Pension Choices and Job Mobility in the UK.

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Abstract

Using data from the British Household Panel Survey we analyze the impact of second tier pension scheme choices on job mobility within a discrete time hazard rate framework. We find that workers either offered and participating or offered and not participating to an occupational pension plan have significantly lower quit rates. However, once the endogeneity of pension scheme status is accounted for through an instrumental variable procedure, these coefficients are no more significant. Alternatively, the effect of pension portability losses on quits' hazards is never significant. The additional finding that workers participating to occupational pension plans are significantly less likely to quit for a non pension job can be interpreted as indirect evidence that they are in "good" jobs.

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1 Introduction

Notwithstanding the pension reforms implemented in the last three decades, portability of occupational pension rights is still a matter of public policy concern in the United Kingdom. While provisions such as the reduction of the vesting period, inflation indexation of deferred rights and the introduction of transfer options, have improved the position of early leavers from occupational pension plans, there is still concern that a lack of pension portability could be detrimental to labour market efficiency. Little empirical work has been produced to support the policy debate. The few available empirical studies are based on cross sectional data with retrospective questions or on short panel data and/or do not take into account workers' selection into pension arrangements. The "selection" issue is particularly relevant in the UK context, where workers have the right to choose among different pension arrangements provided to supplement the basic State pension. This institutional framework is the outcome of a number of reforms aiming to stimulate labour market flexibility through more extensive pension choices.

We estimate discrete time hazard rate models of job to job mobility where transitions are defined according to exit reasons (voluntary/involuntary) and destination states (quit to pension/non pension jobs). Our objective is to analyze the impact of

occupational and personal pension arrangements on voluntary job mobility. If pension participation status reflects workers' choices, neglecting this endogeneity will introduce bias in the estimates. We deal with this problem using an instrumental variables (IV) approach. In particular, to identify the effect of pension choices on job mobility hazards we exploit the exogenous variation provided by a derived instrumental variable representing the occupational pension offer rate by industry, union coverage and firm size. The occupational pension offer rate is expected to bear a positive and significant correlation with occupational pension coverage and participation while being unrelated to job turnover. Such a variable is included in the pension choice probit equations while being excluded from the job to job transition hazards.

We find that the effects of occupational pension schemes on job mobility hazards change significantly while moving from the "simple" hazard model to the IV hazard model. In the former, workers either offered and participating or offered but not participating to an occupational pension plan have significantly lower quit rates. However, once endogeneity is accounted for the occupational pension effects are no more significant. The validity of our instrument is confirmed by its statistical significance in explaining pension choices as well as by an Hausman endogeneity test. These results confirm the importance of accounting for the endogeneity of pension choices, an issue

that has been disregarded by most of the empirical literature. The additional finding that workers participating to an occupational pension plan are significantly less likely to quit towards a non pension job can be interpreted as indirect evidence that they are in "good" jobs.

The remaining of the paper is organized as follows. The next section describes the structure of the UK pension system, focusing on its second pillar and on occupational pensions portability regulation. Section 3 reviews the empirical literature. Section 4 introduces the empirical modelling framework. Section 5 describes the data. Section 6 illustrates the results. Section 7 concludes.

2 Pension Choices and Portability Issues in the United Kingdom

The current UK pension system has a three tiered structure. The first tier is public, and consists of a basic flat-rate pension as well as of a means-tested benefit. The second tier is mandatory and pension provision is split between the State - in the form of the State Earnings-Related Pension Scheme (SERPS) - and private companies - in the form of occupational - employer sponsored - and personal pension schemes. Finally, there is a third tier of voluntary private retirement saving.

The wide variety of retirement pension plans currently offered in the UK is the result

of a number of reforms undertaken over the last 25 years, whose main aim was to offer individuals a wider choice of retirement pension vehicles. Central to this strategy was the "contracting-out" mechanism, introduced originally in 1978 as a means of integrating existing occupational DB pension schemes into the SERPS.[1] While employees with earnings in excess of a "lower earning limit" were automatically enrolled into SERPS, initially they were also given the option of contracting-out into an approved defined benefit (DB) occupational pension scheme.[2] The 1986 Social Security Act extended the contracting-out option to approved defined contribution (DC) plans[3] and to approved personal pensions.[4] Moreover, any contractual membership requirement to an employer's scheme was abolished, while employees were allowed to "opt out" from an occupational plan to subscribe a personal pension.

Employers are not mandated to sponsor an occupational pension plan nor an approved occupational pension plan[5], while employees can always decide to remain into SERPS or to later reenter it. Finally, individuals can eventually top up their occupational or personal pension with additional voluntary contributions or free-standing additional voluntary contributions (up to the limits permitted by the Island Revenue).[6]

Tables 1 and 2 report figures elaborated from the *Occupational Pensions Schemes Survey* collected over the 90s by the Government Actuary.[7] Table 1 indicates that there

has been a downward trend in private sector occupational pension schemes' membership over the decade. Alternatively, the distribution of active members by type of plan has remained relatively stable over time, with more than 80 percent of plan participants belonging to DB plans. Table 2 indicates that the level of contracting-out also has been fairly stable over time, with more than 80 percent of private sector workers participating to contracted-out plans. Most workers participate to contracted-out DB plans - Contracted-Out Salary Related (COSR) schemes - while a minority of workers participate to contracted-out DC plans - Contracted-Out Money Purchase (COMP) schemes. A minority of workers participate to Contracted In Salary Related (CISR) or Money Purchase (CIMP) schemes.

Pension regulation usually defines the standard portability options available to a worker leaving an occupational pension plan before retirement age. According to this general framework, pension portability rules in a pension plan define the rights of early leavers. Typically, these rules provide that an individual is entitled to join a pension plan only upon satisfaction of some eligibility condition (related to service, age or employment status). Once eligible, workers joining an occupational pension plan are usually required to complete a further vesting period before being entitled to any pension rights' accrual. Eligibility conditions and vesting periods apply to occupational

pension plans independently of their DB/DC nature. While vesting periods are usually short - e.g. 2 years in the UK - a more relevant portability issue is typically arising in DB plans, because of their implicitly backloaded pension rights' accrual structure. The typical DB plan promises workers to pay a retirement pension annuity related to the length of service and to the final salary. In case a separation occurs before retirement, vested workers are entitled to a deferred retirement pension determined on the basis of earnings received upon leaving the firm. If deferred benefits are not indexed to inflation and to productivity growth even workers moving betweens firms offering identical DB plans and wage profiles will accumulate lower total pension benefits than workers remaining in the same firm throughout their career. The shortfall of actual retirement benefits from those that would have been paid if there had been no change in scheme membership as a consequence of job separations during the worker career represents the opportunity cost of leaving the current pension plan[8].

In contrast, workers covered by DC arrangements have a legal claim on the individual pension account in which all pension contributions have been invested. If the funds remain in the account after the worker leaves the firm, the account will continue to grow by the accumulated returns on invested assets. Alternatively, the funds can be transferred to a different occupational or personal pension plan. In either case, DC

plans can be defined as fully portable, given that a job changer retains the full value of his/her pension account.

While in the UK there are not specific legislative provision regarding eligibility conditions to an occupational plan[9], a number of legislative changes have contributed to improve the situation of early leavers over the last 25 years. Before 1975, early leavers had no legal right to transfer their accrued pension entitlements to a new scheme or even to receive deferred benefits from their old scheme. Under the current rules, the vesting period is set at two years of pension plan membership. In particular, vested early leavers from DB plans can have their accrued rights preserved in the pension scheme as deferred benefits, to be revalued until retirement guaranteeing a minimum "limited price indexation" in line with the Retail Price Index, up to a maximum of 5 percent. Alternatively they can take a tax free transfer value to a different occupational pension scheme (either DB or DC) or to an approved personal pension or to purchase a retirement annuity.

3 Literature

The impact of employer provided pension plans on individual job mobility choices has been widely investigated in the US pension literature. While early empirical studies[10] documented a significant negative correlation between plan participation and job mo-

bility, more recent literature has tried to explain this stylized fact using three main arguments: pension portability losses arising to early leavers from DB plans[11], compensation premiums accruing to pension covered workers[12] or the "self-selection" of "low discounters" into pension jobs[13].

Evidence for the United Kingdom is essentially limited to five previous studies.

McCormick and Hughes (1984) use the 1974 General Household Survey (GHS) to estimate "intentions to quit" and turnover logit equations. While they explicitly derive pension portability losses, their empirical specification only contains a pension participation dummy and its interaction with job tenure. They find that pension workers are significantly less likely to move, while the negative and significant size of the interaction term suggests that tenure matters only in pension jobs.

Henley, Disney and Carruth (1994) use the 1985 GHS to estimate hazard rates of exit from jobs without distinguishing between exit routes. They find that occupational pension scheme membership significantly decreases the hazard, while transferability of pension rights increases it. They include a quadratic pension-tenure interaction term which turns out to be negative and significant, confirming the McCormick-Hughes proposition that the pension loss function is time dependent and possibly non-linear.

Mealli and Pudney (1996) is the only study that takes into account the potential en-

dogeneity of pension participation choices, although the use of the retrospective sample design provided by the 1988-1989 Retirement Survey could undermine the accuracy of their results. They analyze the role of unobserved individual specific characteristics in explaining the relationship between pension coverage status and labor force transitions. Estimating a random-effects competing risks model they provide evidence of a strong positive association between the length of job tenure and pension participation status, while no role is found for unobservables. These findings run against the self-selection hypothesis; however, the role of pension portability losses is not explicitly modelled.

In a recent paper[14], we use data from the European Community Household Panel (ECHP) survey to analyze the effect of occupational pensions and pension portability losses on interfirm job mobility within a switching regression framework. We find that UK workers participating to an occupational pension plan are significantly less likely to move, while pension portability losses do not seem to act as a significant mobility impediment. Rather, the finding of positive wage premiums accruing to occupational pension workers is consistent with the view that the latters are less likely to leave because they hold "good" jobs.

A more recent study is provided by Disney and Emerson (2002) using BHPS data. They find that not only those workers who join an occupational pension plan offered

by their employer but also those who decline to join it have significantly lower mobility rates. Moreover, they also find that employees contracting-out a personal pension have significantly lower mobility rates. Disney and Emerson (2002) suggest that these results could be explained through different selection processes inducing alternative pension choices. However, their modelling approach does not account for the endogenous nature of pension choices, therefore not providing a direct test of such selection arguments.

The contribution of the present paper to the existing pension literature is three-fold. First, and most importantly, in the empirical modelling of job mobility behavior we account for the endogeneity of pension schemes choice using instrumental variable techniques. Second, we explicitly test the impact of pension portability losses on voluntary job mobility. Third, we exploit the richness of a data set that provides detailed information on occupational and personal pension participation status and that follows individuals over a relatively long time period. Indeed, our empirical approach fully exploits the time varying dimension of the data.

4 Estimation Method

We are interested in modelling the length of the employment spell for individuals with their current employer. Individuals in the sample are indexed by $i = 1, ..., n$, while the passage of calendar time is set in integer years. Year $d_i = 1$ is the year in which

the respondent started working with the current employer (and is before the sample selection year). Let $d_i = j_i$ index the sample selection year, which can be different for different individuals. Each of the respondent is then interviewed approximately one year later. If the individual subsequently moves we denote the length of the spell running after the first interview date by k_i. So, the calendar time of a spell end is denoted by $d_i = j_i + k_i$. Otherwise, k_i denotes the censoring point at the end of the observation window. Our panel is unbalanced in that we follow individuals until they are no more observed in their "current employment" spell, either because they experience a job to job transition or because they drop out from the survey, or because they experience a transition to another state (e.g. unemployment, out of the labour force). While respondents experiencing a job to job transition before the end of the observation window contribute complete duration data, all the others contribute censored duration data, with censoring immediately before the end of the interval between two consecutive waves. However, observations censored because they remained in the current employer are still at risk of experiencing a transition during the observation period.

Suppose that job to job transitions are determined as discrete time counterparts to an underlying continuous time proportional hazards model:

$$\theta_i(t) = \lambda(t) \exp(\mathbf{x}'_{it}\boldsymbol{\beta}), \tag{1}$$

where $\lambda(t)$ denotes the baseline hazard, $\mathbf{x}_{it}$ is a vector of time variant/invariant explanatory variables, and $\boldsymbol{\beta}$ is a vector of unknown coefficients. The discrete time hazard denotes the probability of the current employment spell being completed by time $t+1$, given that it was still continuing at time t, and is given by:

$$h_i(t) = 1 - \exp\left\{-\int_t^{t+1} \theta_i(u)du\right\} = 1 - \exp\left\{-\exp(\mathbf{x}'_{it}\boldsymbol{\beta})\gamma(t)\right\}, \tag{2}$$

where:

$$\gamma(t) = \int_t^{t+1} \lambda(u)du \tag{3}$$

denotes the integrated baseline hazard. We do not specify any functional form for $\gamma(t)$ and estimate the model semiparametrically.

In order to avoid the bias deriving from the fact that we are using a "stock sampling" rather than a "flow sampling" design, we need to condition transition rates on the length of the spell at the first interview date.[15] The individual likelihood contribution can be written as:

$$\begin{aligned} L_i &= c_i \ln h_i(j_i + k_i) + \sum_{t=j_i+1}^{j_i+k_i-1} \ln\left\{\ln(1 - h_i(t)\right\} \\ &= c_i \ln\left(1 - \exp - \left[-\left\{\exp \mathbf{x}'_{it}\boldsymbol{\beta} + \gamma(j_i + k_i)\right\}\right]\right) \\ &\quad - \sum_{t=j_i+1}^{j_i+k_i-1} \exp\left\{\mathbf{x}'_{it}\boldsymbol{\beta} + \gamma(t)\right\} \end{aligned} \tag{4}$$

where c_i is a censoring indicator that takes the value 1 if d_i is uncensored and zero

otherwise.

The model outlined specifies the likelihood of a single risk: the overall job to job transition. We are however interested in distinguishing observed transitions on the basis of their cause (voluntary/involuntary) and, for voluntary transitions, on the basis of their destination state (occupational pension covered/not covered job). We estimate the parameters of a given cause-specific hazard by treating spells ending for other reasons as censored at the time of exit.

The simple hazard model specification includes among the regressors four dummy variables indicating pension schemes participation status. However, if the latter reflects workers' choices, neglecting this endogeneity will introduce bias in our estimates. We deal with this problem using an instrumental variables (IV) approach.

In general, IV estimation requires at least one explanatory variable satisfying an exclusion restriction which is directly related to the identification issue: the variable used as an instrument must not have any direct influence on the outcome variable, while any influence on it should be only indirect through the instrumented explanatory variable. When discussing IV estimation methods the focus is usually on linear outcome equations. In our case we deal with a nonlinear outcome equation. As Sueyoshi (1995) demonstrate, the discrete hazard rate model can be interpreted as a special case of a

binary choice model. This implies that it is not strictly required to impose an exclusion restriction as identification is guaranteed by means of nonlinearities of the functional form, although the availability of a valid instrument makes identification indipendent of functional form assumptions.

Consistent two step estimation in the resulting class of simultaneous probability models has been discussed by Mallar (1977) and Angrist, Imbens and Rubin (1996). Recent applications include Dearden, Machin, Reed and Wilkinson (1997), Veum (1997) and Hujer, Maurer and Wellner (1999). They all estimate probit models to obtain individual training participation propensities which are then used to instrument the potentially endogenous training variables.

We follow a similar approach, estimating probit equations for the available pension choices, where workers that have not been offered an occupational pension plan and that do not contract-out a personal pension are kept as the reference category . Predicted probabilities are then computed for each pension choice equation and substituted for the pension participation dummies in the hazard rate equations. The standard errors in the IV hazard outcome equations are bootstrapped in order to account for first-step estimation.[16] Identification of the hazard IV models is achieved through an exclusion restriction. In particular, we exploit the exogenous variation provided by a derived

variable representing the occupational pension offer rate by industry, union coverage and firm size, as tabulated in Table 3. Such a variable is included in the pension choice equations while being excluded from the job to job transition hazards. The occupational pension offer rate is expected to bear a positive and significant correlation with occupational pension coverage and participation, while being unrelated to job turnover.

5 Data

The data used in the analysis are from waves 1 to 9 of the British Hosehold Panel Survey (BHPS). The first wave, carried out in the autumn of 1991, covered a nationally representative random sample of the UK population consisting of about 5.500 households and 10.000 individuals. The original respondents, as well as any adult co-residents, were then followed over time through annual interviews usually conducted each year from September to April of the following year.

We have selected a stock sample of private - non agricultural, no construction - sector full time male employees aged 20 to 50 at the time they are first observed in full time employment. The upper age limit is set at 50 in order to avoid sample selection related to retirement, while the analysis excludes females because they usually have different employment and job mobility patterns. We follow the individuals in our sample until

they separate from their current employer. In order to observe transitions, the minimum data requirement is that individuals are interviewed at least in two consecutive waves.

The BHPS collects detailed information on individuals' job related and socio-economic characteristics. Working age individuals are asked to complete an employment history each year looking back over the previous year, and from these histories it is possible to identify the end of an employment spell and the motivations behind it. We define a quit, or voluntary separation, as a job separation motivated by the take up of a better job with a different employer as well as by other personal related reasons. Layoffs, or involuntary separations, are consequently defined as a residual category containing individuals dismissed from their job or completing a temporary contract.

Workers participating to an occupational pension scheme usually have to leave it while changing employer. The BHPS contains a number of questions about employees' pension arrangements. Employees are asked if their current employer runs a pension scheme for which they are eligible and if they participate to it.[17] In addition, from the second wave onwards all respondents are asked if they have subscribed a personal pension plan and its starting date. Through the latter question we can define personal pension participation in the first wave of the survey as well. A limitation of the BHPS is that it does not provide any description of occupational pension plan characteristics

(including their DB/DC nature). The calculation of pension portability losses, included as a control in one of the model's specifications, is then based on the features of the typical UK private sector DB occupational plan, as reported in Table 4. This assumption should be a reasonable approximation, given the low proportion of workers covered by DC plans, and given that the tight regulation and market competition have led to a considerable degree of similarity between the features of most DB schemes.[18]

6 Results

6.1 Determinants of Pension Choices

Table 5 reports the participation rates of private sector male employees when first observed in our sample. About three quarters of private sector full time employees are offered an occupational pension plan, while the take-up rate is only 61 percent.[19] More than half of those who decline to join opt out for a personal pension. Workers not offered an occupational pension are found to be equally divided in two further categories: those that contracted-out a personal pension, and those who decide to stay into SERPS. Table 6 indicates that workers belonging to the five second tier pension arrangements are different along many observable dimensions. In particular, workers who joined an occupational pension plan earn the highest net hourly wages, are the most likely to be union member, to have a degree, to be managers and to be in large

firms. These differences are confirmed in the probit regression estimates reported in Table 7, where workers not offered an occupational plan and not contracting out a personal pension are kept as the reference category.[20] Column 1 shows that union members, managers and white collar workers, as well as savers are significantly more likely to join an occupational pension plan. Alternatively, column 2 indicates that union members, higher educated and savers are less likely to decline to join an offered plan and to stay into SERPS, while vocational qualification and household size display an opposite effect. These estimates will be used later in the IV estimation procedure. In this respect, the results reported in Table 7 confirm the validity of our instrument - the pension offer rate - in explaining significantly the decision to join an occupational pension plan as well as the decision to contract-out a personal pension.

6.2 Pension Participation and Job Mobility

Table 8 summarizes job turnover, quits and layoffs over the observation period by pension participation status. The distinction between quits and layoffs is particularly important to our purposes. The negative link between occupational pension participation and voluntary mobility is a well established finding in the US empirical literature, although the causes of such a relationship are still debated. The pension literature has also documented a negative relationship between employer provided pensions and

layoffs.[21] The latter finding has been motivated with the implicit nature of the pension contract acting as a firing constraint for the firm, through the reputation costs that would arise upon breaking the implicit contract. Figures from Table 8 confirm these stylized facts also for the UK. In our sample, the quit rate of workers participating to an occupational pension plan is about 4 times lower of that of workers not offered an occupational pension arrangement and staying into SERPS. It is interesting to note that also workers who decline to join an occupational pension plan offered by their employer as well as workers contracting-out a personal pension have lower quit rates than those in the reference category. The link between pension scheme participation and layoffs follows a similar pattern, although it appears to be weaker.

The above results are suggestive of a negative correlation among occupational pension participation and job mobility. However, a multivariate analysis is needed in order to assess if there is any causality link.

Tables 9 and 10 report the results obtained from estimation of the hazard models for job turnover, quits and layoffs. The hazard rates are conditioned on observable time constant as well as time varying covariates that can be grouped in three categories:

- *personal and household characteristics*: include a marital status dummy (reference: married), age at the first interview, number of children, household size and

income, 3 education dummies (degree, a-level, o-level; reference: lower education), a vocational qualification dummy (reference: no qualification), 5 region dummies (London, East, West-North, Scotland; reference: South and Wales), 3 housing tenure dummies (house owner outright, private rental, subsidized rental; reference: house owner with mortgage), a dummy for spouse employment status (reference: spouse not employed or not married), experience and experience squared;

- *job specific characteristics*: include net hourly wage, travel time to work, 2 occupation dummies (manager and professional, white collar worker; reference: blue collar worker), 2 worker's supervisory status dummies (managerial, supervisor; reference: no supervisory role), 2 industry dummies (distribution, services; reference: manufacturing), a union membership dummy (reference: not member), 2 firm size dummies (large, medium, reference: small);

- *pension variables*: include pension portability loss computed for workers enrolled in an occupational DB plan and 4 dummies indicating workers' pension participation status (joins an occupational pension plan, does not join the plan offered opting out for a personal pension, does not join the plan offered remaining into SERPS, contracts-out a personal pension; reference: is not offered an occupational pension plan, and remains into SERPS).

We assume a flexible "semiparametric" piece-wise form for the baseline hazard. Duration dependence is captured through 11 job duration dummies, one for each of the first ten years and a further dummy that groups durations over 10 years.

The coefficients reported in Tables 9 and 10 describe the impact of the regressors on the "simple" hazard rate model. The model is estimated under two specification, the second one (corresponding to the last three columns) including pension portability losses among the regressors. We focus on the results of the quit hazards which are of main interest for this paper.

The baseline quit hazard estimates, reported in Table 10 show a non-monotonic shape. Until the 3rd year, the hazard is monotonically decreasing. Upward spikes are found at the 4th and 6th year of the spell, while thereafter the baseline hazard takes again a monotonically decreasing shape. However, the coefficients of the baseline hazard are never significant at standard levels.

Results from the second column of Table 9 indicate that in the simple model household size and travel time to work affect positively and significantly the quit hazard rates, while workers not married, with dependent children and in medium firms are found to be less likely to quit at the 10 percent level. Importantly, we find that not only workers participating to occupational pension plans but also workers that although

being offered an occupational pension plan decide not to join, either opting out for a personal pension or staying into SERPS, are significantly less likely to quit. These findings are consistent with those provided by Disney and Emerson (2002) although they use a different sample (including females and public employees) and a different modelling approach. Our results are robust to the inclusion of pension portability losses among the regressors. Indeed, the likelihood does not improve very much and pension portability loss does not bear a significant influence on hazard rates.

While looking at the impact of occupational pension participation on quits, it can be important to differentiate between transitions in and out of occupational pension jobs, in contrast to transitions between occupational pension jobs that involve a change of pension plan. In particular, if occupational pension jobs also offer higher wages, this fact can in itself be a strong deterrent to quit, and should be separated from the costs arising from moving between occupational pension jobs associated with non-portability of pensions. Higher wages offered by occupational pension jobs can also explain why individuals choose jobs offering an occupational pension scheme even if they later decide not to join the scheme.

In Tables 11 and 12 we report the hazard rate estimates of a second competing risk model which focuses on quits distinguishing between occupational pension/ non

occupational pension jobs as destination states. The most interesting finding is that second tier pension schemes arrangements have a marginally significant positive effect on quits towards an occupational pension job. Alternatively, workers participating to occupational pension plans as well as workers that have not joined an occupational pension plan are significantly less likely to move voluntarily to a non pension job. Importantly, pension portability losses are not statistically significant at standard levels. These results can be interpreted as indirect evidence that occupational pension jobs are better jobs, and therefore covered workers are not keen to quit for a non pension job.

The results presented above, as well as those provided by Disney and Emerson (2002), are conditional on treating pension participation status as exogenously assigned. In the UK context, characterized by the availability of extensive pension choices to individuals, this assumption seems too strong. We therefore account for pension endogeneity including in the hazard model the predicted pension scheme choice generated using the pension choice probits estimates reported in Table 7. We estimate the IV model using only the specification that excludes the pension portability loss, given that the latter was never found to be significant in the "simple" hazard model estimates.[22]

The results for the hazard IV quit models, reported in Tables 13 and 14, are quite similar to those of the simple hazard models for all the variables but for the pension

participation ones. The occupational pension participation dummies in the aggregate quit equation - reported in column 1 - are no more significant, while now workers contracting-out a personal pension are significantly more likely to move. Alternatively, IV hazards estimates of quits to an occupational or to a non occupational pension job - reported in Column 2 and 3 of Table 11 respectively - indicate that among the pension participation dummies only the occupational pension participation one preserves its sign and significance. To confirm the validity of our instruments, we test the exogeneity of pension participation status in the mobility hazards using the method developed by Hausman (1978). This method involves estimating a specification of the hazards which includes both the actual and the predicted values of pension scheme choices as regressors and testing the null hypothesis that the coefficients on the predicted values are equal to zero. The test statistic obtained allow to reject exogeneity at standard significance levels.[23]

The IV results indicate that the negative relationship between occupational pension schemes dummies and voluntary job mobility can be due to spurious correlation. If this was really the case, we could conclude that the results provided by the previous literature are biased.

7 Conclusions

This paper analyzes job to job transitions of private sector male employees in the United Kingdom. The aim is to evaluate the relative impact of second tier pension schemes choice and portability rules on voluntary job mobility. We find that the effects of pension schemes participation on job mobility hazards change significantly while moving from the simple hazard model to the instrumental variable hazard model. In the former, workers either offered and participating or offered but not participating to an occupational pension plan have significantly lower quit rates. However, once endogeneity is accounted for these effects are no more significant. Alternatively, the effect of pension portability losses on transition rates is never significant. These results seem to indicate that the negative relationship between occupational pension schemes participation and voluntary job mobility is due to spurious correlation and confirm the importance of taking into account of the endogeneity of pension choices, an issue that is disregarded by most of the empirical literature. From a policy perspective, our results cast doubts on the effectiveness of pension portability reforms on fostering labour mobility, suggesting that the lower job mobility rate of pension covered workers may be attributed to a better quality of these jobs (e. g. in terms of wage rates) rather than to the costs associated with pension portability losses.

References

Allen, S. G., R. L. Clark and A. A. McDermed (1988). "Why do pensions reduce mobility?" *NBER* Working Paper 2509.

Allen, S. G., R. L. Clark and A. A. McDermed (1993). "Pensions, bonding and lifetime jobs." *Journal of Human Resources* 28 (3), 502-517.

Andrietti, V. (forthcoming). "Occupational pensions and job mobility in the European Union." In Castellino, O. and E. Fornero (Eds.). *Pension Policy Harmonization In An Integrating Europe*. Edwar Elgar, London.

Andrietti, V., and Hildebrand, V. A. (2001). "Pension portability and labour mobility in the United States. New evidence from SIPP data." W.P. 10-2001, *Center for Research on Pensions and welfare policies*.

Angrist, J. D., G. W. Imbens, D. B. Rubin (1996). "Identification of causal effects using instrumental variables." *Journal of the American Statistical Association* 91, 444-455.

Cornwell, C., S. Dorsey and N. Mehrzad (1991). "Opportunistic behavior by firms in implicit pension contracts." *Journal of Human Resources* 26 (4), 705-25.

Dearden, L., S. Machin, H. Reed, D. Wilkinson (1997). *Labour Turnover and Work-Related Training.* Institute for Fiscal Studies, London.

Disney, R. and C. Emmerson (2002). "Choice of pension scheme and job mobility in Britain." *IFS* Working Paper 02/09.

Government Actuary's Department (1995). *Occupational Pensions Schemes 1991: Ninth Survey by the Government Actuary.* London, HMSO.

Government Actuary's Department (2001). *Occupational Pensions Schemes 1995: Tenth Survey by the Government Actuary.* London, HMSO.

Government Actuary's Department (2003). *Occupational Pensions Schemes 2000: Eleventh Survey by the Government Actuary.* London, HMSO.

Gustman, A. L. and T. L. Steinmeier (1993). "Pension portability and labor mobility. Evidence from the Survey of Income and Program Participation." *Journal of Public Economics* 50, 299-323.

Henley, A., Disney, R. and A. Carruth (1994). "Job tenure and asset holdings." *Economic Journal* 104, 338-349.

Hujer, R., Maurer, O. and M. Wellner (1999) "Estimating the effect of vocational

training on unemployment duration in West Germany." *Journal of Economics and Statistics* 218, 619-646.

Ippolito, R., (1997). *Pension Plans and Employee Performance.* Chicago, University of Chicago Press.

Jenkins, S. P. (1995). "Easy estimation methods for discrete-time duration models." *Oxford Bulletin of Economics and Statistics* 57, 129-138.

Mallar, C. D: (1977). "The estimation of simultaneous probability models." *Econometrica* 45, 1717-1722.

McCormick, B. and G. Hughes (1984). "The influence of pensions on job mobility." *Journal of Public Economics* 23, 183-206.

Mealli, F. and S. Pudney (1996). "Occupational pensions and job mobility in Britain: estimation of a random-effects competing risks model." *Journal of Applied Econometrics* 11, 293-320.

Mitchell, O. S. (1983). "Fringe benefits and the cost of changing jobs." *Industrial and Labor Relations Review* 37, 70-78.

Sueyoshi, G. T. (1995). "A class of binary response models for grouped duration data." *Journal of Applied Econometrics* 10, 411-431.

Veum, J. R. (1997). "Training and job mobility among young workers in the United States." *Journal of Population Economics* 10, 219-233.

Notes

[1]SERPS was introduced by the 1975 Social Security Act to supplement the basic flat rate public pension. Originally, it was paying a pension corresponding to one quarter of employees earnings' between a lower and an upper limit from the best twenty working years. Earnings were to be uprated by growth in average earnings until retirement age, and pension payments were indexed to prices. The Social Security Act of 1986 reduced the generosity of SERPS by lowering the payments to twenty percent of employees average earnings', calculated over the entire working life.

[2]In a DB plan workers' pension benefits are determined on the basis of an accrual rate, years of plan participation and final salary.

[3]In a DC plan an individual account is opened for each worker, and contributions to the account are usually invested in financial assets.

[4]Personal pensions are individual DC pension accounts offered by financial institutions and usually not linked to a particular employer, although employers can sponsor group personal pension plans.

[5]Employers can sponsor a "contracted-in" occupational pension scheme supplementing, rather then substituting, SERPS pension benefits.

[6]Individuals can participate to occupational and personal pension schemes at the same time only if the occupational scheme is "contracted-in" or if the personal pension scheme is used to receive a transfer payments from a previous scheme.

[7]Government Actuary's Department (1995, 2001, 2003).

[8]Andrietti (forthcoming) provides details on the pension loss computation methodology.

[9]Most occupational pension plans in the UK do not apply a waiting period, while it is common to require a minimum entry age for plan membership or minimum working hours. See Government Actuary's Department (1995).

[10]See Mitchell (1983) among others.

[11]Allen, Clark and McDermed (1988), Andrietti and Hildebrand (2001).

[12]Gustman and Steinmeier (1993), Andrietti and Hildebrand (2001).

[13]Allen, Clark and McDermed (1993), Ippolito (1997).

[14]Andrietti (forthcoming).

[15]See Jenkins (1995).

[16]We use 1.000 repetitions for the bootstrapping procedure.

[17]However, individuals are not asked whether their employer offers them an occupational pension scheme. Rather, they are asked about any pension scheme offered by their employer. This might

include people who are offered group personal pension schemes. We should be able to identify these people since they are likely to report that they are offered a pension scheme to which they belong and that they have a personal pension. We then classify anyone who reports having a personal pension as not having an occupational pension.

[18]See Government Actuary's Department (1995, 2001, 2003).

[19]The differences with the official figures provided by the Government Actuary's Department (1995, 2001, 2003) come from the fact that the sample we use as the base for our statistics has a more restricted age range and excludes females as well as construction industries and part time employees.

[20]We do not report the results obtained for the following variables: age squared, experience squared, travel to work time, household size and income, and dummies for geographical location (4), housing tenure (3), supervisory role (2) and job tenure (10). The estimated coefficients have been transformed into marginal effects; $t-values$ are reported in parenthesis, while the coefficients' statistical significance is indicated with one (90 percent) or two (95 percent) asterisks. The complete set of results is available upon request from the author.

[21]Allen, Clark and McDermed (1988, 1993) and Dorsey, Cornwell and Mehrzad (1993).

[22]We also tried to endogenize the pension loss instrumenting it through a tobit estimator, but the results were similar to the ones presented here.

[23]As a further check of the validity of our instrument, we reestimated the quit hazards endogenizing only the pension choices that were found to be explained significantly by our instrument. We found no significant changes in the results. The results of this test and of the Hausman test are available upon request from the author.

Table 1: Private Sector Scheme Active Members by Plan Type

	1991		1995		2000	
	Millions	%	Millions	%	Millions	%
DB Plans	5.3	81.5	4.87	80	4.6	80.7
DC Plans	1	14.3	1.1	18	0.9	15.7
Hybrid Plans	0.2	4.7	0.3	4.9	0.2	3.5
Total Active Members	6.5	100	6.2	100	5.7	100
Private Sector Workers	15.8		16		17	
OP Members in % of Private Sector Workers		40		39		36

Source: Government Actuary's Department (1995, 2001, 2003)

Table 2: Private Sector Scheme Active Members by Plan Type and Contracting Out Status

	1991		1995		2000	
	Millions	%	Millions	%	Millions	%
DB Plans						
COSR	4.6	90.2	4.13	87.3	4.1	89.1
CISR	0.5	9.8	0.57	12.7	0.5	10.9
DC Plans						
COMP	0.4	44.4	0.46	42	0.3	33.3
CIMP	0.5	55.6	0.64	58	0.6	66.7
Total contracting-out	5	84	4.6	80	4.4	83

Source: Government Actuary's Department (1995, 2001, 2003)

Table 3: Pension Offer Rate by Firm Size, Industry and Union Coverage

	Manufacturing		Distribution		Services	
	Union	No Union	Union	No Union	Union	No Union
Small Firm	51.2	80	49.1	81.8	49.1	84.7
Medium Firm	80.4	93	77.8	100	73.5	92.1
Large Firm	81.8	98.1	100	100	80	96.4

Source: BHPS, waves 1-9

Table 4: Assumptions for Portability Loss Computation

Annual Accrual Rate	1/60
Pensionable Wage	Final Wage
Normal Retirement Age	60
Expected Inflation Rate	3%
Expected Nominal Wage Growth Rate	5%
Post-Retirement Indexation	3%
Early Leavers' Indexation	3%
Nominal Discount Rate	5%
Inflation Adjusted Discount Rate	2%

Table 5: Occupational Pension Schemes Coverage and Participation

Offered OP	**74.32**
Offered OP - joined	60.96
Offered OP - not joined - PP	7.24
Offered OP - not joined - SERPS	6.12
Not Offered OP	**25.68**
Not Offered OP - PP	12.84
Not Offered OP - SERPS	12.84
Sample Size	981

Source: BHPS, waves 1-9

Table 6: Summary Statistics (Mean) by Occupational Pension Status

	OP-J.	OP-No J.-PP	OP-No J.-SERPS	NO OP-PP	NO OP-SERPS
Not Married (%)	11.7	21.1	18.3	16.7	19
Age	39.2	38.4	38.7	38.9	37.6
Children	1	.77	1.12	.82	.98
Household Size	3.3	2.8	3.5	3.1	3.3
Spouse Employed (%)	68.4	66.2	55	67.5	58.7
Union Member (%)	44.5	28.2	26.7	10.3	8.7
Manager & Professional (%)	35.1	23.9	13.3	24.6	16.7
White Collar Worker (%)	19.7	15.5	21.7	13.5	11.9
Medium Firm (%)	34.3	33.8	43.3	17.5	15.1
Large Firm (%)	26.6	12.7	20	3.2	7.1
Experience	22.9	22.4	22.9	23	21.5
Job Tenure	8.5	5.8	5.8	5.7	4.4
Distribution (%)	11.9	22.5	16.7	26.2	23.8
Services (%)	29.3	22.5	23.3	25.4	38.9
Education: Degree (%)	20.7	15.5	6.7	11.9	10.3
Education: A Level (%)	29.6	31	31.2	25.4	23.8
Education: O Level (%)	26.4	26.8	25	28.6	31.7
Net Wage	6.66	6.03	5.21	5.38	4.92
Saver (%)	60.7	40.8	36.7	52.4	36.5
Pension Offer Rate	79.8	72.3	77.9	59.3	61.1
Sample Size	598	71	60	126	126

Table 7: Probit Estimates of Occupational Pension Choices

	OP-J.	OP-NO J.-PP	OP-NO J.-SERPS	NO OP-PP
Not Married	-0.061	0.022	0.022	0.014
	(0.85)	(0.63)	(0.82)	(0.39)
Age	0.093	0.023	0.004	0.013
	(0.81)	(0.44)	(0.10)	(0.24)
Children	0.043	0.014	-0.007	-0.004
	(1.33)	(0.94)	(0.81)	(0.23)
Household Size	-0.025	-0.029**	0.017**	-0.004
	(0.91)	(2.28)	(2.25)	(0.30)
Spouse Employed	0.025	0.019	-0.016	0.004
	(0.52)	(0.94)	(1.11)	(0.19)
Union Member	0.196**	-0.009	-0.024*	-0.012
	(3.68)	(0.40)	(1.87)	(0.35)
Manager & Professional	0.157**	-0.020	-0.014	-0.019
	(2.76)	(0.34)	(0.81)	(0.66)
White Collar Worker	0.137**	-0.017	0.012	-0.033
	(2.69)	(0.89)	(0.78)	(1.39)
Medium Firm	0.014	-0.005	0.018	0.028
	(0.21)	(0.21)	(0.91)	(0.72)
Large Firm	0.047	-0.033	0.012	-0.006
	(0.58)	(1.22)	(0.48)	(0.13)
Experience	-0.075	0.013	-0.004	-0.003
	(1.26)	(0.48)	(0.17)	(0.12)
Distribution	-0.030	0.021	-0.000	-0.016
	(0.58)	(0.99)	(0.02)	(0.71)
Services	-0.030	-0.022	-0.008	-0.012
	(0.68)	(1.34)	(0.68)	(0.60)
Education: Degree	0.107	0.009	-0.033*	-0.002
	(1.41)	(0.27)	(1.83)	(0.06)
Education: A Level	0.072	0.015	-0.010	-0.022
	(1.21)	(0.60)	(0.65)	(0.78)
Education: O Level	0.045	0.010	-0.019	-0.007
	(0.83)	(0.43)	(1.36)	(0.29)
Vocational Qualification	-0.061	-0.005	0.024*	0.000
	(1.46)	(0.29)	(1.87)	(0.00)
Net Wage	0.014	0.003	-0.003	-0.005
	(1.37)	(0.87)	(0.70)	(0.96)
Saver	0.097**	-0.031**	-0.021*	0.022
	(2.67)	(2.08)	(1.90)	(1.28)
Occup. Pension Offer Rate	0.006**	0.001	0.001	-0.005**
	(3.09)	(0.78)	(1.21)	(3.87)
Log Likelihood	486.7	227.17	189.2	301.72
Observed P	60.96	7.24	6.1	13.05
Predicted P at ($\bar{x}$)	64.51	5.08	3.1	7.54
Sample Size			981	

Table 8: Job Mobility Rates by Occupational Pension Choice

	All	Quit	Layoff
OP Member	5.58	2.81	2.77
Offered OP, No Joined-PP	7.35	4.08	3.27
Offered OP, No Joined-SERPS	8.46	4.48	3.98
Not Offered OP-PP	10.78	7.53	3.44
Not Offered OP-SERPS	18.50	11.36	7.14
Number of Observations		4.104	
Base: Sample of Private Sector Male Employees Aged 20-50			

Source: BHPS waves 1-9.

Table 9: Hazard Rates for Job to Job Transitions

	Specification 1			Specification 2		
	All	Quit	Layoff	All	Quit	Layoff
Not Married	-0.331	-0.691*	-0.005	-0.331	-0.695*	-0.007
	(1.26)	(1.81)	(0.01)	(1.26)	(1.82)	(0.02)
Age	-0.368	-0.162	-0.453	-0.379	-0.190	-0.447
	(1.17)	(0.38)	(0.96)	(1.21)	(0.45)	(0.95)
Children	-0.083	-0.181	0.067	-0.087	-0.193	0.066
	(0.83)	(1.42)	(0.44)	(0.87)	(1.50)	(0.43)
Household Size	0.139	0.244**	0.008	0.141	0.250**	0.009
	(1.61)	(2.23)	(0.06)	(1.64)	(2.27)	(0.07)
Spouse Employed	-0.158	-0.072	-0.233	-0.152	-0.057	-0.234
	(0.94)	(0.33)	(0.94)	(0.90)	(0.25)	(0.94)
Travel Time to Work	0.009**	0.010**	0.007**	0.009**	0.010**	0.007**
	(4.13)	(3.44)	(2.30)	(4.15)	(3.46)	(2.29)
Union Member	0.099	-0.130	0.321	0.095	-0.136	0.325
	(0.62)	(0.58)	(1.44)	(0.60)	(0.61)	(1.46)
Manager & Professional	0.152	0.165	0.132	0.161	0.182	0.129
	(0.72)	(0.59)	(0.42)	(0.75)	(0.65)	(0.41)
White Collar Workers	0.124	-0.025	0.257	0.125	-0.021	0.257
	(0.64)	(0.10)	(0.96)	(0.65)	(0.08)	(0.96)
Medium Firm	-0.209	-0.369*	-0.008	-0.210	-0.375*	-0.010
	(1.32)	(1.70)	(0.04)	(1.33)	(1.73)	(0.04)
Large Firm	-0.133	-0.144	-0.076	-0.133	-0.145	-0.074
	(0.71)	(0.57)	(0.28)	(0.71)	(0.57)	(0.28)
Experience	0.187	0.105	0.230	0.186	0.109	0.233
	(1.15)	(0.51)	(0.90)	(1.15)	(0.53)	(0.91)
Experience Squared	-0.005	-0.001	-0.008	-0.005	-0.001	-0.008
	(1.42)	(0.18)	(1.61)	(1.43)	(0.21)	(1.61)
Distribution	0.169	0.306	-0.036	0.163	0.295	-0.033
	(0.96)	(1.36)	(0.13)	(0.93)	(1.31)	(0.12)
Services	-0.198	0.160	-0.621**	-0.202	0.154	-0.619**
	(1.26)	(0.79)	(2.59)	(1.28)	(0.76)	(2.58)
Education: Degree	-0.371	0.022	-0.864**	-0.351	0.067	-0.868**
	(1.40)	(0.06)	(2.09)	(1.32)	(0.20)	(2.10)
Education: A level	-0.112	-0.060	-0.088	-0.098	-0.029	-0.089
	(0.53)	(0.21)	(0.29)	(0.46)	(0.10)	(0.30)
Education: O Level	-0.464**	-0.465*	-0.387	-0.454*	-0.439	-0.385
	(2.34)	(1.73)	(1.39)	(2.29)	(1.62)	(1.38)
Vocational Qualification	0.123	0.257	-0.033	0.120	0.245	-0.035
	(0.83)	(1.31)	(0.15)	(0.81)	(1.25)	(0.16)
Net Wage	-0.035	-0.021	-0.071	-0.043	-0.030	-0.066
	(1.21)	(0.58)	(1.43)	(1.33)	(0.77)	(1.25)
Saver	0.021	0.094	-0.037	0.022	0.094	-0.039
	(0.15)	(0.54)	(0.19)	(0.17)	(0.54)	(0.20)
OP-Joined	-0.972**	-1.040**	-0.741**	-1.00**	-1.073**	-0.707**
	(4.72)	(3.91)	(2.47)	(4.75)	(3.98)	(2.24)
OP-No Joined-PP	-0.836**	-0.763*	-0.770*	-0.829**	-0.751*	-0.779*
	(2.77)	(1.94)	(1.75)	(2.74)	(1.90)	(1.77)
OP-No Joined-SERPS	-0.817**	-0.862**	-0.597	-0.812**	-0.850**	-0.601
	(2.62)	(2.10)	(1.33)	(2.60)	(2.06)	(1.34)
NO OP-PP	-0.389*	-0.180	-0.653*	-0.378*	-0.160	-0.662*
	(1.74)	(0.66)	(1.85)	(1.69)	(0.58)	(1.87)
Portability Loss				0.037	0.055	-0.040
				(0.65)	(0.84)	(0.33)
Log Likelihood	987.65	618.6	548	987.45	618.27	548
Spells Ended from Risk	304	170	134	304	170	134
Sample Size	4.104	4.104	4.104	4.104	4.104	4.104

Table 10: Semiparametric Baseline Hazard: Job to Job Transitions

	Specification 1			Specification 2		
	All	Quit	Layoff	All	Quit	Layoff
dur1	4.304	1.237	3.43	4.559	1.767	3.272
	(0.92)	(0.20)	(0.49)	(0.97)	(0.28)	(0.47)
dur2	3.701	0.379	3.32	3.958	0.917	3.165
	(0.79)	(0.06)	(0.48)	(0.85)	(0.15)	(0.45)
dur3	3.270	0.254	2.613	3.523	0.785	2.458
	(0.70)	(0.04)	(0.38)	(0.75)	(0.12)	(0.35)
dur4	3.403	0.777	1.865	3.656	1.310	1.712
	(0.73)	(0.12)	(0.27)	(0.78)	(0.21)	(0.25)
dur5	3.119	0.113	2.446	3.369	0.639	2.296
	(0.67)	(0.02)	(0.35)	(0.72)	(0.10)	(0.33)
dur6	3.373	0.466	2.566	3.619	0.988	2.419
	(0.72)	(0.07)	(0.37)	(0.77)	(0.16)	(0.35)
dur7	2.936	0.153	1.992	3.181	0.674	1.848
	(0.63)	(0.02)	(0.29)	(0.68)	(0.11)	(0.26)
dur8	2.606	-0.042	1.33	2.848	0.473	1.189
	(0.56)	(0.01)	(0.20)	(0.61)	(0.08)	(0.17)
dur9	2.617	-0.053	1.4	2.856	0.460	1.267
	(0.56)	(0.01)	(0.20)	(0.61)	(0.07)	(0.18)
dur10	2.521	-0.226	1.51	2.757	0.283	1.380
	(0.54)	(0.04)	(0.22)	(0.59)	(0.04)	(0.20)
dur10+	2.625	-0.605	2.10	2.823	-0.163	2.005
	(0.56)	(0.10)	(0.30)	(0.60)	(0.03)	(0.29)

Table 11: Hazard Rates for Voluntary Job to Job Transitions

	Specification 1		Specification 2	
	Quit OP	Quit NOP	Quit OP	Quit NOP
Not Married	-0.753	-0.706	-0.755	-0.711
	(1.21)	(1.41)	(1.21)	(1.42)
Age	0.086	-0.618	0.105	-0.656
	(0.15)	(0.96)	(0.19)	(1.01)
Children	-0.051	-0.250	-0.053	-0.263
	(0.22)	(1.55)	(0.22)	(1.61)
Household Size	0.005	0.407**	0.008	0.412**
	(0.03)	(2.94)	(0.04)	(2.96)
Spouse Employed	0.205	-0.147	0.202	-0.130
	(0.57)	(0.50)	(0.56)	(0.44)
Travel Time to Work	0.006	0.014**	0.006	0.014**
	(1.24)	(3.83)	(1.25)	(3.86)
Union Member	-0.063	-0.253	-0.056	-0.258
	(0.21)	(0.75)	(0.19)	(0.77)
Manager & Professional	0.581	-0.161	0.573	-0.140
	(1.40)	(0.42)	(1.38)	(0.36)
White Collar	0.470	-0.485	0.464	-0.477
	(1.26)	(1.24)	(1.25)	(1.22)
Medium Firm	-0.387	-0.328	-0.387	-0.338
	(1.22)	(1.10)	(1.22)	(1.13)
Large Firm	0.056	-0.631	0.064	-0.625
	(0.17)	(1.44)	(0.20)	(1.43)
Experience	0.088	0.287	0.088	0.293
	(0.35)	(0.86)	(0.35)	(0.88)
Experience Squared	-0.003	-0.001	-0.003	-0.001
	(0.53)	(0.16)	(0.53)	(0.20)
Distribution	-0.689	0.896**	-0.681	0.878**
	(1.65)	(3.07)	(1.63)	(3.00)
Services	-0.202	0.551*	-0.204	0.533
	(0.70)	(1.93)	(0.70)	(1.85)
Education: Degree	-0.660	0.596	-0.675	0.647
	(1.29)	(1.29)	(1.31)	(1.38)
Education: A Level	-0.752*	0.433	-0.764*	0.466
	(1.74)	(1.16)	(1.77)	(1.24)
Education: O Level	-0.630	-0.427	-0.642	-0.395
	(1.58)	(1.15)	(1.61)	(1.05)
Vocational Qualification	-0.020	0.466*	-0.018	0.451
	(0.07)	(1.71)	(0.06)	(1.65)
Net Wage	-0.007	-0.004	0.005	-0.014
	(0.11)	(0.09)	(0.07)	(0.29)
Saver	0.186	-0.019	0.187	-0.022
	(0.70)	(0.08)	(0.71)	(0.09)
OP Joined	1.052	-1.942	1.120*	-1.970**
	(1.64)	(5.71)**	(1.71)	(5.73)
OP No Joined-PP	1.425*	-1.661**	1.392*	-1.655**
	(1.93)	(2.90)	(1.88)	(2.89)
OP-No Joined-SERPS	1.338*	-1.686**	1.319*	-1.673**
	(1.75)	(2.92)	(1.73)	(2.89)
NO OP-PP	1.046	-0.447	1.012	-0.432
	(1.56)	(1.44)	(1.50)	(1.38)
Portability Loss			-0.101	0.048
			(0.54)	(0.65)
Log Likelihood	330.1	353.9	330	353.7
Spells Ended from Risk	72	98	72	98
Sample Size	4.104	4.104	4.104	4.104

Table 12: Semiparametric Baseline Hazard: Voluntary Job to Job Transitions

	Specification 1		Specification 2	
	Quit OP	Quit NOP	Quit OP	Quit NOP
dur1	-6.206	8.244	-6.670	8.940
	(0.71)	(0.89)	(0.76)	(0.96)
dur2	-6.123	6.772	-6.595	7.478
	(0.70)	(0.73)	(0.75)	(0.80)
dur3	-6.612	6.984	-7.073	7.684
	(0.76)	(0.75)	(0.81)	(0.82)
dur4	-6.150	7.578	-6.601	8.285
	(0.70)	(0.82)	(0.75)	(0.89)
dur5	-6.945	7.076	-7.383	7.773
	(0.79)	(0.76)	(0.84)	(0.83)
dur6	-6.746	7.529	-7.171	8.226
	(0.77)	(0.81)	(0.82)	(0.88)
dur7	-7.375	7.403	-7.787	8.103
	(0.84)	(0.80)	(0.89)	(0.87)
dur8	-6.820	6.546	-7.219	7.241
	(0.78)	(0.70)	(0.82)	(0.77)
dur9	-7.669	7.196	-8.058	7.891
	(0.87)	(0.77)	(0.91)	(0.84)
dur10	-6.835	6.089	-7.211	6.784
	(0.78)	(0.65)	(0.82)	(0.72)
dur10+	-7.606	6.247	-7.882	6.882
	(0.87)	(0.67)	(0.90)	(0.74)

Table 13: Hazard Rates for Voluntary Job to Job Transitions. IV Model, Spec. 1

	Quit	Quit OP	Quit NOP
Not Married	-0.607	-0.583	-0.756
	(1.57)	(0.92)	(1.51)
Age	-0.261	0.124	-0.551
	(0.61)	(0.21)	(0.85)
Children	-0.225*	-0.077	-0.294*
	(1.75)	(0.32)	(1.81)
Household Size	0.292**	-0.052	0.476**
	(2.36)	(0.23)	(3.01)
Spouse Employed	-0.078	0.209	-0.216
	(0.35)	(0.58)	(0.75)
Travel Time to Work	0.009**	0.006	0.012**
	(3.03)	(1.32)	(3.17)
Union Member	-0.101	-0.623	0.278
	(0.36)	(1.62)	(0.66)
Manager & Professional	0.148	0.206	0.200
	(0.50)	(0.47)	(0.49)
White Collars	-0.069	0.200	-0.315
	(0.26)	(0.51)	(0.78)
Medium Firm	-0.305	-0.580*	-0.025
	(1.26)	(1.66)	(0.08)
Large Firm	-0.059	-0.296	-0.222
	(0.21)	(0.80)	(0.47)
Experience	0.144	0.192	0.160
	(0.69)	(0.71)	(0.48)
Experience Squared	-0.002	-0.005	0.000
	(0.44)	(0.80)	(0.01)
Distribution	0.293	-0.445	0.720**
	(1.29)	(1.05)	(2.47)
Services	0.237	-0.167	0.669**
	(1.11)	(0.53)	(2.22)
Education: Degree	-0.056	-0.935	0.681
	(0.15)	(1.74)	(1.34)
Education: A Level	-0.036	-0.863	0.577
	(0.12)	(1.94)	(1.46)
Education: O Level	-0.438	-0.752	-0.253
	(1.57)	(1.85)	(0.66)
Vocational Qualification	0.293	0.116	0.429
	(1.43)	(0.39)	(1.50)
Net Wage	-0.015	-0.023	0.010
	(0.40)	(0.33)	(0.25)
Saver	-0.004	-0.046	0.016
	(0.02)	(0.16)	(0.06)
OP-Joined	0.036	3.089**	-2.509**
	(0.04)	(2.11)	(2.09)
OP-No Joined-PP	-0.020	-2.833	1.719
	(0.01)	(0.87)	(0.67)
OP-No Joined-SERPS	-0.892	0.564	-1.913
	(0.50)	(0.20)	(0.80)
NOP-PP	2.207*	1.261	2.418
	(1.94)	(0.65)	(1.58)
Log Likelihood	625	328.5	364.6
Spells Ended from Risk	170	72	98
Sample Size		4.104	

Table 14: Semiparametric Baseline Hazard: Voluntary Job to Job Transitions. IV Model, Spec. 1

	Quit	Quit OP	Quit NOP
dur1	1.663	-7.770	7.167
	(0.26)	(0.85)	(0.78)
dur2	0.736	-7.702	5.587
	(0.12)	(0.85)	(0.61)
dur3	0.588	-8.172	5.760
	(0.09)	(0.90)	(0.63)
dur4	1.055	-7.831	6.325
	(0.17)	(0.86)	(0.69)
dur5	0.387	-8.776	5.927
	(0.06)	(0.96)	(0.64)
dur6	0.748	-8.592	6.403
	(0.12)	(0.94)	(0.70)
dur7	0.429	-9.257	6.292
	(0.07)	(1.01)	(0.68)
dur8	0.244	-8.800	5.553
	(0.04)	(0.96)	(0.60)
dur9	0.232	-9.619	6.131
	(0.04)	(1.05)	(0.66)
dur10	0.052	-8.832	5.110
	(0.01)	(0.97)	(0.55)
dur10+	-0.340	-9.859	5.439
	(0.05)	(1.08)	(0.59)