0 = b + B\lambda_0 E[Max(W(x), V_0] + Ba\lambda_0 E[Max(V_T(x), V_0] + B(1 - \lambda_0 - a\lambda_0)V_0 - .5(\lambda_0)^2,$$

where the expectation in each case is taken with respect to the distribution of permanent or temporary job wage offers x given an offer.

Equation (2) states that the present value of being unemployed equals the current unemployment benefit b plus the expected discounted value of future labour market states minus current search costs. In the next period, there are three possible job offer outcomes: one can have received a permanent job offer (with endogenous probability λ_0), a temporary job offer (with probability $a\lambda_0$), or one can have not received any offers (with probability $1- \lambda_0 -a\lambda_0$). If one has received a job offer of either type, one then needs to decide whether to accept it by comparing the value of accepting it with the value of continuing unemployment. Thus, in any

[3] The model could easily be modified to allow different probabilities of receiving a permanent or temporary job offer while employed than while unemployed, as in Mortensen's (1990) model of workers awaiting recall or in Kugler and Saint-Paul's (2004) model of adverse selection signaled by one's being unemployed. But the basic features would remain the same as in the simpler version presented here.

period, the searcher has three choices: a search intensity and reservation wages for permanent or temporary job offers.

Equation (2) can be simplified by using the reservation wage property:

(3) $V_0 = b + B\lambda_0 \int_{R0}^{\infty}[W(x) - V_0]dF(x) + Ba\lambda_0 \int_{T0}^{\infty}[V_T(y) - V_0]dG(y) + BV_0 - .5(\lambda_0)^2$,

where F(.) and G(.) are respectively the distribution functions for wage offers in permanent and in temporary jobs. These are assumed to be given from the jobseeker's point of view, although of course in a general equilibrium framework they would be endogenous with respect to aggregate search behavior. One could also endogenize wages at the individual jobseeker-employer match level through bargaining effects, although one's incentives to search will still rise as the time remaining on one's temporary job falls. Some of these incentives may be attenuated if firms make offers to deter search. Because of this possibility, in some alternative specifications discussed below, I excluded current wages on the idea that they may be endogenously determined at the firm-worker match level.

The reservation wages R_0 and T_0 each solve the following equations:

(4) $W(R_0)=V_0$

(5) $V_T(T_0)=V_0$.

In other words, the reservation wages for each type of offer are set so as to make the searcher indifferent between continued search and accepting the job.

Search effort λ_0 can be calculated by maximizing (3) with respect to λ_0. Assuming an interior solution, we have:

(6) $\lambda_0 = B \int_{R0}^{\infty}[W(x) - V_0]dF(x) + Ba \int_{T0}^{\infty}[V_T(y) - V_0]dG(y)$.

Search effort is positively affected by the expected gains to an accepted job offer.[4]

[4] Equation (6) is one of the first order conditions of the multivariate maximization problem in which the jobseeker simultaneously chooses the two reservation wages and search intensity each period. A similar theoretical outcome

To study the behavior of search effort in temporary jobs of various remaining duration levels, I now write down the value functions for being in a temporary job with one, or n remaining periods. First, for those with one period remaining in their temporary job, which is assumed to pay a wage w, we have:

(7) $V_1(w) = w + B\lambda_1(w)\int_{\mathrm{R1(w)}}^{\infty}[W(x) - V_0]dF(x) + Ba\lambda_1(w)\int_{\mathrm{T1(w)}}^{\infty}[V_T(y) - V_0]dG(y) + BV_0 - .5(\lambda_1(w))^2,$

where a 1 subscript on the value function, reservation wages and search intensity refers to the time remaining on the current temporary job. Since the current job will end in the next period, the value of turning down a job offer or not receiving a job offer is the same as it was for the unemployed searcher.[5] Therefore, the reservation wages are the same in the last period of employment as they are for the unemployed searcher. By implication, so is the optimal search intensity $\lambda_1(w)$. Period 1 reservation wages and search intensity are therefore independent of the current wage. Being employed in a temporary job with one period left therefore has a value that is equal to the value of being unemployed plus (w-b). On the assumption of indefinite duration of unemployment benefits, then, workers only accept jobs paying at least b.

The goal of this model is to provide insight into the behavior of search intensity as the end of one's temporary job approaches. I now therefore show the value function for being in a temporary job with n periods remaining:

(8)

$V_n(w) =$

$w + B\lambda_n(w)\int_{\mathrm{Rn(w)}}^{\infty}[W(x) - V_{n-1}(w)]dF(x) + Ba\lambda_n(w)\int_{\mathrm{Tn(w)}}^{\infty}[V_T(y) - V_{n-1}(w)]dG(y) + BV_{n-1}(w) - .5\big(\lambda_n(w)\big)^2,$

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appears in earlier models of search intensity such as Mortensen (1977) and Paserman (2008), although those papers did not consider the choice between temporary and permanent jobs.

[5] Note that I have assumed that the probability of obtaining a permanent or temporary job offer given search effort is the same whether or not one is currently employed. Below, I discuss the likely consequences of relaxing this assumption.

where as before, the subscripts refer to the number of periods remaining in the temporary job.

Using the same logic as above, we can say that reservation wages for the various time periods and job offers satisfy:

(9) $W(R_2(w))=V_1(w)= V_0+w-b> V_0$ for all jobs paying wages strictly greater than UI benefit levels. As I show in the Appendix:

(10) $W(R_n(w))=V_{n-1}(w)> V_{n-2}(w)$

for all jobs paying wages strictly greater than UI benefit levels. This result is intuitive because a promise of n-1 periods at a wage greater than UI benefits is worth strictly more than a promise of n-2 periods of the same wage.

Equations (9) and (10) show that the reservation wage falls as the time remaining in one's temporary job rises. Once a worker is employed at wage w, the unemployment benefit to which he/she would be entitled in the event of layoff would likely be strictly less than the current wage, given less than 100% replacement ratios (Nickell and Layard 1999). The following solutions for $\lambda_{n-1}(w)$ and $\lambda_n(w)$ for n>=2 will, as I now show, imply that optimal search intensity rises over time (recall that n refers to n periods left in a temporary job):

(11) $\lambda_{n-1}(w)= B \int_{Rn-1(w)}^{\infty}[W(x) - V_{n-2}(w)]dF(x) + Ba \int_{Tn-1(w)}^{\infty}[V_T(y) - V_{n-2}(w)]dG(y)$

(12) $\lambda_n(w) = B \int_{Rn(w)}^{\infty}[W(x) - V_{n-1}(w)]dF(x) + Ba \int_{Tn(w)}^{\infty}[V_T(y) - V_{n-1}(w)]dG(y).$

Specifically, the Appendix shows that reservation wages and value functions fall as the time left in a temporary job decreases. Therefore, for n>=2, the integrands are larger in equation (11) than in equation (12) and so is the range of integration. Thus, search intensity must rise as the end of

the job approaches. We are now in a position to place some bounds on the speed with which search intensity rises.

By the properties of the reservation wage, we have:

(13) $\lambda_{n+1}(w) > B\int_{Rn(w)}^{\infty}[W(x)-V_n(w)]dF(x) + Ba\int_{Tn(w)}^{\infty}[V_T(y)-V_n(w)]dG(y)$.

Inequality (13) holds because a) for all values of the permanent wage offer x less than $R_{n+1}(w)$, $W(x)<V_n(w)$ and for all values of the temporary wage offer y less than $T_{n+1}(w)$, $V_{n+1}(y)<V_n(w)$.[6] Therefore, by equation (12) and expression (13), we have:

(14) $0<\lambda_n(w)-\lambda_{n+1}(w)<B(V_n(w)-V_{n-1}(w))(1-F(R_n(w))+Ba(V_n(w)-V_{n-1}(w))(1-G(T_n(w))$.

By the same reasoning that led to expression (13), we have:

(15) $\lambda_{n-1}(w) > B\int_{Rn(w)}^{\infty}[W(x)-V_{n-2}(w)]dF(x) + Ba\int_{Tn(w)}^{\infty}[V_T(y)-V_{n-2}(w)]dG(y)$.

Therefore,

(16) $\lambda_{n-1}(w)-\lambda_n(w)>B(V_{n-1}(w)-V_{n-2}(w))(1-F(R_n(w))+Ba(V_{n-1}(w)-V_{n-2}(w))(1-G(T_n(w))$.

Using inequalities (14) and (16), we can bound the relative increase between periods n+1 and n versus periods n and n-1 (with the period numbers referring to time left in the temporary job) in the jobseeker's search intensity:

(17) $[\lambda_n(w)-\lambda_{n+1}(w)]/[\lambda_{n-1}(w)-\lambda_n(w)]< [V_n(w)-V_{n-1}(w)]/[V_{n-1}(w)-V_{n-2}(w)]$.

[6] These inequalities therefore hold for all wages between R_n and R_{n+1} and T_n and T_{n+1}, since $R_n<R_{n+1}$ and $T_n<T_{n+1}$.

The maximum value of being employed at wage w in a temporary job with n-1 periods left must be greater than the value of choosing the period n reservation wages and search intensity (assuming a unique reservation wage):

(18)

$$V_{n-1}(w) > w + B\lambda_n(w)\int_{\mathrm{Rn(w)}}^{\infty}[W(x) - V_{n-2}(w)]dF(x) + Ba\lambda_n(w)\int_{\mathrm{Tn(w)}}^{\infty}[V_T(y) - V_{n-2}(w)]dG(y) + BV_{n-2} - .5(\lambda_n(w))^2.$$

Therefore, using equation (16) and inequalities (17) and (18), we have:

(19) $[\lambda_n(w)- \lambda_{n+1}(w)]/[\lambda_{n-1}(w)- \lambda_n(w)]< [V_n(w)-V_{n-1}(w)]/[V_{n-1}(w)-V_{n-2}(w)]<$

$B\{1- \lambda_n(w)(1-F(R_n(w)+a-aG(T_n(w))\}$.

According to expression (19), the increase in search intensity between periods n+1 and n relative to the increase between periods n and n-1 is less than the discount factor times the probability of not finding either an acceptable new permanent job or acceptable new temporary job in period n. Since finding an acceptable new permanent job or an acceptable temporary job are mutually exclusive events, one minus the sum of their individual probabilities is the probability of not moving, abstracting from the possibility of quitting to drop out of the labour force or search while unemployed. Let E_n be the probability of not moving (i.e., $\{1-\lambda_n(w)(1-F(R_n(w)+a-aG(T_n(w))\})$. Then,

(20) $[\lambda_n(w)- \lambda_{n+1}(w)]/[\lambda_{n-1}(w)- \lambda_n(w)]< BE_n$.

We would like an estimate of the increase in search intensity in the last period (i.e. $\lambda_2(w)-\lambda_1(w)$) relative to the total increase in search intensity over the life of a temporary job (i.e. $\lambda_T(w)-\lambda_1(w)$). To estimate this relative increase, write $(\lambda_T(w)-\lambda_1(w))$ as:

(21) $(\lambda_T(w)-\lambda_1(w))= (\lambda_T(w)-\lambda_{T-1}(w)))+ (\lambda_{T-1}(w)-\lambda_{T-2}(w)))+\ldots+ (\lambda_2(w)-\lambda_1(w))$.

Then with successive use of inequality (20), we have:

(22) $(\lambda_T(w)-\lambda_1(w))< (\lambda_2(w)-\lambda_1(w))(1+BE_3+B^2E_3E_4+ \ldots +B^{T-2}(E_3E_4\ldots E_T))$.

While the ECHP data aren't fine enough to allow one to follow people within their temporary jobs, we can use the data to compare people with different total temporary contract durations or the same person in different jobs with different total durations. For example, a randomly chosen person with a 2 year contract will have on average more time remaining on his/her contract than a randomly chosen person on a one year contract, and so on. Thus, comparing people under different contracts will be similar to comparing people with different amounts of time remaining on their temporary job, as the model depicts. As shown below, in the ECHP data, the potential durations of temporary jobs are defined in four categories with enough observations on which to perform meaningful statistical analyses: under 6 months; 6 months to under a year; one year to under two years; and two years or more. This division of the data by the ECHP suggests considering a period to be 6 months and therefore that T=5. That is, period 1 is the less than 6 months category. Increasing by 6 month increments, we arrive at period 5, which is duration 2 to 2.5 years, or the highest category: period 2 is 6-12 months, period 3 is 12-18 months, period 4 is 18-24 months, and period 5 is 24+ months. This means that we need to use the following limit for the total increase in search intensity relative to the increase in the last period:

(23) $(\lambda_5(w)-\lambda_1(w))< (\lambda_2(w)-\lambda_1(w))(1+BE_3+B^2E_3E_4+B^3E_3E_4E_5)$.

However, periods 3 and 4 (12-18 months) and (18-24 months) are aggregated by the ECHP, so we must set $E_3=E_4$.

Appendix Table A1 shows transition rates from temporary jobs of various total duration levels. If we make the maintained hypothesis that differences in behavior across durations are the same as that for an individual as the time left in his/her temporary job falls, then we can use these transition rates to compute E_3, E_4, and E_5). The data in Table A1 imply that E_3 (and therefore E_4) is 0.344 (i.e., 1-.169-.487) and E_5 is .243 (i.e., 1-.130-.627).[7] Using a 6 month discount factor B of 0.985 (i.e., a period is 6 months, and I am assuming an annual real discount rate of 3%), inequality (23) implies that at least 68% of the total increase in job search intensity going from the longest to the shortest duration temporary job should occur in the last period. We therefore expect to see sharply increasing job search intensity as temporary job durations fall. This result does not assume myopia or hyperbolic discounting; however, we do predict very gradually rising search intensity throughout one's employment in a temporary job until the last period. If jobseekers are completely unresponsive to changes in the duration of their jobs, then we would conclude that they are myopic.

The search model's calibration implies that forward-looking workers on long duration temporary jobs will find it optimal to essentially wait to until the last period—the last 6 months--to substantially increase their search intensity, although there will be a small level of search effort before then. Thus, shortening the potential duration of such jobs is likely to have the same kind of effect on jobseekers as limiting the duration of UI benefit receipt. The model predicts higher search intensity throughout a temporary job if its duration is shorter, and a sooner rapid increase in intensity after the job starts than if duration is allowed to be longer.

[7] The total transition rate is actually somewhat higher for the shortest duration temporary jobs than for the other categories, as the search model predicts. But the transition to permanent jobs is actually highest for those in the longest temporary jobs. It is possible that the respondents in the different duration temporary jobs differ in measurable or unmeasurable ways that could affect their transition probabilities. The empirical work below controls for measured factors as well as person-specific unmeasured factors that would affect search intensity.

The model just outlined assumes that one's probability of a job offer given search effort is the same regardless of whether one is employed or unemployed. In reality, some temporary job contracts are renewed when they expire, and firms promote some workers from temporary jobs into permanent jobs. The search model presented above can be modified conceptually to accommodate the possibility of promotion into permanent jobs. Suppose, for example, that while one is employed in a temporary job with n periods left, that the probability of finding a permanent job is:

$(\lambda_n(w)+d)$, with $d>0$ being the probability of promotion into a permanent job even if one doesn't search. If d is constant over time, then the first order condition for search intensity has the same form as before, since d doesn't interact with λ_n. Reservation wages in period 1 will still be the same as reservation wages while unemployed, but the value of employment will have risen due to the possibility of promotion at zero search cost. But as long as d is constant across time, then the model will still predict that the value of employment will fall as the end of the job approaches, leading to falling reservation wages and thus rising search intensity. On the other hand, if d falls over time, then this would be an additional reason for observing rising search intensity as the end of a temporary job approaches; conversely, if d rises as the end approaches (perhaps because the firm wants to retain the worker), then search intensity might not rise. Thus the likely impact of promotions on search behavior depends on the relationship between temporary contract duration and the probability of promotion. In the work below, I investigate this issue.

It should be noted that it is theoretically possible for employees to affect the promotion probability by working harder, as in Givord and Wilner (2009), although the authors' empirical analysis for France found that more work effort did not affect the promotion probability. But allowing for the possibility of effort-based promotions would lead to a more complicated model that would include both search effort and work effort on the job. Since the ECHP doesn't have good measures of actual effort on the job, I must abstract from this additional issue. Further, if

search is more efficient while unemployed, then this would reduce the gap between $V_1(w)$ and V_0, reducing the rate at which search intensity rises as time left in one's temporary job falls.

Finally, lowering search costs (e.g. the expansion of employment agencies or direct job search subsidies) raises the value of being unemployed and therefore reservation wages on all types of jobs. Moreover, lowering search costs raises the relative value of temporary employment compared to permanent employment, since an inherent feature of temporary jobs is the likelihood of needing to search for a new one. Therefore, reservation wages of temporary jobs will rise by less than those of permanent jobs, and such policies may raise the relative incidence of temporary employment.

III. Data and Descriptive Patterns

I use the ECHP data for 1995-2001 for the following countries to study the impact of temporary employment contracts on job search: Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain.[8] This is a panel data base that follows individuals over the 1994-2001 period. The questions were harmonized as much as possible in order to produce a data base that would provide comparable information across countries.[9] Beginning in 1995 for all of these countries except Finland and in 1996 for Finland, the ECHP asked each employed wage and salary worker whether his/her job was characterized by a fixed term contract. Specifically, each employed respondent is asked: "What type of employment contract do you have in your main job?" The possible responses are: 1) permanent employment; 2) fixed-term or short-term contract; 3) casual work or no contract; 4) some other working arrangement. For the purposes of analyzing the determinants of temporary

[8] Of the fifteen countries in the ECHP, these eleven are the only ones with data on both on the job search and contract type (i.e., permanent vs. temporary) and with repeated observations on the same person.
[9] For further description of the methods and sample characteristics of the ECHP, see the Eurostat web site: http://circa.europa.eu/irc/dsis/echpanel/info/data/information.html .

employment, I include only those with responses 1) or 2), that is, those that state they have a permanent or a temporary employment contract. Respondents with a temporary contract were asked how long the total duration of their contract was, with possible responses: less than 6 months, 6 months to less than a year, 1 year to under 2 years, 2 years to under 5 years, 5 years or more.

To gauge on the job search activity, I use two questions from the ECHP. First, I use responses to the question asking employed workers whether they are looking for a job. Second, the ECHP asks whether in the last four weeks, a respondent has taken active steps to find a job. Examples given by the survey include: "contacted a public employment office,…, applied to an employer, studied or replied to advertisements, contacted a private employment or vocational guidance agency, asked friends or contacts, or taken steps to start your own business" (ECHP codebook, p. 273). In the empirical work below, I examine responses to both questions. The second question (about taking active steps) is more closely related to search effort than the first one, although the results were very similar for either measure of on the job search activity. Unfortunately, the ECHP does not include further measures of search intensity such as the time devoted to job search or the number of search methods used.

Tables 1-4 provide some descriptive information about contract duration and search activity. All statistics are weighted using the ECHP's provided person weights, and these have been adjusted in the data pooled across countries so that each country receives the same weight. Included in the tables are all employed workers with complete data on the explanatory variables used below and who have either a known fixed contract duration or a permanent job. The age range is restricted to 16-65 years. Table 1 provides these data aggregated across the eleven countries listed above. About 9% of the sample has a temporary contract, and the most common duration is 6-12 months (about 42% of temporary jobs), followed by less than 6 months (24%), and 1-2 years (21%).[10] A very small fraction have 5 years or more duration (4%). The incidence

[10] Earlier work has shown that the ECHP data on the incidence of temporary employment contracts match up well with published sources such as the OECD. See Kahn (2010).

of on the job search and active search behavior look at first blush to be consistent with the theoretical model outlined earlier. First looking at the figures for on the job search, the fraction of workers searching rises from 0.074 of those in permanent jobs to 0.143 for those with at least two years' duration on a temporary contract.[11] This figure rises again to 0.175-0.179 for those with 6 months to two years duration, and rises sharply to 0.276 for those with the shortest contract duration (under 6 months). In other words, the incidence of search activity rises by 20.2 percentage points between those with permanent jobs and those with the shortest temporary jobs, and 10.1 percentage points of this rise occurs between the 6-12 months duration and <6 months duration categories. Moreover, among those with temporary contracts, search incidence rises by 13.3 percentage points from the 2+ years category to the shortest category, with, as just noted, 10.1 percentage points or 76% of the rise occurring in between the two shortest duration categories.

Table 1's figures for search intensity (the incidence of active search behavior) are very similar to those for the incidence of job search. 4.8% of those on permanent contracts have engaged in active search behavior in the last four weeks (compared to 7.4% who said they were looking for a new job), a figure that rises to 10.3% for those with temporary jobs with at least two years' duration and finally to 21.7% of those on the shortest temporary contracts. Again, for those on temporary contracts, 79% of the increase in search intensity between the longest and the shortest temporary contracts occurs between the two shortest duration categories. But there is still a slight increase in search intensity from the 2+years category to the 6-12 months duration category.

Overall, then, workers appear to be forward-looking in the sense that the shorter one's employment contract, the more likely one is to search and the more intensively one searches. But most of the increase in search activity occurs for those in the shortest duration category. This result is especially noteworthy because the difference in expected duration between the two

[11] In the empirical work, I will be aggregating the 2-5 years and 5 years plus categories because of the small numbers of cases in the later duration category. Table 1 shows that these categories have very a similar incidence of on the job search and search intensity.

shortest categories likely to be less than for the other categories; this is the case because the potential duration only increases by 6 months going from the shortest to the second shortest category, while the increase is at least a year between the other pairs of adjacent temporary job duration categories. This set of outcomes is precisely what is predicted by the search model outlined earlier. Tables 2-4 examine whether this pattern is common to each of the countries individually. Table 2 shows that for all of the countries except the Ireland and Netherlands, the 6-12 months duration category is the most common temporary duration, while the least common is usually the 2+ years duration jobs. Tables 3 and 4 show a remarkable consistency across countries in the incidence and intensity of job search in the various employment contract duration categories. In each case, those in permanent jobs are least likely to search or have the smallest amount of search activity, while those in the shortest temporary jobs search the hardest, with the exception of Ireland (Table 4). In addition, in most cases the largest increase in search activity among the temporary job holders occurs between the 6-12 months and the less than 6 months duration categories.

IV. Empirical Procedures and Regression Results

Tables 3 and 4 show that search behavior in each country is consistent with the model discussed earlier, which of course did not assume myopia or hyperbolic discounting. In the empirical work that follows, I test whether these patterns hold up controlling for worker human capital, pay or economic conditions, as well as individual worker fixed effects. For example, it is possible that the shortest duration jobs pay lower wages than longer duration temporary jobs, and these purportedly lower wages could in principle explain the patterns in Tables 1, 3 and 4.

The basic empirical setup for testing the job search model presented earlier is to estimate the intensity of search as a function of contract duration and control variables:

(24) Active Search=f(dur0-6, dur6-12, dur12-24, dur24+, X, u),

where for each employed individual, Active Search is a dummy variable for having taken active measures to find a job in the last four weeks, dur0-6, dur6-12, dur12-14, dur24+ are dummy variables for being a temporary job with respective, less than 6 months, over 6 but less than 12 months, over 12 but less than 24 months, and at least 24 months total duration, X is a vector of control variables to be discussed below, and u is a disturbance term.[12]

In equation (24), the dependent variable is the ECHP's proxy for search intensity, although I also estimated models with an employed search dummy variable as dependent variable, with very similar results to those presented below. The duration variables correspond to the categories in Tables 2-4, and the omitted category is those who have permanent jobs. While, as noted earlier, the duration variables refer to total contract length, the person's remaining duration will on average be less than this.[13] Therefore the duration dummy variable categories likely measure the remaining duration with some error. One's inferences about the impact of remaining duration on search activity may, then, be biased downward, since, for example, some people in the 6-12 month category will have less time remaining on their job than some people in the <6 month category.

The controls include age, age squared, dummy variables for low (ISCED levels 0-2) and middle levels (ISCED level 3) of schooling with high levels of schooling the omitted category (ISCED levels 5-7), the log of hourly earnings expressed in purchasing power parity units in 2001 US dollars, the regional unemployment rate, and year dummy variables.[14] Individual fixed

[12] Because active search is defined to occur over the previous four weeks, it is theoretically possible that some jobs began after this reported search. If so, it would be inappropriate to call this kind of search employed search from the current job. To examine this possibility, I estimated the model on a subsample of people who had been on their job at least two months. For this group, the search activity definitely refers to the current job, and the results were virtually identical to those presented below for the full sample.

[13] Unfortunately, the ECHP doesn't include information on the contract type of any intervening jobs that may have occurred between interviews. Therefore, we can't observe changes for the same individual in time remaining on a given temporary job. While there is information on when the current job started, we can't know for sure what type of job contract it started with.

[14] The ECHP provides purchasing power parity rates for each country in each year, allowing one to transform the earnings data into US purchasing power units for that year. These transformed earnings variables were then corrected for US inflation by using the Personal Consumption Expenditures deflator for the US, taken from

effects models automatically control for country and gender level effects, although in some models I stratify by gender or country. While, as discussed above, hourly earnings may be endogenous with respect to search activity, it is a potentially important control, since 6 month jobs may differ in quality from, for example, 24 month jobs. And we would expect job match quality (as proxied by wages) to independently affect one's search propensity, both directly as in the model presented earlier and perhaps also as a signal that one is likely to be promoted to a permanent job. Including current wages, therefore, increases the likelihood that the key duration variables reflect actual time remaining on the job rather than the overall quality of the job.[15] The regional unemployment rate information was collected from the European Labour Force Survey and matched to the regional indicators in the ECHP data.[16] The unemployment rate and human capital controls account for likely wage offers relative to the current wage, which is also a control. Year dummies account for continent-wide economic factors, as well as for the value of the US dollar in purchasing power. The standard errors were clustered at the country level.

The basic model is linear and is estimated using fixed effects, where I take advantage of the longitudinal nature of the ECHP data. The standard errors are, as suggested above, robust to heteroskedasticity. [17] I also ran some models using conditional fixed effects logit analysis, with very similar results to those presented for the linear model. In either the linear or the logit case, the basic variation in the duration of the contract comes from individuals who change contract type[18]; however the linear model uses the whole sample, while the fixed effects logit model only includes those who changed search intensity. Thus the linear model may provide more efficient estimates of the effects of the control variables. The fixed effects models account for possible spurious correlation between an individual's propensity to search and the type of job one has.

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www.bea.gov. I excluded observations with hourly earnings less than $1 or greater than $300 in 2001 purchasing power parity units. These exclusions amounted to about 0.2% of the sample.

[15] As discussed above, due to the possible endogeneity of wages, I also estimated models with wages excluded.

[16] I am grateful to Alison Davies and Rhys Powell for their help in acquiring the European Labour Force Survey regional unemployment rate data. Since the ECHP did not collect regional information for Denmark or the Netherlands, I used the national unemployment rate for those countries.

[17] Moffitt (1999) argues that the linear probability model may be justified as a linear approximation to a more general data-generating process.

[18] Below, I examine the representativeness of the subsample of individuals who change contract type relative to the whole sample.

For example, if most workers want a permanent job, then other things being equal, those who are most willing to look hard for work will be most likely to have permanent jobs. If this willingness is a fixed trait, then we may observe a spurious negative correlation between search intensity and the incidence of temporary work. Fixed effect models can account for this possibility. It is also possible that those with better prospects for landing a permanent job may be more likely to accept a short term job in the first place. Thus, any correlation between short jobs and search activity may reflect one's underlying job prospects rather than the search model presented earlier. Again, however, to the extent that these job prospects are due to person-specific effects, the fixed effects will account for such a possibility.

In addition to the basic equation (24), which constrains the effects of job duration to be same across the sample, I also estimated the basic model separately by gender and also separately by country. These specifications allow each country's laws and economic structure to have different effects on search intensity as well as for possible gender differences in search behavior. In particular, continued inclusion of time dummies in the models disaggregated by country allows each country to have a flexible trend in its job search intensity.

Before discussing the regression results, I note that in a fixed effects model, the parameters are identified from the behavior of those who change contract duration during the panel. Appendix Table A2 compares mean values for three samples: i) the entire panel ("Full Sample"); ii) those who changed contract duration—the key group on which identification is based; and iii) those currently on a temporary job. From Table 2, we know that only about 9% of the sample has a temporary job. Therefore, it is not surprising that the sample who changed contract duration is more similar to those who currently have a temporary job than to the entire sample. In the second two columns of Table A2, we see that compared to the full sample, duration changers and those on temporary contracts are more likely to be women, live in areas with higher unemployment, have lower schooling levels, earn less money, and are more likely to live in Spain, Portugal, or Finland, countries with high levels of temporary employment. Most of those who changed contract duration had permanent jobs at least once during the panel, so it is

not surprising that this group had somewhat higher wages, a (slightly) lower female representation, was slightly better-educated, and less likely to live in Spain (the country with the highest incidence of temporary jobs) than those currently on temporary jobs.

Table 5 contains basic fixed effects regression results for the determinants of search intensity among employed workers. Looking first at the full sample results, we see that the increase in search intensity from permanent jobs to short duration temporary jobs is very similar to the raw means shown in Table 1. Active searching increases by a highly significant 2.1 percentage points going from permanent jobs to longest duration temporary jobs, all else equal. The incidence further increases to 3.6% for jobs with 6-12 months duration and all the way to 11.6% for the shortest duration jobs. Among temporary jobs, 84% of the increase in search intensity that occurs between the longest and the shortest duration jobs occurs in the last period. Moreover, Table 5 shows that the effect for the 0-6 month category is significantly different at better than the 1% level from that of permanent jobs and from each of the other temporary job duration categories. The point estimates show gradually increasing search intensity between the 24+ months category and the 6-12 months category, although Table 5 indicates that these increases are not statistically significant. Nonetheless, the point estimates and the significantly positive effect for 24+ months duration both suggest forward-looking behavior by workers.

Other results for the full sample are that older workers have lower search intensity (the negative main term outweighs the positive quadratic for all ages up to 61.6 years), and more highly paid workers have lower search intensity. Table 5's results for men and women separately are very similar to those of the pooled sample, and together they confirm that the raw increase in search intensity observed in the overall means as duration falls is not simply a compositional effect. The effect for the 0-6 month duration category remains significantly different from that of each of the other temporary duration levels as well as of course the level for permanent jobs. For both men and women, most of the increase in search intensity across temporary job duration categories occurs in the last period (104% for men and 66% for women). And there is evidence of forward-looking behavior for both men and women: for men, there is

significantly more search activity in the longest temporary jobs than on permanent jobs, while for women, there are significant increases in search intensity going from 24+ month duration jobs to those with 12-24 months or 6-12 months duration. A further interesting result concerns the relative effects of wages for men and women. In both cases, the effect is negative, is statistically significant for men and is 1.5 times its standard error in absolute value for women. But the magnitude is more than twice as high for men as for women, and the gender difference in the effects of wages is nearly significant (1.6 times its standard error in absolute value). Since the sample mean search intensity is 0.055 for men and 0.059 for women, men's search elasticity with respect to wages is more than twice as high as women's. This suggests a higher labour supply elasticity to the firm for men than women, a factor that could help explain part of the gender pay gap.[19]

Table 6 shows that these results for the pooled ECHP sample largely hold up within individual countries. First, for each country, search intensity is significantly greater for those in temporary jobs than on permanent jobs. While search intensity doesn't always monotonically increase as contract duration falls, it generally rises, and in nearly every case, it is much higher for the shortest duration contract than for longest duration temporary jobs.[20] Nearly all, or in some cases, more than the full rise in search intensity across temporary job categories occurs in the shortest jobs in seven of the eleven countries, including Belgium, Finland, France, Italy, the Netherlands, Portugal and Spain, and the increase in search intensity in the last period is statistically significant in each of these countries. Searchers are forward looking as indicated by the presence of several significant positive coefficients in duration categories in the 6 month to 2 year range, and the shortest duration jobs have the most search intensity.

In addition to the results shown so far, I attempted some further, alternative specifications. First, I limited the sample to those age 19-60 to reduce the influence of school

[19] The evidence on the relative wage elasticity of male and female quitting is somewhat mixed. See, for example, Blau and Kahn (1981), Viscusi (1980), Barth and Dale-Olsen (2009), and Ransom and Oaxaca (2010).
[20] An exception to monotonicity is a seemingly anomalous rise to 8.1% for those in 12-24 month contracts in Ireland.

and retirement on the results. Second, I re-ran the models excluding current wages on the idea that these may be endogenously determined at the worker-firm match level. Third, in some models, I controlled for current tenure and its square, although roughly 5% of the sample has missing tenure data. Moreover, current tenure is potentially endogenous with respect to search activity. But in all three of these cases, the results were virtually identical to those shown above, giving one further confidence in the robustness of the basic findings. I also investigated whether the impact of contract duration varied with wages on the idea that incentives to start searching earlier would likely be stronger with lower current wages. However, interaction effects between wages and duration showed no consistent patterns. Finally, I estimated models separately by country-gender group. I obtained similar results to the more aggregated analyses both with respect to the countries with large increases in search intensity in the shortest jobs and the higher wage elasticity of search activity for men.

It is interesting to consider my results for the individual countries in the context of their systems of employment protection both with respect to temporary contracts and regular (permanent) employment. In this regard, Table 7 summarizes these regulations as of the late 1990s, the period when most of the ECHP data were collected. The Table shows the limits (if any) on the number and duration of temporary contracts as well as the OECD's index of strictness of protection mandates on regular jobs. In countries where firms can renew temporary contracts without limit, one might expect less incentive to search during temporary employment than otherwise. And where it is very difficult to fire workers from permanent jobs, one might expect less search from such jobs, both because the probability of keeping the job is higher than otherwise and because in such settings, job creation is suppressed due to anticipated firing costs. The reduced job creation will also likely reduce the return to search from temporary jobs as well. Figure 1 indeed shows a negative relationship between the incidence of searching on the job from permanent jobs and the OECD's protection strictness indicator for such jobs, while Figure 2 shows a similar relationship for the incidence of active search from very short duration jobs.

These admittedly simple relationships suggest that reforms reducing the strictness of protection will generate additional search activity.[21]

I investigated further the relationship between the OECD's permanent employment protection index and search intensity by re-estimating the basic pooled fixed effects models interacting the duration categories with the country's late 1990s permanent protection index. The interaction effects were each about -1 percentage point, were significantly different as a group from the omitted category (permanent jobs), but were not significantly different each other. Thus, there was some evidence that stricter employment protection lowers the gap in search intensity between temporary jobs and permanent jobs but not within the set of temporary jobs.

On the regulation of temporary contracts, Table 7 shows especially strict regulations for both France and Italy, with relatively few contracts allowed and tight limits on their duration. And for both countries, active search from very short jobs is especially high, as shown in both Table 4 and in the regression coefficients in Table 6. These results suggest that restricting firms' ability to offer temporary jobs will generate more active job search by workers on such jobs, although the Netherlands, with relatively lax regulations of temporary work also sees a high search intensity from such jobs (Tables 6 and 7). Estimating the basic fixed effects model adding the OECD's late 1990s index of temporary employment protection interacted with contract duration yielded a positive, small interaction effect for the shortest jobs relative to permanent jobs, as one might expect. However, this effect was insignificantly different from zero, as were the effects for the other duration categories. The effects of the duration interactions were also insignificant as a group and not significantly different from each other. But overall, the findings suggest the possibility that changing regulatory policy may generate the expected changes in search activity.

The Role of Within-Firm Promotions from Temporary to Permanent Jobs

[21] In both Figures 1 and 2, the regression line has a negative slope but is insignificant.

In the analysis of the theoretical model presented in Section II, the possible impact of promotions from temporary to permanent jobs was mentioned. If, for example, workers on temporary contracts anticipate being promoted to permanent jobs, then they may not search hard for new work. Moreover, as discussed, if the anticipated probability of promotion on temporary jobs with a long duration is greater than that on short-term jobs, then anticipated promotions could explain the pattern of results I have presented so far. To investigate this issue, one would ideally have access to information on whether and when workers on temporary contracts were offered permanent job status. Unfortunately, the ECHP doesn't have information on the existence of such offers. But we do know if a person who was on a temporary job in one year was in a permanent job with the same firm at the next wave of the survey. Unless such workers left their temporary job and were rehired into a permanent job at their original firm during the intervening year, we can infer that they were promoted into a permanent job. And we can observe the incidence of such events by using the longitudinal feature of the ECHP. However, we are unable to observe offers of promotion for those who left their firm. Nonetheless, with these caveats, one can obtain at least a partial assessment of the role of promotions in explaining my basic results.[22]

Table 8 shows mean values for the incidence of changes from temporary to permanent status at the same firm between consecutive waves of the ECHP for i) all workers with temporary contracts in the initial year ("All Workers") and ii) workers with temporary jobs in the initial year who were not actively searching for work that year. The overall incidence of such status changes is 19-21% on average and is roughly similar across the differing levels of initial contract duration. The incidence is slightly lower for the shortest jobs, although it is also lower

[22] In principle, the same reasoning we have used for transitions to permanent jobs would apply to a worker who anticipates that his/her temporary contract will be renewed. Unfortunately, for the longer temporary job duration categories, it is impossible to determine from the year-to-year data whether one's contract has been renewed. Therefore, unlike the transitions we do observe to permanent work, we can't observe renewals of temporary contracts, since for many of those in temporary jobs, contract duration will be the same from one year to the next both for those with renewals and for those in their original contract. There thus would be no way to distinguish the renewals from the continuations, whereas for those who were promoted into permanent jobs, we do observe a change in contract type in the ECHP.

for the longest jobs than for the 6-12 and 12-24 month categories. But to properly assess the role of promotions in explaining the search intensity results in Tables 5 and 6, one needs to compare our estimate of the promotion incidence across contract durations while controlling for other factors affecting such outcomes. Tables 9 and A3 perform such an analysis by estimating individual fixed effects models of promotion to permanent jobs in equations that are similarly specified to our models of search intensity, except that temporary contract duration and real wages are measured as of the initial year.[23] In Table 9, the results for both samples are very similar. Specifically, Table 9 shows that the duration variable coefficients are insignificant as a group and also not significantly different from each other in each model and sample. Moreover, the effects are quantitatively small relative to the mean incidence of promotions shown in Table 8. Thus at the aggregate level, there is no evidence to support the idea that search intensity rises dramatically in the 0-6 month duration category due to supposedly smaller perceived promotion probabilities.[24] Other results from the analysis of promotions in Table 9 are that older workers are more likely to be promoted (at least through ages 61-67), while those with low levels of schooling or living in high unemployment regions are less likely to be promoted.

The basic conclusion about the lack of impact of temporary contract duration on promotions holds within countries as well, as shown by the models in Table A3. The sample here is restricted to those in an initial temporary job who weren't actively searching on that initial job, although the findings are similar when I include everyone on an initial temporary contract. Table A3 shows that in each case, the contract duration variables are insignificant as a group and are not significantly different each other in 31 of 33 possible comparisons. Moreover,

[23] I am calling the transition from last year's temporary job to this year's permanent job at the same firm a "promotion" even though, as mentioned, an unknown number of workers may have left their firm and returned with a permanent job during the months between consecutive waves of the ECHP. And of course, I also don't observe offers of promotion for those who left their firm and didn't return. I measure initial wages in order to avoid the endogeneity of current wages and promotion status.

[24] Even with a constant per period promotion likelihood, we would expect greater search intensity for those in the later stages of their temporary contract because they have not yet been promoted. The fact that they are still observed in their temporary contract means that they have likely been passed over for promotion. In the ECHP data, we have a snapshot for workers in a job with a given contract duration. On average, those workers in longer jobs have likely had more opportunities to be promoted but haven't been, compared to those observed in shorter jobs. Therefore, this selection phenomenon would lead us to expect more search intensity among those currently in long jobs than in short jobs. Of course we observe the opposite, as predicted by the search model.

Table 6 showed large increases in search intensity in the 0-6 month duration jobs for Belgium, Finland, France, Italy, the Netherlands, Portugal and Spain. Table A3 shows that the promotion probability was insignificantly different between the two shortest duration categories in each case. Additionally, in four of the seven countries with rapid final period increases in search intensity, the point estimate in Table A3 shows a *higher* promotion probability in the 0-6 month duration jobs than in the 6-12 month jobs, with three of these showing a lower promotion probability for the shortest jobs. And the point estimates among these seven countries are, with the exception of Belgium, small in absolute value. Again, promotion probabilities do not appear to explain our basic search intensity results, which are consistent with the calibrated search model presented in Section II.[25]

V. Conclusions

In this paper, I have examined the job search behavior of those employed in temporary jobs with a known duration level. A theoretical model of optimal search from a temporary job was constructed, and it predicts that workers employed in shorter duration temporary jobs would search harder than those in longer duration temporary jobs. Moreover, calibration of the model using observed transition rates to permanent work and to temporary work implies that at least 68% of the increase in search intensity over the life of a 2+ year temporary contract occurs in the last six months of the contract. I then used the ECHP data on employed workers for 1995-2001 from 11 countries to study the impact of contract duration on job search intensity. The countries were Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands,

[25] Table A3 shows a large, positive, marginally significant promotion effect of the 6-12 month jobs (relative to the omitted 0-6 month category) for Denmark. There is also a large, but insignificant coefficient for this category for Belgium. While these point estimates could explain the last period increase in search intensity in both countries, the promotion argument can't explain the monotonically increasing search intensity as duration falls for Denmark, since Table A3 shows for Denmark, falling, then rising promotion probabilities as duration falls. In the case of Belgium, the non-monotonic changes in search intensity in Table 6 match the direction of the changes in the coefficients in Table A3. But the only statistically significant search intensity coefficient for Belgium is that for the 0-6 month category (Table 6), while the comparison of the 12-24 and 24+ month categories is the only significant contract duration effect for promotion, as shown in Table A3.

Portugal and Spain. In regression models that controlled for human capital, pay, local unemployment, time and individual fixed effects, I found that workers on temporary jobs indeed search harder than those on permanent jobs. Moreover, search intensity increases as temporary job duration falls, and roughly 84% of this increase occurs on average in the shortest duration jobs. These results largely held up when I disaggregated by gender and also by country. In addition, an analysis of promotions from temporary to permanent jobs within one's firm showed that anticipated promotions cannot explain the basic findings. These empirical results are noteworthy, since it was not necessary to assume myopia or hyperbolic discounting in order to explain them, although the data clearly also do not rule out such explanations.

During the past 20 years, a number of European countries have enacted reforms of their employment protection systems in an attempt to stimulate job creation and increase the flexibility of their labour markets. The most common of these reforms have been new regulations allowing firms greater freedom to offer temporary employment contracts (OECD 2004), including increasing the number and duration of such contracts. Theoretical and empirical research suggests that such reforms will reduce firms' relative supply of permanent jobs (Blanchard and Landier 2002; Kahn 2010). The results I have obtained here suggest that such reforms are also likely to reduce workers' intensity of job search during most of the duration of these temporary contracts, thus reducing the transition to permanent jobs, which have also been made more scarce by such reforms. For example, if a firm is allowed to offer one two year contract, then my findings suggest a small level of job search for the first 1.5 years of such a contract, with search not becoming more intensive until the last six months. If a firm is allowed to offer two consecutive such contracts covering four years, and if the worker anticipates the renewal, then my results imply that search activity will remain low for the first 3.5 years of this arrangement. Recent research on European labour markets has confirmed the productivity of job search in the context of job search requirements and sanctions in unemployment benefit systems or active labour market programs in Denmark, the Netherlands, Switzerland, and the United Kingdom (Svarer forthcoming; Abbring, van den Berg, and van Ours 2005; Lalive, van Ours and

Zweimüller 2005; Blundell, Dias, Meghir and van Reenen 2004). Thus my findings do indeed suggest the possibility that reforms of temporary employment systems will reduce workers' transition rates to permanent jobs and may thus have some unintended consequences.

One must weigh the direct benefits to a worker of having a longer duration temporary contract with the reduction in search effort to find a more permanent job. This is a similar dilemma to that for designing unemployment benefit systems that try to balance the gains to better income support for workers with reduced incentives to find work. Conversely, my findings suggest that policies making it easier to fire workers from permanent jobs will generate more intensive search from such jobs, potentially increasing mobility in the labour market through the search mechanism.

Appendix: Proof That Reservation Wages Fall as the End of a Temporary Job Approaches

The reservation wages for temporary and permanent job offers conditional on being employed in a job with n periods left leave one indifferent between taking the job offer and remaining employed in the current job. Thus, if there are currently n periods left in one's temporary job, the value of alternative employment at the reservation wages is V_{n-1}. Thus, to prove that reservation wages fall as the end of the temporary job approaches, it is sufficient to show that $V_n > V_{n-1}$ for all n>=2. I prove this using induction. First, note that:

(A1) $V_2(w) = w + B\lambda_2(w)\int_{\mathrm{R2(w)}}^{\infty}[W(x) - V_1]dF(x) + Ba\lambda_2(w)\int_{\mathrm{T2(w)}}^{\infty}[V_T(y) - V_1]dG(y) + BV_1 - .5(\lambda_2(w))^2.$

This value is at least as large as the expected value of searching if one used the period 1 reservation wages and search intensity:

(A2) $V_2(w) >= w + B\lambda_1(w)\int_{\mathrm{R1(w)}}^{\infty}[W(x) - V_1]dF(x) + Ba\lambda_1(w)\int_{\mathrm{T1(w)}}^{\infty}[V_T(y) - V_1]dG(y) + BV_1 - .5\left(\lambda_1(w)\right)^2 = V_1(w) + B(w-b)[1 - B\lambda_1(w)(1 - F\left(R_1(w)\right) - Ba\lambda_1(w)\left(1 - G\left(T_1(w)\right)\right] > V_1(w)$ as long as wages are strictly greater than UI benefits and the probability of receiving an acceptable wage is less than one.

Now assume that $V_n > V_{n-1}$. Using the same reasoning as in expression (A2), one finds that

(A3)
$V_{n+1}(w) >= w + B\lambda_n(w)\int_{\mathrm{Rn(w)}}^{\infty}[W(x) - V_n]dF(x) + Ba\lambda_n(w)\int_{\mathrm{Tn(w)}}^{\infty}[V_T(y) - V_n]dG(y) + BV_n - .5\left(\lambda_n(w)\right)^2 = V_n(w) + B(V_n - V_{n-1})[1 - B\lambda_n(w)(1 - F\left(R_n(w)\right) - Ba\lambda_n(w)\left(1 - G\left(T_n(w)\right)\right] > V_n(w)$ by the induction hypothesis.

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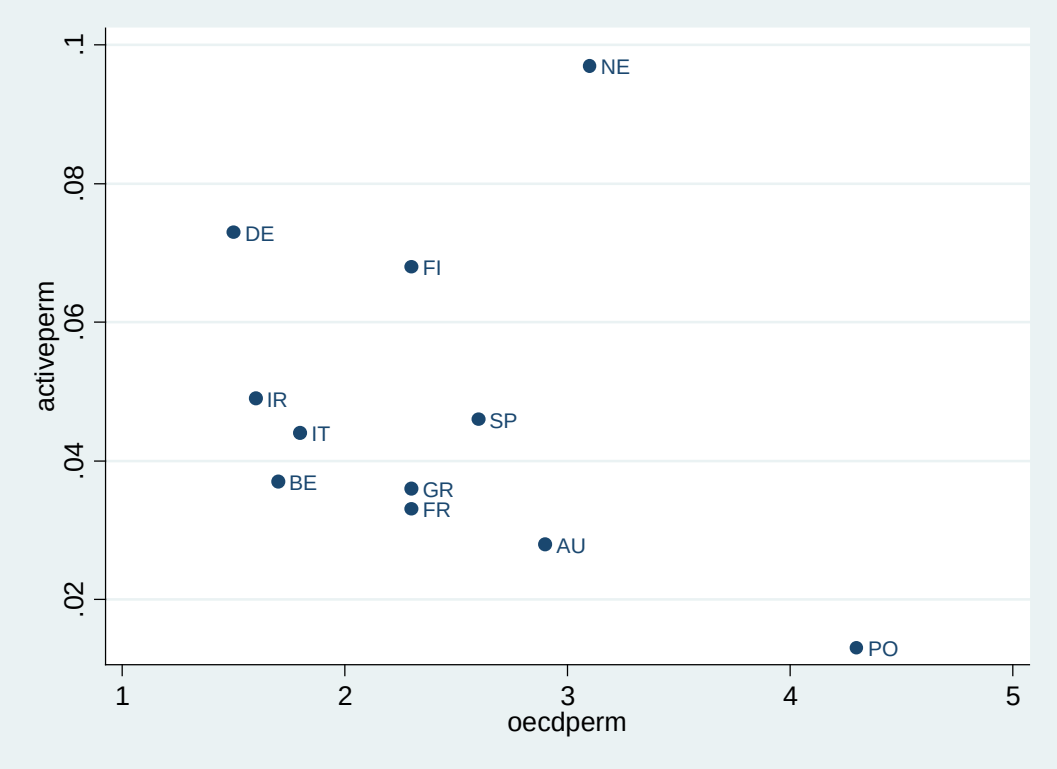
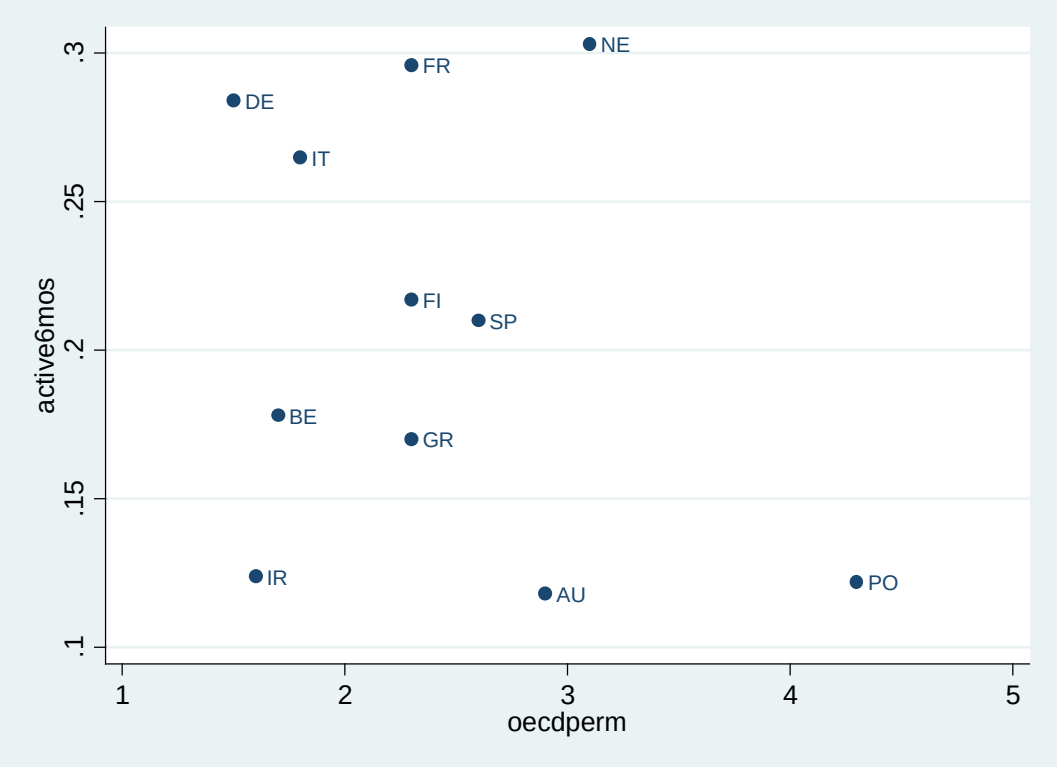
Figure 1: Incidence of Active Search Measures from Permanent Jobs by OECD Indicator of Strictness of Protection on Permanent Jobs



Source: Table 4 and OECD (2004), p. 117.

Figure 2: Incidence of Active Search Measures from Temporary Jobs with Under 6 Months' Duration by OECD Indicator of Strictness of Protection on Permanent Jobs



Source: Table 4 and OECD (2004), p. 117.

Table 1: Contract Duration and On the Job Search Effort, 1995-2001 (employed workers)

Employment Contract Type	Fraction of Sample	Incidence of On the Job Search	Incidence of Active Search Behavior	Sample Size
A. Temporary Contract				
< 6 months	0.022	0.276	0.217	5672
6 months to < 1 year	0.039	0.175	0.127	9915
1 year to under 2 years	0.019	0.179	0.132	4721
2 years to under 5 years	0.010	0.140	0.106	2308
5 years or more	0.004	0.152	0.096	779
2 years or more	0.013	0.143	0.103	3087
B. Permanent Contract	0.908	0.074	0.048	213919
Total	1.000	0.085	0.057	237314

Source: ECHP data. Adjusted sampling weights used, where the raw weights are modified so that each country receives the same total weight. Sample is limited to those age 16-65 from the following countries: Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain.

Table 2: Contract Duration Incidence by Country, 1995-2001

	Temporary Contracts with Duration:					
	< 6 months	6 months to < 1 year	1 year to < 2 years	2 years or more	Permanent Contracts	Sample Size
Austria	0.010	0.014	0.013	0.014	0.949	18221
Belgium	0.015	0.035	0.017	0.016	0.917	14449
Denmark	0.012	0.017	0.015	0.013	0.943	15669
Finland	0.039	0.049	0.031	0.013	0.867	18676
France	0.028	0.030	0.014	0.014	0.914	30315
Greece	0.011	0.046	0.013	0.017	0.913	14746
Ireland	0.013	0.014	0.015	0.010	0.948	13642
Italy	0.021	0.028	0.013	0.011	0.927	32172
Netherlands	0.012	0.007	0.006	0.007	0.967	27638
Portugal	0.014	0.073	0.021	0.009	0.884	25914
Spain	0.066	0.109	0.051	0.021	0.753	25872
Total	0.022	0.038	0.019	0.013	0.908	237314

Table 3: Incidence of On the Job Search by Contract Duration

	Temporary Contracts with Duration:				
	< 6 months	6 months to < 1 year	1 year to < 2 years	2 years or more	Permanent contracts
Austria	0.124	0.105	0.120	0.102	0.038
cell size	171	234	255	224	17337
Belgium	0.270	0.184	0.212	0.137	0.063
cell size	227	498	242	205	13277
Denmark	0.344	0.294	0.260	0.197	0.091
cell size	176	282	262	192	14757
Finland	0.254	0.203	0.179	0.168	0.092
cell size	757	926	595	257	16141
France	0.417	0.275	0.212	0.109	0.050
cell size	880	964	437	440	27594
Greece	0.274	0.180	0.211	0.115	0.055
cell size	170	793	200	267	13316
Ireland	0.157	0.142	0.210	0.093	0.065
cell size	189	219	218	160	12856
Italy	0.333	0.228	0.272	0.214	0.061
cell size	746	1006	441	403	29576
Netherlands	0.394	0.386	0.429	0.314	0.206
cell size	310	179	160	191	26798
Portugal	0.160	0.076	0.070	0.077	0.024
cell size	300	1950	604	183	22877
Spain	0.250	0.163	0.127	0.131	0.059
cell size	1746	2864	1307	565	19390
Total	0.276	0.175	0.179	0.143	0.074
cell size	5672	9915	4721	3087	213919

Table 4: Incidence of Active On the Job Search Measures by Contract Duration

	Temporary Contracts with Duration:				
	< 6 months	6 months to < 1 year	1 year to < 2 years	2 years or more	Permanent contracts
Austria	0.118	0.090	0.092	0.077	0.028
cell size	171	234	255	224	17337
Belgium	0.178	0.126	0.132	0.092	0.037
cell size	227	498	242	205	13277
Denmark	0.284	0.229	0.206	0.157	0.073
cell size	176	282	262	192	14757
Finland	0.217	0.163	0.137	0.150	0.068
cell size	757	926	595	257	16141
France	0.296	0.169	0.129	0.071	0.033
cell size	880	964	437	440	27594
Greece	0.170	0.107	0.142	0.074	0.036
cell size	170	793	200	267	13316
Ireland	0.124	0.108	0.169	0.075	0.049
cell size	189	219	218	160	12856
Italy	0.265	0.154	0.229	0.142	0.044
cell size	746	1006	441	403	29576
Netherlands	0.303	0.248	0.245	0.193	0.097
cell size	310	179	160	191	26798
Portugal	0.122	0.051	0.052	0.044	0.013
cell size	300	1950	604	183	22877
Spain	0.210	0.134	0.101	0.099	0.046
cell size	1746	2864	1307	565	19390
Total	0.217	0.127	0.132	0.103	0.048
cell size	5672	9915	4721	3087	213919

Table 5: Individual Fixed Effects Regression Results for Search Intensity, Pooled Across Countries

	Pooled	Men	Women
Age	-0.007**	-0.004*	-0.011**
	(0.002)	(0.002)	(0.002)
Age Squared	0.000*	0.000	0.000**
	(0.000)	(0.000)	(0.000)
Low Level Schooling	-0.002	0.008	-0.015
	(0.009)	(0.011)	(0.011)
Middle Level Schooling	0.005	0.011	-0.003
	(0.009)	(0.013)	(0.005)
Contract Duration <6 mos.	0.116**	0.125**	0.104**
	(0.012)	(0.016)	(0.017)
Contract Duration 6-12 mos.	0.036**	0.037*	0.035**
	(0.009)	(0.015)	(0.008)
Contract Duration 12-24 mos.	0.032**	0.021	0.042**
	(0.010)	(0.016)	(0.010)
Contract Duration 24+ mos.	0.021**	0.040*	-0.001
	(0.006)	(0.015)	(0.012)
Regional Unemployment rate	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.001)
Log Real Hourly Earnings	-0.022**	-0.029**	-0.012
	(0.006)	(0.007)	(0.008)
Year Dummies?	yes	yes	yes
N	237314	136699	100615
P- values for tests of Duration Coeffs:			
<6 mos. vs. 6-12 mos.	0.0000	0.0015	0.0028
<6 mos vs. 12-24 mos.	0.0001	0.0007	0.0204
<6 mos vs. 24+ mos.	0.0000	0.0045	0.0006
6-12 mos. vs. 12-24 mos.	0.6880	0.1076	0.6254
6-12 mos. vs. 24+ mos.	0.1989	0.8743	0.0102
12-24 mos. vs. 24+ mos.	0.2972	0.3792	0.0240

Standard errors clustered at the country level. Permanent contract is the omitted duration category.
+ p<0.10, * p<0.05, ** p<0.01

Table 6: Individual Fixed Effects Regression Results for Search Intensity, Separately by Country

	Austria	Belgium	Denmark	Finland	France	Greece
Age	-0.008*	-0.007	-0.001	-0.016+	-0.005	-0.013*
	(0.004)	(0.006)	(0.006)	(0.008)	(0.004)	(0.005)
Age Squared	0.000	0.000	-0.000	0.000	0.000	0.000+
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Low Level Schooling	0.037	-0.029	-0.019	0.019	-0.056	0.025
	(0.028)	(0.025)	(0.023)	(0.027)	(0.071)	(0.023)
Middle Level Schooling	0.050+	-0.030	0.004	0.043+	-0.059	0.001
	(0.025)	(0.021)	(0.019)	(0.023)	(0.052)	(0.016)
Contract Duration <6 mos.	0.064+	0.074+	0.169**	0.123**	0.174**	0.063
	(0.036)	(0.041)	(0.052)	(0.029)	(0.023)	(0.050)
Contract Duration 6-12 mos.	0.067*	0.001	0.118**	0.048*	0.055**	0.056*
	(0.026)	(0.030)	(0.040)	(0.024)	(0.020)	(0.023)
Contract Duration 12-24 mos.	0.041	-0.005	0.086*	0.004	0.045+	0.072+
	(0.026)	(0.036)	(0.037)	(0.025)	(0.027)	(0.039)
Contract Duration 24+ mos.	-0.003	0.035	0.021	0.008	-0.010	0.022
	(0.016)	(0.038)	(0.045)	(0.049)	(0.035)	(0.031)
Regional Unemployment rate	0.016*	0.001		-0.001	-0.001	0.002
	(0.006)	(0.001)		(0.001)	(0.003)	(0.003)
Log Real Hourly Earnings	0.002	-0.024	-0.029	-0.025	0.005	-0.055**
	(0.010)	(0.017)	(0.022)	(0.017)	(0.007)	(0.013)
Year Dummies?	yes	yes	yes	yes	yes	yes
N	18221	14449	15669	18676	30315	14746
P- values for tests of Duration Coeffs:						
<6 mos. vs. 6-12 mos.	0.9451	0.0948	0.4251	0.0290	0.0000	0.8885
<6 mos vs. 12-24 mos.	0.5852	0.1174	0.1862	0.0006	0.0001	0.8862
<6 mos vs. 24+ mos.	0.0792	0.4943	0.0243	0.0303	0.0000	0.5014
6-12 mos. vs. 12-24 mos.	0.4670	0.8777	0.5446	0.1016	0.7280	0.7106
6-12 mos. vs. 24+ mos.	0.0345	0.4883	0.1001	0.4211	0.0687	0.3805
12-24 mos. vs. 24+ mos.	0.1236	0.4965	0.2392	0.9378	0.2480	0.3528

+ p<0.10, * p<0.05, ** p<0.01

Table 6 (ctd): Individual Fixed Effects Regression Results for Search Intensity, Separately by Country

	Ireland	Italy	Netherlands	Portugal	Spain
Age	-0.015+	-0.010**	-0.009	0.002	-0.010
	(0.008)	(0.004)	(0.006)	(0.003)	(0.007)
Age Squared	0.000+	0.000*	0.000+	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Low Level Schooling	-0.029	-0.027	0.002	0.001	-0.036*
	(0.026)	(0.048)	(0.040)	(0.026)	(0.018)
Middle Level Schooling	-0.025	-0.027	0.041	0.009	-0.009
	(0.021)	(0.047)	(0.041)	(0.022)	(0.017)
Contract Duration <6 mos.	0.043	0.135**	0.177**	0.079**	0.099**
	(0.053)	(0.025)	(0.041)	(0.027)	(0.020)
Contract Duration 6-12 mos.	0.005	0.028	0.062	0.012	0.020
	(0.025)	(0.018)	(0.044)	(0.012)	(0.016)
Contract Duration 12-24 mos.	0.081*	0.049+	0.016	0.031	0.010
	(0.039)	(0.028)	(0.051)	(0.021)	(0.016)
Contract Duration 24+ mos.	0.048	0.039	0.068	0.003	0.014
	(0.042)	(0.027)	(0.070)	(0.024)	(0.024)
Regional Unemployment rate	-0.001	0.003+		0.005*	-0.002
	(0.004)	(0.002)		(0.002)	(0.002)
Log Real Hourly Earnings	-0.033*	-0.048**	-0.013	-0.025**	-0.037+
	(0.014)	(0.012)	(0.011)	(0.010)	(0.021)
Year Dummies?	yes	yes	yes	yes	yes
N	13642	32172	27638	25914	25872
P- values for tests of Duration Coeffs:					
<6 mos. vs. 6-12 mos.	0.4909	0.0001	0.0445	0.0165	0.0003
<6 mos vs. 12-24 mos.	0.5337	0.0166	0.0070	0.1510	0.0001
<6 mos vs. 24+ mos.	0.9277	0.0079	0.1670	0.0336	0.0033
6-12 mos. vs. 12-24 mos.	0.0869	0.5257	0.4704	0.4066	0.5758
6-12 mos. vs. 24+ mos.	0.3408	0.7406	0.9398	0.7049	0.8063
12-24 mos. vs. 24+ mos.	0.5394	0.7828	0.5357	0.3487	0.8749

+ p<0.10, * p<0.05, ** p<0.01

Permanent contract is the omitted duration category. Standard errors are heteroskedasticity robust.

Table 7: Regulation of Temporary and Regular Employment Contracts, Late 1990s

	Temporary Contracts		Regular Employment
	Maximum Number	Maximum Total Duration	OECD Protection Strictness Index
Austria	1.5	None	2.9
Belgium	4	30 months	1.7
Denmark	1.5	30 months	1.5
Finland	1.5	None	2.3
France	2	18 months	2.3
Greece	2.5	None	2.3
Ireland	None	None	1.6
Italy	2	18 months	1.8
Netherlands	3	None	3.1
Portugal	3	30 months	4.3
Spain	3	24 months	2.6

Source: OECD (2004), pp. 113 and 117. Protection Strictness Index ranges from 0 (least strict) to 6 (the most restrictive laws).

Table 8: Incidence of One Year Transition Rates to Permanent Job from Temporary Job in the Same Firm, by Temporary Contract Duration

Duration of Last Year's Temporary Contract	All Workers	Workers with No Search Effort
0-6 months	0.157	0.174
6-12 months	0.200	0.214
12-24 months	0.229	0.243
24+ plus	0.177	0.184
Total	0.192	0.206
Sample size	17691	15171

Sample includes those who had a temporary contract one year ago. The figures represent the fraction of this sample that was at the same firm at the current year's interview and had a permanent contract.

Table 9: Individual Fixed Effects Results for the Incidence of One Year Transition Rates to Permanent Job from Temporary Job in the Same Firm, by Temporary Contract Duration

	All Workers with Temporary Jobs at Previous Interview			Workers with Temporary Jobs at Previous Interview Who Had No Search Activity		
	Pooled	Men	Women	Pooled	Men	Women
Age	0.127**	0.123**	0.133**	0.132**	0.129**	0.133**
	(0.015)	(0.027)	(0.021)	(0.019)	(0.032)	(0.023)
Age Squared	-0.001**	-0.001+	-0.001**	-0.001**	-0.001+	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Low Level Schooling	-0.277+	-0.252+	-0.241	-0.278+	-0.246	-0.251+
	(0.138)	(0.138)	(0.147)	(0.132)	(0.162)	(0.133)
Middle Level Schooling	-0.045	0.021	-0.112	-0.025	0.032	-0.087+
	(0.033)	(0.069)	(0.072)	(0.029)	(0.070)	(0.044)
Contract Duration 6-12 mos. (prev. yr)	0.014	0.038	-0.006	0.024	0.046	0.006
	(0.018)	(0.026)	(0.026)	(0.022)	(0.033)	(0.037)
Contract Duration 12-24 mos. (prev yr)	0.016	0.014	0.016	0.015	-0.003	0.030
	(0.020)	(0.039)	(0.024)	(0.016)	(0.037)	(0.028)
Contract Duration 24+ mos. (prev yr)	0.046	0.041	0.050	0.032	0.028	0.033
	(0.034)	(0.035)	(0.045)	(0.043)	(0.033)	(0.065)
Regional Unemployment rate	-0.009*	-0.014*	-0.004	-0.011*	-0.016*	-0.006
	(0.004)	(0.006)	(0.004)	(0.005)	(0.006)	(0.004)
Log Real Hourly Earnings (prev yr)	0.014	0.010	0.021	0.013	0.021	0.011
	(0.031)	(0.048)	(0.032)	(0.023)	(0.045)	(0.026)
Year Dummies?	yes	yes	yes	yes	yes	yes
N	17691	8866	8825	15171	7612	7559
P- values for tests of Duration Coeffs:						
6-12mos=12-24mos=24+mos=0	0.5709	0.5029	0.1408	0.6583	0.5786	0.5162
6-12 mos. vs. 12-24 mos.	0.9154	0.5582	0.2795	0.7173	0.3584	0.4336
6-12 mos. vs. 24+ mos.	0.1991	0.9266	0.1833	0.8301	0.6292	0.6268
12-24 mos. vs. 24+ mos.	0.3462	0.4957	0.5202	0.7297	0.5735	0.9598

+ p<0.10, * p<0.05, ** p<0.01

Sample for columns 1-3 includes all who had a temporary job at the previous interview.
Sample for columns 4-6 includes those with temporary jobs at the previous interview who had no search activity. Omitted duration category is 0-6 months.

Table A1: Transition Rates for Jobseekers: From Temporary Jobs to Permanent or New Temporary Jobs

Temporary Job Duration	Transitions to:		
	Permanent Job	New Temporary Job	N
< 6 months	0.474	0.330	796
6-12 months	0.475	0.293	867
12-24 months	0.487	0.169	398
24+ months	0.627	0.130	199
All	0.495	0.260	2260

Sample includes people in temporary jobs who were searching for a new job.

Table A2: Mean Values for Full Sample, Those Who Changed Contract Duration During the Panel, and Those Currently in Temporary Jobs

	Full Sample	Changed Contract Duration	Currently on Temporary Job
incidence of Active Search	0.057	0.106	0.146
Age	38.546	33.405	32.040
Age Squared	1597.227	1207.482	1125.964
Low Level Schooling	0.293	0.322	0.361
Middle Level Schooling	0.411	0.362	0.342
Contract Duration <6 mos.	0.022	0.092	0.236
Contract Duration 6-12 mos.	0.038	0.175	0.416
Contract Duration 12-24 mos.	0.019	0.098	0.205
Contract Duration 24+ mos.	0.013	0.064	0.142
Female	0.425	0.481	0.503
Regional Unemployment Rate	9.361	10.381	11.747
Log Real Hourly Earnings	1.926	1.737	1.649
Denmark	0.091	0.076	0.056
Netherlands	0.091	0.038	0.032
Belgium	0.091	0.092	0.081
France	0.091	0.071	0.085
Ireland	0.091	0.051	0.051
Italy	0.091	0.083	0.071
Greece	0.091	0.089	0.085
Spain	0.091	0.195	0.243
Portugal	0.091	0.123	0.114
Austria	0.091	0.068	0.050
Finland	0.091	0.112	0.131
Sample Size	237314	37396	23395

Sampling weights are used, where each country in the full sample receives the same total weight.

Table A3: Individual Fixed Effects Results for the Incidence of One Year Transition Rates to Permanent Job from Temporary Job in the Same Firm, by Temporary Contract Duration for Those Who Had No Search Activity, by Country

	Austria	Belgium	Denmark	Finland	France	Greece
Age	0.073	0.168*	-0.010	0.185**	0.142**	0.143*
	(0.073)	(0.083)	(0.128)	(0.058)	(0.038)	(0.060)
Age Squared	-0.000	-0.001	0.001	-0.002*	-0.001*	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.000)	(0.001)
Low Level Schooling	0.094	0.032	-0.581	-0.211	0.014	0.447*
	(0.214)	(0.230)	(0.453)	(0.142)	(0.211)	(0.181)
Middle Level Schooling	-0.032	0.165*	-0.024	-0.130	-0.069	0.309**
	(0.147)	(0.073)	(0.279)	(0.120)	(0.205)	(0.094)
Contract Duration 6-12 mos. (prev. yr)	0.018	0.131	0.297+	-0.030	-0.008	-0.061
	(0.089)	(0.090)	(0.153)	(0.039)	(0.037)	(0.185)
Contract Duration 12-24 mos. (prev yr)	0.100	0.016	0.154	0.005	0.019	0.050
	(0.108)	(0.103)	(0.119)	(0.044)	(0.052)	(0.198)
Contract Duration 24+ mos. (prev yr)	-0.114	0.170	0.241*	0.026	-0.001	-0.149
	(0.151)	(0.115)	(0.121)	(0.062)	(0.058)	(0.240)
Regional Unemployment rate	-0.011	0.038		-0.011	0.014	-0.056
	(0.099)	(0.050)		(0.007)	(0.018)	(0.037)
Log Real Hourly Earnings (prev yr)	-0.109	0.002	0.052	0.009	-0.038	-0.111
	(0.113)	(0.114)	(0.134)	(0.065)	(0.048)	(0.079)
Year Dummies?	yes	yes	yes	yes	yes	yes
N	626	821	535	1515	1696	927
P- values for tests of Duration Coeffs:						
6-12mos=12-24mos=24+mos=0	0.2827	0.1372	0.1558	0.6271	0.9395	0.3446
6-12 mos. vs. 12-24 mos.	0.3726	0.1350	0.3058	0.3570	0.5343	0.3071
6-12 mos. vs. 24+ mos.	0.2902	0.6477	0.6796	0.2754	0.8826	0.4538
12-24 mos. vs. 24+ mos.	0.0713	0.0571	0.3181	0.6579	0.7268	0.0788

+ p<0.10, * p<0.05, ** p<0.01

Table A3 (ctd) : Individual Fixed Effects Results for the Incidence of One Year Transition Rates to Permanent Job from Temporary Job in the Same Firm, by Temporary Contract Duration for Those Who Had No Search Activity, by Country

	Ireland	Italy	Netherlands	Portugal	Spain
Age	0.461	0.131*	0.191*	0.090	0.108**
	(0.281)	(0.053)	(0.086)	(0.104)	(0.041)
Age Squared	-0.004**	-0.001+	-0.002+	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Low Level Schooling	-0.634+	-0.243		-0.207	-0.219**
	(0.361)	(0.289)		(0.246)	(0.080)
Middle Level Schooling	0.078	0.007		0.057	-0.155*
	(0.320)	(0.212)		(0.124)	(0.061)
Contract Duration 6-12 mos. (prev. yr)	-0.105	-0.067	-0.069	0.024	0.031
	(0.103)	(0.055)	(0.107)	(0.062)	(0.028)
Contract Duration 12-24 mos. (prev yr)	-0.045	-0.133	-0.006	0.101	0.035
	(0.099)	(0.112)	(0.090)	(0.097)	(0.042)
Contract Duration 24+ mos. (prev yr)	-0.085	-0.049	0.071	0.263*	0.088+
	(0.130)	(0.096)	(0.098)	(0.108)	(0.053)
Regional Unemployment rate	0.025	-0.010		-0.014	-0.004
	(0.139)	(0.014)		(0.030)	(0.013)
Log Real Hourly Earnings (prev yr)	0.050	0.111	0.055	0.118	0.071
	(0.130)	(0.079)	(0.166)	(0.124)	(0.046)
Year Dummies?	yes	yes	yes	yes	yes
N	458	1565	456	2223	4349
P- values for tests of Duration Coeffs:					
6-12mos=12-24mos=24+mos=0	0.7836	0.5459	0.7246	0.0552	0.3903
6-12 mos. vs. 12-24 mos.	0.5995	0.5312	0.6102	0.3060	0.9277
6-12 mos. vs. 24+ mos.	0.8668	0.8503	0.2609	0.0063	0.2435
12-24 mos. vs. 24+ mos.	0.7085	0.5009	0.4830	0.0682	0.3654

+ p<0.10, * p<0.05, ** p<0.01

Omitted duration category is 0-6 months. Standard errors are heteroskedasticity robust.