ISSN 0265-8003

MULTIPLE JOB-HOLDING AS A 'HEDGE' AGAINST UNEMPLOYMENT

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Discussion Paper No. 1626
April 1997

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CEPR Discussion Paper No. 1626

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ABSTRACT

Multiple Job-holding as a 'Hedge' Against Unemployment*

This paper explores a possible link between job security and multiple job-holding in the United Kingdom. It is argued that an individual may hold a second job if they believe that their primary job has a high risk of termination. The reason is that holding a second job may cushion the financial impact of losing the main source of earnings, especially if there is scope for increasing the number of hours worked in the second job. Data from four waves of the British Household Panel Study are used to test this hypothesis. The empirical analysis provides (at best) very weak evidence in support of hedging behaviour of this type.

JEL Classification: J23
Keywords: multiple job-holding, job insecurity, labour supply, unemployment

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*This paper is produced as part of a CEPR research programme on *The UK Labour Market: Microeconomic Imperfections and Institutional Features*, which is co-sponsored by the UK Department for Education and Employment and the Department of Trade and Industry. The views expressed in this paper are those of the authors and do not necessarily reflect those of the DfEE, DTI or CEPR. Helpful comments were received at seminars at St Andrews University and the University of Stirling. All correspondence should be addressed to Robert E Wright.

Submitted 6 March 1997

NON-TECHNICAL SUMMARY

Contemporary accounts (especially in the popular press) paint a generally bleak picture of the UK labour market in recent years. The diminishing importance of the manufacturing sector, widespread corporate restructuring, privatization, high unemployment, de-unionization, etc. have all contributed to a sense of 'gloom' about the future prospects of many workers. Although there is a 'belief' that jobs are becoming 'less secure' in the United Kingdom, only limited attention has been directed towards trying to empirically verify such a trend. This neglect is surprising given that in other countries changes in 'job security' have been the focus of much empirical research. Nevertheless, despite the lack of hard empirical evidence, there is little doubt that the vast majority of the UK public believes, rightly or wrongly, that job security has deteriorated dramatically in the 1980s and 1990s.

Another trend in the UK labour market in this period that has also gone relatively unnoticed is the increase in the proportion of workers (both male and female) who hold more than one job. Data from the *New Earnings Survey*, covering the period 1975–94, suggest a secular increasing trend in 'multiple job-holding'. Likewise, estimates from the *British Household Panel Study* indicate that in the early 1990s, about 10% of UK workers held a second job. Only limited attention has been directed towards examining the determinants of multiple job holding, however. The only UK studies that we were able to find concerned with multiple job-holding are four highly descriptive (and dated) papers. This neglect is surprising given the increasing importance of multiple job-holding in the UK labour market, and given that the topic has received attention in other countries, most notably the United States.

The purpose of this paper is to explore a proposed link between job security and multiple job-holding in the United Kingdom. There are two main economic explanations for multiple job-holding. The first is that an individual holds a second job because there is some form of constraint on their primary job that limits that job's earnings capacity (e.g. hours). The second is that an individual holds a second job because the labour supplied to the two jobs are not perfect substitutes, in the sense that the wage paid and the utility lost from forgone leisure do not completely reflect the benefits and costs of working. A third possible explanation is that an individual may hold a second job if they believe that their primary job has a high risk of termination. The reason being that holding a second job may cushion the financial impact of losing their main source of earnings, especially if there is scope for increasing the number of

hours worked in the second job. Multiple job-holding may thus be a response to perceived job insecurity and may be a 'hedge against unemployment'.

Data from four waves of the *British Household Panel Study* are used to test for hedging behaviour of this type. Two types of models are estimated. The first is concerned with explaining the probability that an individual holds a second job. The second is concerned with the number of hours worked in a second job (including zero). In these equations variables are included that we believe capture the relative 'security' of the individual's primary job. The models are estimated separately for men and women. For men, none of the job security variables are statistically significant in any of the labour supply equations. For women, some of these job security variables are statistically significant with signs consistent with this hypothesis. These results provide (at best) very weak evidence in support of hedging behaviour of this type.

Multiple Job-Holding as a 'Hedge' Against Unemployment

1. Introduction

Contemporary accounts (especially in the popular press) paint a generally bleak picture of the British labour market in recent years. The diminishing importance of the manufacturing sector, widespread corporate restructuring, privatisation, high unemployment, de-unionisation, etc. have all contributed to a sense of "gloom" about the future prospects of many workers. Although there is a "belief" that jobs are becoming "less secure" in the United Kingdom, only limited attention has been directed towards trying to empirically verify such a trend.[1] This neglect is surprising given that in other countries changes in "job security" have has been the focus of much empirical research.[2] Nevertheless, despite the lack of hard empirical evidence, there is little doubt that the vast majority of the British public believes, rightly or wrongly, that job security has deteriorated dramatically in the 1980s and 1990s.

Another trend in the British labour market in the 1980s and 1990s that has also gone relatively unnoticed is the increase in the proportion of workers (both male and female) who hold more that one job. Data from the *New Earnings Survey*, covering the period 1975 to 1994, suggest a secular increasing trend in "multiple job holding". Likewise, estimates from the *British Household Panel Study* (discussed below) indicate that in the early 1990s, about ten per cent of British workers held a second job. However, only limited attention has been directed towards examining the determinants of multiple job holding. The only British studies that we were able to find concerned with multiple job-holding are four highly descriptive (and dated) papers by Alden

[1] One exception is the recent study of Burgess and Rees (1995) who note that in the UK in 1980s there has been a slight secular decline in elapsed job tenure for men but not for women. However the magnitude of this decline is "not enormous" (p.344).

(1977, 1980) and Alden and Saha (1978, 1980). This neglect is surprising given the increasing importance of multiple job-holding in the British labour market, and given that the topic has received some attention in other countries, most notably the United States (see for example, Abdukadir, 1992; Conway and Kimmel, 1992; Krishnan, 1990; Levenson, 1995; Mehay, 1991; O'Connell, 1979; Paxson and Sicherman, 1994; Plewes and Stinson, 1991; Shishko and Rostker, 1976).[3]

The purpose of this paper is to explore a proposed link between job security and multiple job-holding in the United Kingdom. As is discussed below, there are two main economic explanations for multiple job-holding. The first is that an individual holds a second job because there is some form of constraint on their primary job that limits that job's earnings capacity (e.g. hours). The second is that an individual holds a second job because the labour supplied to the two jobs are not perfect substitutes, in the sense that the wage paid and the utility lost from foregone leisure do not completely reflect the benefits and costs of working. However, a third possible explanation is that an individual may hold a second job if they believe that their primary job has a high risk of termination. The reason being that holding a second job may the cushion the financial impact of losing their main source of earnings, especially if there is scope for increasing the number of hours worked in the second job. Therefore, multiple job-holding may be a response to perceived job insecurity and may be a "hedge against unemployment".

The remainder of this paper is organised as follows. In the next section, a theoretical framework is presented that will be used to guide the empirical analysis

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[2] See for example Farber (1995) and the recent exchange between Diebold, Neumark and Polsky (1996) and Swinnerton and Wial (1995,1996) relating to trends in job security in the United States.

[3] See also the studies of Reija (1991) for Finland and Kimmel and Powell (1996) for Canada.

outlined in Section 3. In Section 4 the main results of the empirical analysis are presented and discussed. A brief conclusion follows.

2. Theoretical Framework

As mentioned above, there are two main economic explanations for multiple job-holding. The first is that an individual holds a second job because there is some form of constraint on their primary job that limits that job's earnings capacity. For example, due to work week restrictions, economic conditions or other institutional factors, an individual may be unable to work their desired number of hours in their primary. In such jobs, for example, there may be no opportunity to work over-time hours or the job may only be part-time in nature. Therefore, an individual holds a second job in order to make up for the primary job's earnings shortfall resulting from the constraint on the number of hours available for work in their primary job.[4]

If such a constraint on hours worked in the primary job does exist, then standard labour supply theory suggests that the decision to take on a second job will depend on the comparison between the reservation wage and the wage offer in the second job (see Killingsworth, 1988). The reservation wage will depend on the (constrained) number of hours worked in primary job, and the number of hours worked in the second job will therefore be conditional on the number of hours worked in the first job. Put slightly differently, the number of hours worked in the primary job is not a "choice variable". In the estimation of labour supply models relating to the second job (e.g. the probability of holding a second job or the number of hours worked in the second job), this assumption results in the number of hours worked in the primary job

[4] The American study of Shishko and Rostker (1976) was the first to formally present and test this hypothesis.

being included as an exogenous variable. As is discussed below, this assumption is clearly open to question.

The second main economic explanations for multiple job-holding is that an individual holds a second job because the labour supplied to the two jobs are not perfect substitutes in the sense that the non-money costs and benefits differ across the two jobs. For example, the wage paid and the utility lost from the foregone leisure may not completely reflect the benefits and costs of working. Conway and Kimmel (1994: 2) write: "[W]orking on a primary job may provide the worker with the credentials to take on a higher paying second job, such as a university professor who engages in consulting. Or, working on the second job may provide some pleasure (or less displeasure) but pay less than the primary job, such as a musician who has a 'regular' job by day and performs at night." In both these examples, the costs and benefits associated with both the primary and second job are more complicated than implied by the wages paid in each and the leisure forgone by working. Put slightly differently, supplying labour to two jobs may be complementary behaviour.[5]

With this explanation the decision to take a second job is not simply based on the comparison of the reservation wage and the wage offer in the second job. The number of hours worked in the primary job is not an exogenous variable. Both the number of hours worked in the primary job and the number of hours worked in the second job are "choice variables" and are jointly determined. This has important implication for the estimation of labour supply models. First, in the estimation of labour supply models relating to the second job, the number of hours worked in the primary job should not be assumed to exogenous and simply included as a right-hand side

[5] While Shishko and Rostker (1976) suggest this explanation, they do not explore it empirically. Reija (1991) was the first to develop it formally. However, as Conway and

variable in any estimating equation. Second, in the estimation of labour supply models relating to the primary job, account must be taken of the possibility that characteristics relating to the second job may influence labour supply behaviour relating to the primary job.

It is relatively straightforward to extend standard labour supply theory to derive a testable model of multiple-jobholding that not only incorporates both the above two explanations but also allow one to evaluate the impact of job insecurity on multiple job-holding. Following Shishko and Rostker (1976), let "h_1" be the number of hours worked in primary job; "h_2" be the number of hours worked in the second job; "L" be leisure, and "C" be consumption. Assuming maximising behaviour, the utility function is:

$$(1) \qquad U = U(C, h_1, h_2, L) ,$$

which is maximised subject to the following budget and time constraints:

$$(2) \qquad C = w_1h_1 + w_2h_2 + Y ,$$

$$(3) \qquad T = h_1 + h_2 + L ,$$

where: "w_1" is the wage rate received in the primary job; "w_2" is the wage rate received in the second job; "Y" is property (non-labour) income and "T" is the total amount of time available for both work and leisure. Substituting Eqs. (2) and (3) into (1) gives the utility maximisation problem that the individual faces:

$$(4) \qquad \underset{h_1\, h_2}{Max:}\ U(w_1h_1, + w_2h_2 + Y, h_1, h_2, T - h_1 - h_2)$$

Kimmel (1994) point out, he fails to recognise the importance of the time constraint, which reduces the effectiveness of his empirical analysis .

where h_1 and h_2 are the two choice variables.

Eq. (4) can be used the illustrate the implications for estimation of labour supply models of the two explanations discussed above. If constraints exist on the number of hours worked in the primary job, then h_1 is no longer a choice variable and is fixed at the maximum amount of $h_1 = H_1$. The maximisation problem described in Eq. (4) becomes:

$$(5) \qquad \underset{h_2}{Max:}\ U(w_1H_1, + w_2h_2 + Y, H_1, h_2, T - H_1 - h_2)$$

where only h_2 is the choice variable. The optimising relationship is:

$$(6) \qquad (\partial U/\partial h_2 - \partial U/\partial L)/\ \partial U/\partial C = -w_2$$

where $\partial U/\partial x$ are partial derivatives of utility with respect to h_2, L, and C. Eq. (6) states that an individual will supply labour to a second job up until the point that the disutility associated with working an additional hour (divided by the marginal utility of income) is equal to the negative of the wage rate in the second job. Solving this model gives the following labour supply equation for the second job:

$$(7) \qquad h_2 = h^c{}_2(w_2, Y + (w_1 - w_2)H_1, H_1)$$

where "$h^c{}_2$" is used to denote that the labour supply function for the second job is based on the assumption that there are constraints on the upper limit of the number of hours that can be worked in the primary job. If leisure is a normal good, then $\partial h_2/\partial Y$ should

be negative. The sign of $\partial h_2/\partial w_2$ is ambiguous because of well known income and substitution effects (i.e. the labour supply schedule for the second job may also be backwards bending).

If however the two jobs differ with respect to their non-money costs and benefits, as implied by the second explanation considered above, then there are two optimising relationships associated with the maximisation problem described in Eq. (4) since the amount of labour supplied in the primary job is not by definition fixed. That is:

$$(8) \qquad (\partial U/\partial h_1 - \partial U/\partial L) / \partial U/\partial C = -w_1$$

$$(9) \qquad (\partial U/\partial h_2 - \partial U/\partial L) / \partial U/\partial C = -w_2 .$$

Examination of these two relationships suggests that an individual will supply labour to either job up until the point that the disutility associated with working an additional hour in that job is equal to the negative of the wage rate associated with that job. It is important to note that if the two jobs are identical with respect to their non-money costs and benefits (i.e. the two jobs differ only with respect to their respective wage rates) then Eqs. (8) and (9) simplify to:

$$(10) \qquad \partial U/\partial L / \partial U/\partial C = -w_1$$

$$(11) \qquad \partial U/\partial L / \partial U/\partial C = -w_2 .$$

In this situation, the individual will supply all their labour to the job that has the highest wage rate.

Solving this model suggests that there are two labour supply equations:

$$h_1 = h^n{}_1(w_1, w_2, Y), \tag{12}$$

$$h_2 = h^n{}_2(w_1, w_2, Y), \tag{13}$$

where "$h^n{}_1$" and "$h^n{}_2$" are used to denote that they are unconstrained. Again assuming leisure is a normal good, then $\partial h_1/\partial Y$ and $\partial h_2/\partial Y$ should both be positive. Because of income and substitution effects the signs of $\partial h_1/\partial w_1$ and $\partial h_2/\partial w_2$ are ambiguous. Conway and Kimmel (1994) note however that given "standard assumptions" about the utility function, $\partial h_1/\partial w_2$ and $\partial h_2/\partial w_1$ should be negative.

The above theoretical framework implies that with respect to multiple job-holding there are four possible groups of workers: (1) unconstrained workers who hold a second job; (2) unconstrained workers who do not hold a second job; (3) constrained workers who hold a second job; and (4) constrained workers who do not hold a second job. Conway and Kimmel (1994) present an elaborate econometric framework, which they implement with American micro-level panel data, aimed at trying to establish the relative importance of each of these groups. Although a replication of their study for the United Kingdom would be useful (and to our knowledge has not been carried out), we do not pursue such a task here. The reason is that we are primarily interested in evaluating the impact of job insecurity on multiple job-holding. Since we have no reason to assume that individuals are constrained in their primary job, our empirical analysis (presented below) is based on "reduced form" labour supply equations relating to the second job. More specifically, the approach that we adopt is to augment these labour supply equations with variables that measure job security associated with the primary job.

3. Empirical Evidence

3.1 Data

The data source that is used to test for the hedging behaviour described above is the four available waves of the *British Household Panel Study (BHPS)*, which cover the period 1991 to 1995 (see Buck *et al.*, 1994 for a detailed discussion of the *BHPS*). The *BHPS* is a nationally representative survey of some 5,000 households (or about 10,000 individuals) from all regions of Great Britain with the exception of the far north of Scotland. The first wave of the survey was carried out in September to December 1991, with subsequent waves being carried out annually. The individuals interviewed in the first wave were re-interviewed in the subsequent waves so the study has a true panel element. New individuals were interviewed to replace those lost to attribution in later waves.

The *BHPS* is well suited to addressing issues relating to multiple job-holding since in each wave five questions relating to an individual's second job were asked: (1) *Has second job?* (2) *Occupation of second job?*; (3) *Employee or self employed in second job?*; (4) *Number of hours worked per month in second job?*; and (5) *Gross earnings from second jobs last month?* No information was collected for higher order jobs. In addition, detailed questions were asked relating to the individual's primary job. Therefore it is possible to "match" characteristics relating to the individual's primary job to their second job.

In the regression models estimated below, several sample restrictions were imposed. Individuals below the age of 16 and above the age of 64 were excluded, along with individuals in full-time education. Those individuals who are self-employed in the primary job are also excluded. All the models were estimated separately for men and women. In addition, the models were also estimated using samples of individuals

aged25 to 54 in order to reduce the problems associated with the potential endogeneity of schooling and retirement decisions. In order to increase the size of the sample used in the estimation, the four waves of the *BHPS* were pooled into a single data set and treated as a single cross-section. (Sample sizes and other descriptive information is discussed below).

3.2 Statistical Models

As mentioned above, we are primarily interested in examining how characteristics associated with a individual's primary job affect labour supply decisions relating to a second job. One labour supply outcome relating to a second job is simply whether or not an individual holds a second job. One way to examine this outcome is to focus on the probability that an individual hold a second job (i.e. $H_2 > 0$), given that the individual has a primary job (i.e. $H_1 > 0$). That is:

$$(14) \qquad Prob(H_{2i} > 0) = f(\mathbf{X}_i, \mathbf{Z}_j, u_i)$$

where $\mathbf{X}_i$ is a vector of socioeconomic variables (including a constant) that relate to the individual (such as education and age) and $\mathbf{Z}_j$ is a vector of variables that relate to the individuals primary job (such as the job insecurity proxies defined below). Assuming u_i follows a logistic distribution, Eq. (14) can be estimated as logistic or "logit" regression model.

Another labour supply outcome relating to a second job is the number of hours worked in the second job (including zero). One way to examine this outcome is to focus on the number of hours worked in a second job (i.e. H_2), given that the individual has a primary job (i.e. $H_1 > 0$), using censored regression techniques. That is:

(15a) $E(H_{2i}) = f(X_i, Z_j, e_i)$

where:

(15b) $E(H_{2i}) = Prob(H_{2i} > 0) \times E(H_{2i} | H_{2i} > 0)$

The first term on the right-hand side of Eq. (15b) is the probability that the individual has a second job and the second term is the expectation of hours worked in the second job conditional on having a second job. Assuming e_i follows a normal distribution, then Eq. (15a/b) can be estimated as a "tobit" regression model.

It is important to note that both Eqs. (14) and (15a/b) are estimated only for individuals who are employed (i.e. individuals who have a primary job). This creates a potential problem relating to sample selection bias since those individuals who are employed may be a "self selected sample". We attempted to control for this bias by using the appropriate sample selection model extensions of the above models (i.e. bivariate probit with selection in the case of Eq. (14) and tobit with selection in the case of Eq. (15a/b), see Greene, 1990). Overall, the results from these more sophisticated selection models were very similar to the results from the models that ignore the sample selection bias issue. Therefore only the latter results are presented. Nevertheless it should be noted that there are difficult identification problems associated with estimating these models (which are often ignored in practice) and the sample selection bias issue should be addressed fully in future research in this area.

3.3 Job Security Proxy Variables

Much of the current debate concerned with changes in job security focus on changes in accumulated job tenure over time (see Burgess and Rees, 1995; Diebold,

Neumark and Polsky, 1996; Farber, 1995; and Swinnerton and Wial, 1995, 1996). In these studies, changes in job tenure are summarised by calculating "retention ratios" for various groups for workers. An "*n-year*" retention rate (e.g. 5 year) for an individual with "*k*" years of accumulated tenure (e.g. 10 years) is interpreted as the probability that an individual who has "*k*" years of tenure (e.g. 10 years) will accumulate an additional "*n*" years of tenure (e.g. 5 years). Decreases in these rates over time are usually presented as evidence in support of the conclusion of decreasing job security.

The first measure of job security that we use is similar to a retention rate. Based on information relating to primary job, the measure, "$Ten<1_j$", is the percentage of individuals in occupation "*j*" with tenure less than 1 year. This measure was constructed by pooling the four waves of the *BHPS* and the two-digit *Standard Occupational Classification System (SOC)* was used to define each individual occupation (i.e. almost a 100 different occupations in total). That is:

$$Ten<1_j = [(N:t<1)/N_j] \times 100$$

where "$(N:t<1)_j$" is the number of individuals employed in occupation "*j*" with job tenure "*t*" less than one year and "*Nj*" is the total number of individuals employed in occupation "*j*".[6]

The second measure of job security that we use is constructed from a qualitative question relating to how individuals perceive their own job security. In each wave of the *BHPS* a series of questions were asked of the general form: "I'd like you to tell me

[6] We also constructed variables similar variables base on 5 and 10 years of tenure. In none of the labour supply equation estimated were these variables statistically significant.

from this card which best describes how satisfied or dissatisfied your are with that particular aspect of your job". There are seven possible response categories ranging from "not satisfied at all" to "completely satisfied". One of these questions was concerned with the individual's perceived "job security". Based on information relating to primary job, the measure, "$SecBad_j$" is the percentage of individuals in occupation j who respond "not satisfied at all" (category 1) or "not satisfied" (category 2) to this question. That is:

$$SecBad_j = [(N:q=1,2)/N_j] \times 100$$

where "$(N:q=1,2)$" is the number of individuals employed in occupation "j" who report category "1" or "2" on this question and "N_j" is the total number of individuals employed in occupation "j". As in the above job security measures, the four waves of the *BHPS* were pooled and the two-digit *SOC* was used to define each individual occupation.

Three other possible proxy measures of job security are also considered. Unlike the above measures, these measures are not aggregated over individual occupations but refer directly to each individual. The first, "$Tenure_i$", is the individual's number of years of accumulated job tenure in their primary job. The second, "$Union_i$", is a dummy coded "1" if the individual's primary job is covered by a trade union and coded "0" if not. The third, "$Tempjob_i$", is a dummy variable coded "1" if the individual's primary job is "seasonal, temporary, contract or fixed time" and coded "0" if "permanent". If job security in an individual's primary job does affect decisions relating to labour supply in a second job, we would expect the above variables to have an impact on both the

probability that an individual hold a second job and the number of hours worked in a second job.

3.4 Control Variables

In addition to the above job security proxy variables, a series of other variables are included in the equations primarily as control variables which will allow us to evaluate the relationship between job security and labour supply in second jobs "holding constant" other factors that likely affect labour supply decisions. These variables include age, schooling, educational attainment, marital status, number and age of children, occupation of primary job, region of residence, health status and non-labour income. These variables are shown in Table 1.

3.5 Descriptive Information

Before turning to the estimates of the labour supply equations, Tables 2 to 5 presents some descriptive information relating to the double job-holding. Table 2 shows the percentage of men and women in the age group 16-64 who hold a second job over the four waves of the *BHPS*. As this table suggests, the incidence of double job-holding has been relative stable in the early 1990s. About 10.5 per cent of men and women who have a primary job also hold a second job. The table also suggests that the incidence of double job-holding is higher for women (about 11.5 per cent) compared to men (about 9.5 per cent).

Table 3 shows how the incidence of double job-holding varies by age based on information in the fourth (most recent) wave of the *BHPS* (1994/1995). Although there is no clear pattern with respect to age, it appears that double job-holding rates are

higher for the youngest age groups. For example, 14.3 per cent of men and 19.0 per cent of women in the 15 to 19 age group hold a second job.

Table 4 reports the occupation distributions of first and second jobs based on the four waves of the *BHPS*. Panel (a) is for men while Panel (b) is for women. This table simply summarises the degree of similarity (or difference) between the occupations that individuals hold in the first and second jobs. The diagonal in Table 4 conveniently summarises the degree of correspondence. (Each element of the diagonal who equal 100 per cent if the "match" was perfect). What is immediately clear from the examination of this diagonal is that there is little correspondence between the occupations that individuals hold in their first and second jobs. In fact, for both for men and women none of the diagonal elements are larger that 50 per cent.

Table 5 reports the sample sizes, hours worked and wage rates for both the first job and the second job. Accounting for missing information, in the four waves of the *BHPS* there are 575 men and 811 women who hold a second job. The mean number of hours worked by men in their primary job is 45.2 hours (which includes over-time). The mean for women is much lower at 31.8 hours. There is less of difference between men and women with respect to the mean number of hours worked in the second job. As Table 4 shows, the mean for men is 6.2 hours compared to 5.7 hours for women.

Table 5 also shows the mean hourly wage rate (in £1995).The mean hourly wage rate for men is £6.68 and is lower at £4.99 for women. For both men and women the hourly wage rate is higher in the second job compared to the primary job--£16.45 for men and £8.72 for women. At first glance, these second job wages rates appear to be "too high". However, these means include individuals who report earning up to several "£1,000 per hour" in their second job. That is, there are a small group of individuals who report being paid large sums of money for working very short periods

of time. When we exclude individuals who report earning greater £50 per hour in their second job (i.e. 42 men and 18 women), the mean hourly wage rates in the second job falls to £8.10 for men and to £6.08 for women (see Table 5).

4. Estimates of Labour Supply Equations

Table 6 reports the estimates of the logit models of the probability of holding a second job. Columns (1) and (2) are the estimates for men while Columns (3) and (4) are the estimates for women. For men, none of the job security variables are statistically significant even at the generous 10 per cent level. This is the case for both the sample of men aged 16-64 (Column 1) and for the restricted sub-sample aged 25-54 (Column 2). These estimates provide no support for the hypothesis that a job insecurity increases the probability of holding a job.

For women, the two occupation-specific measures of job security, *Ten<1* and *SecBad*, are not statistically significant. However, two of the other three measures, *Tenure* and *Tempjob* are statistically significant with the expected signs. The estimates suggest that a longer job tenure in the primary job is associated with a lower probability of holding a second job. Likewise, holding a primary job that is "temporary" (not permanent) is associated with a higher probability of holding a second job. It is important to note that the union variable, *Union*, has the expected sign and is "almost" statistically significant. This provides some weak evidence suggesting that holding a unionised primary job is associated with a lower probability of holding a second job. These estimates provide some support for the hypothesis that job insecurity increases the probability of holding a job.

Table 7 reports the estimates of the tobit model of the number of hours worked in the second job. As a general remark, these estimates are consistent with the logit

estimates. For men, none of the job security variables are statistically significant, expect for job tenure, $Tenure_i$, in the equation for the age 25-54 sub-sample (Column 2). However, the sign of this variable is the opposite to what is expected, implying that a longer job tenure in the primary job is associated with a *higher* probability of holding a second job. These estimates provide no support for the hypothesis that job insecurity increases the number of hours worked in a second job.

For women, the two occupation-specific measures of job security, $Ten<1_i$ and $SecBad_i$, are again not statistically significant in the tobit equations. However, job tenure, $Tenure_i$, is highly significant with the expected negative sign, suggesting that a longer job tenure in the primary job is associated with a lower number of hours worked in a second job. It is also important to note that although neither *Tempjob* nor *Union* are statistically significant, the signs of these two variables are as expected. These estimates provide some support for the hypothesis that job insecurity increases the number of hours worked in a second job.

5. Conclusion

The purpose of this paper was to explore a possible link between job security and multiple job-holding in the United Kingdom. It was argued that multiple job-holding may be a response to perceived job insecurity in the sense that an individual may hold a second job if they believe that their primary job has a high risk of termination. As a general remark, the analysis of *BHPS* data carried out in this paper provides (at best) very weak evidence in support of hedging behaviour of this type. For men, none of the job security variables were statistically significant in any of the labour supply equations. For women, some of these job security variables were statistically significant with the signs consistent with this hypothesis. Although these results are

disappointing in terms of the hypothesis put forth, this paper has drawn attention to a little researched area and has demonstrated the value of continued effort in trying to understand the determinants of multiple job-holding.

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Table 1
Control Variables Included in 2nd Job Labour Supply Equations

Mnemonic	Definition
Age	Individual's age in years.
School	Individuals years of schooling completed.
Highest educational qualifications obtained (dummies):	
Qual1	A dummy variable coded "1" if the individual has no qualifications beyond basic school leaving and coded "0" otherwise (excluded category).
Qual2	A dummy variable coded "1" if the individual highest educational qualification is O-levels (and like), clerical and commercial qualifications, CSE's (and the like), recognised trade apprenticeships or a Youth Training certificate and coded "0" otherwise.
Qual3	A dummy variable coded "1" if the individual highest educational qualification is a teaching qualification, A-levels (and the like) City and Guilds, etc. or a nursing qualification and coded "0" otherwise.
Qual4	A dummy variable coded "1" if the individual highest educational qualification is university education and coded "0" otherwise (excluded category).
Married	Marital status--a dummy variable coded "1" if the individual is married and coded "0" otherwise.
Kids	Number of dependent children.
Age of youngest child (dummies):	
Child04	Dummy variable coded "1" if youngest child is of pre-school age (age 0 to 4) and coded "0" otherwise.
Child515	Dummy variable coded "1" if child is of school age (age 5 to 15) and coded "0" otherwise.
Child1618	Dummy variable coded 1 if older (age 16 to 18) and coded "0" otherwise.
Health	Health status--Dummy variable coded "1" is the individual reports in being in "poor health" and coded "0" otherwise.

Region of residence (dummies):

London	London = "1"; Elsewhere = "0"(excluded category)
SE	Southeast = "1"; Elsewhere = "0"
SW	Southwest = "1"; Elsewhere = "0"
EAng	East Anglia = "1"; Elsewhere = "0"
EM	East Midland = "1"; Elsewhere = "0"
WM	West Midland = "1"; Elsewhere = "0"
NW	Northwest = "1"; Elsewhere = "0"
York	Yorkshire and Humberside = "1"; Elsewhere = "0"
North	North = "1"; Elsewhere = "0"
Wales	Wales = "1"; Elsewhere = "0"
Scot	Scotland = "1"; Elsewhere = "0"

Occupation group of primary job (dummies):

Occ1	"Managers and administrators" = 1; Otherwise = "0" (excluded category).
Occ2	"Professional occupations" = 1; Otherwise = "0"
Occ3	"Associate professional and technical occupations" = 1; Otherwise = "0"
Occ4	"Clerical and secretarial occupations" = 1; Otherwise = "0"
Occ5	"Craft and related occupations" = 1; Otherwise = "0"
Occ6	"Personal and protective service occupations" = 1; Otherwise = "0"
Occ7	"Sales occupations" = 1; Otherwise = "0"
Occ8	"Plant and machine operatives" = 1; Otherwise = "0"
Occ9	"Other occupations" = 1; Otherwise = "0"

Nonlab	Non-labour income = Household income from all sources minus labour earnings of individual.

Wave of survey:

Wave1	A dummy variable coded "1" if observation is from the first wave and coded "0" otherwise (excluded category).
Wave2	A dummy variable coded "1" if observation is from the second wave and coded "0" otherwise.
Wave3	A dummy variable coded "1" if observation is from the third wave and coded "0" otherwise.
Wave4	A dummy variable coded "1" if observation is from the fourth wave and coded "0" otherwise.

Table 2
Percentage Who Have a Second Job
1991-1995
(Age 16-64)

Group	*Wave 1*	*Wave 2*	*Wave 3*	*Wave 4*
Men	*9.3*	*8.8*	*9.1*	*9.9*
Women	*11.8*	*11.4*	*11.4*	*11.9*
Both	*10.5*	*10.1*	*10.2*	*10.9*

Source: Waves 1 to 4, *British Household Panel Study.*

Table 3
Percentage Who Have a Second Job by Age and Sex
1994/1995

Age group	*Men*	*Women*	*Both*
15-19	*14.3*	*19.0*	*16.6*
20-24	*13.4*	*13.3*	*13.3*
25-29	*9.1*	*9.6*	*9.3*
30-34	*11.2*	*9.4*	*10.3*
35-39	*9.9*	*15.2*	*12.4*
40-44	*10.1*	*14.1*	*12.1*
45-49	*8.6*	*11.8*	*10.3*
50-54	*5.3*	*8.9*	*7.1*
55-59	*6.7*	*7.9*	*7.3*
60-64	*7.4*	*8.0*	*7.7*
All	*9.9*	*11.9*	*10.9*

Source: Wave 4, *British Household Panel Study.*

Table 4
Occupation Distributions of First and Second Jobs
(Row Percentages)
1991-1995

a) Men

First Job	Second Job 1	2	3	4	5	6	7	8	9	Total
1	**26.9**	13.1	17.2	6.9	8.3	11.7	5.5	7.6	2.8	100
2	10.5	**43.6**	33.8	--	0.8	8.3	1.5	0.8	0.8	100
3	7.6	9.8	**53.8**	5.3	8.3	6.8	5.3	2.3	0.8	100
4	5.9	3.5	25.9	**14.1**	7.1	21.2	9.4	4.7	8.2	100
5	4.9	1.5	9.8	2.9	**46.3**	17.6	0.5	4.9	11.7	100
6	5.8	3.8	5.8	5.8	15.4	**42.3**	5.8	1.9	13.5	100
7	11.0	4.9	14.6	1.2	17.1	23.2	**14.6**	3.7	9.8	100
8	4.8	1.0	10.6	3.8	19.2	26.9	4.8	**11.5**	17.3	100
9	6.6	2.2	8.8	4.4	19.8	23.1	2.2	4.4	**28.6**	100

b) Women

First Job	Second Job: 1	2	3	4	5	6	7	8	9	Total
1	**16.7**	19.4	11.1	8.3	6.9	22.2	12.5	--	2.8	100
2	4.9	**48.8**	21.3	6.1	2.4	12.2	3.0	--	1.2	100
3	0.8	10.6	**52.0**	4.9	2.4	17.1	9.8	--	2.4	100
4	2.7	5.9	5.9	**15.2**	4.3	32.0	25.4	2.0	6.6	100
5	--	8.6	14.3	8.6	**11.4**	14.3	28.6	--	14.3	100
6	2.2	2.9	7.7	11.4	2.9	**47.1**	11.4	0.4	14.0	100
7	1.5	2.9	2.9	14.0	2.2	49.3	**18.4**	--	8.8	100
8	--	2.9	--	2.9	5.7	51.4	22.9	**2.9**	11.4	100
9	3.7	0.7	2.2	6.0	1.5	30.6	9.0	0.7	**45.5**	100

Notes: The occupation groups are: (1) Managers and administrators; (2) Professional occupations; (3) Associate professional and technical occupations; (4) Clerical and secretarial occupations; (5) Craft and related occupations; (6) Personal and protective service occupations; (7) Sales occupations; (8) Plant and machine operatives; and (9) Other occupations.

Source: Waves 1-4, *British Household Panel Study*

Table 5
Sample Characteristics

	Males	*Females*
Sample sizes:		
N	10,672	13,367
N: $H_1 > 0$	8,141	8,747
N: $H_2 > 0 \mid H_1 > 0$	575	811
Mean hours:		
$H_1 \mid H_1 > 0$	45.2 hrs	31.8 hrs
$H_2 \mid H_2 > 0$	6.2 hrs	5.7 hrs
Means wages:		
W_1	£6.68	£4.99
W_2	£16.45	£8.72
	(£8.10)[1]	(£6.08)[2]

Notes:
1. Excludes 42 men with $W_2 > 50$.
2. Excludes 18 women with $W_2 > 50$.

Source: *Waves 1-4*, British Household Panel Study.

Table 6
Reduced-form Second Job Labour Supply Equations
Logit Regression Estimates

	Men		Women	
	(1)	*(2)*	*(3)*	*(4)*
Age group:	***16-64***	***25-64***	***16-64***	***25-64***
Variable				
Ten<1	0.005[1]	-0.003	-0.003	0.002
	(1.18)	(0.58)	(0.63)	(0.36)
Secbad	0.004	0.011	0.008	0.007
	(0.52)	(1.15)	(0.74)	(0.60)
Tenure	0.005	0.008	-0.011	-0.016
	(1.18)	(1.67)	(2.43)	(2.82)
Union	0.089	0.003	-0.101	-0.100
	(1.50)	(0.04)	(1.68)	(1.46)
Tempjob	0.050	0.010	0.140	0.156
	(0.51)	(0.90)	(2.16)	(2.03)
Age	-0.009	-0.006	0.002	0.003
	(3.36)	(1.50)	(0.93)	(3.54)
School	-0.018	-0.024	0.019	0.048
	(0.77)	(0.89)	(0.92)	(1.97)
Qual2	0.175	0.196	0.187	0.181
	(2.37)	(2.27)	(3.01)	(2.64)
Qual3	0.047	0.084	0.264	0.193
	(0.61)	(0.93)	(3.71)	(2.39)
Qual4	0.311	0.382	0.339	0.293
	(2.92)	(3.19)	(3.47)	(2.69)
Married	-0.078	-0.025	-0.176	-0.202
	(1.32)	(0.36)	(3.84)	(3.80)
Kids	0.058	0.070	0.064	0.071
	(1.90)	(2.18)	(2.25)	(2.38)
Child04	0.127	0.164	-0.126	-0.051
	(1.68)	(2.04)	(1.50)	(0.55)
Child515	-0.008	-0.053	0.018	-0.001
	(0.13)	(0.71)	(0.31)	(0.02)
Child1618	-0.252	-0.402	0.018	-0.102
	(1.06)	(1.29)	(0.31)	(0.55)
Health	0.002	-0.134	-0.196	-0.256
	(0.02)	(0.90)	(2.00)	(2.19)
SE	0.0569	0.051	0.141	0.185
	(0.67)	(0.51)	(1.83)	(2.10)
SW	0.025	-0.044	0.292	0.357
	(0.25)	(0.36)	(3.28)	(3.49)
EAng	0.229	0.105	0.251	0.341
	(1.88)	(0.68)	(2.17)	(2.56)
EM	-0.052	0.065	0.205	0.239

		(0.50)	(0.53)	(2.22)	(2.28)
WM		0.015	0.105	0.217	0.234
		(0.88)	(0.93)	(2.44)	(2.26)
NW		-0.232	-0.206	0.025	-0.014
		(2.2)	(1.69)	(0.28)	(0.13)
York		-0.107	-0.005	0.109	0.184
		(1.05)	(0.04)	(1.22)	(1.80)
North		-0.076	-0.013	-0.020	0.047
		(0.68)	(0.10)	(0.19)	(0.41)
Wales		0.229	0.357	0.200	0.165
		(2.09)	(2.84)	(1.88)	(1.32)
Scot		0.045	0.065	0.097	0.114
		(0.45)	(0.57)	(1.11)	(1.13)
Occ2		0.135	0.116	0.256	0.292
		(1.47)	(1.18)	(2.57)	(2.68)
Occ3		0.221	0.322	0.061	0.082
		(2.55)	(2.45)	(0.61)	(0.73)
Occ4		0.170	0.043	0.041	0.064
		(1.81)	(0.38)	(0.43)	(0.60)
Occ5		0.068	-0.091	0.039	-0.078
		(0.75)	(0.86)	(0.25)	(-0.41)
Occ6		-0.026	0.042	0.521	0.583
		(0.23)	(0.35)	(5.59)	(5.60)
Occ7		0.383	0.272	0.111	0.284
		(3.46)	(2.08)	(2.61)	(2.27)
Occ8		-0.016	-0.021	0.113	0.133
		(0.16)	(0.18)	(0.73)	(0.74)
Occ9		0.072	-0.001	0.448	0.434
		(0.60)	(0.01)	(4.36)	(3.72)
Nonlab^2		0.002	0.001	-0.001	-0.003
		(0.07)	(0.32)	(0.70)	(1.26)
Wave2		0.090	0.037	-0.010	0.026
		(1.42)	(0.49)	(0.18)	(0.40)
Wave3		0.097	0.014	-0.037	0.013
		(1.51)	(0.18)	(0.66)	(0.20)
Wave4		0.171	0.094	0.010	0.060
		(2.65)	(1.23)	(0.17)	(0.92)
Constant		-1.300	-1.423	-1.962	-2.723
		(4.2)	(3.85)	(7.03)	(8.01)
-2lnL		4037.7	2598.0	5217.2	3995.2
Notes:		1. Absolute value of the ratio of parameter to standard error in parentheses. 2. Parameter has been multiplied by 1,000.			

Table 7
Reduced-form Second Job Labour Supply Equations
Tobit Regression Estimates

	Men		*Women*	
	(1)	*(2)*	*(3)*	*(4)*
Age group:	*16-64*	*25-54*	*16-64*	*25-54*
Variable				
Ten<1	-0.003[1]	-0.013	-0.032	0.013
	(0.06)	(0.17)	(0.61)	(0.22)
Secbad	0.037	0.146	0.108	0.104
	(0.34)	(1.06)	(0.86)	(0.74)
Tenure	0.083	0.120	-0.122	-0.182
	(1.52)	(1.82)	(2.22)	(2.80)
Union	1.039	-0.117	-1.194	-1.202
	(1.26)	(0.12)	(1.68)	(1.51)
Tempjob	0.957	1.200	1.414	1.552
	(0.80)	(1.18)	(1.68)	(1.74)
Age	-0.141	-0.105	0.025	0.145
	(3.74)	(1.94)	(0.98)	(3.90)
School	-0.341	-0.376	0.167	0.524
	(1.05)	(0.99)	(0.68)	(1.86)
Qual2	1.940	2.271	2.027	2.045
	(1.93)	(1.88)	(2.80)	(2.59)
Qual3	0.390	0.805	2.627	1.729
	(0.37)	(0.65)	(3.14)	(1.85)
Qual4	3.500	4.423	3.484	2.955
	(2.40)	(2.61)	(3.03)	(2.34)
Married	-0.622	0.097	-2.068	-2.251
	(0.77)	(0.10)	(3.82)	(3.63)
Kids	0.750	0.914	0.676	0.761
	(1.80)	(2.02)	(2.04)	(2.19)
Child04	1.872	2.343	-2.028	-0.940
	(1.82)	(2.07)	(2.01)	(0.87)
Child515	-0.088	-0.605	0.141	-0.061
	(0.10)	(0.58)	(0.20)	(0.08)
Child1618	-3.930	-6.135	-1.506	-1.424
	(1.18)	(1.35)	(0.72)	(0.65)
Health	-0.276	-2.075	-2.258	-2.965
	(0.17)	(0.99)	(1.96)	(2.19)
SE	0.800	0.618	1.678	2.139
	(0.69)	(0.44)	(1.84)	(2.07)
SW	0.730	0.069	3.665	4.493
	(0.54)	(0.04)	(3.47)	(3.77)
EAng	3.400	1.390	3.054	4.130
	(2.03)	(0.64)	(2.23)	(2.66)
EM	-0.484	1.053	2.841	3.151

		(0.34)	(0.61)	(2.61)	(2.58)
WM		0.046	1.310	2.638	2.871
		(0.03)	(0.81)	(2.50)	(2.37)
NW		-3.113	-3.102	0.775	0.255
		(2.18)	(1.78)	(0.74)	(0.21)
York		-1.158	0.343	1.737	2.570
		(0.83)	(1.68)	(1.64)	(2.16)
North		-0.655	0.214	0.200	1.069
		(0.43)	(0.12)	(0.17)	(0.81)
Wales		3.810	5.601	2.421	1.682
		(2.55)	(3.17)	(1.91)	(1.15)
Scot		1.362	1.663	1.990	2.132
		(1.01)	(1.03)	(1.84)	(1.82)
Occ2		1.934	1.582	2.939	3.139
		(1.51)	(1.12)	(2.48)	(2.46)
Occ3		2.817	2.967	0.915	1.346
		(2.35)	(2.20)	(0.78)	(1.04)
Occ4		2.628	0.873	0.252	0.484
		(2.04)	(0.55)	(0.23)	(0.39)
Occ5		0.963	-1.256	-0.208	-1.872
		(0.77)	(0.84)	(0.11)	(0.81)
Occ6		-0.009	1.081	6.341	7.034
		(0.01)	(0.64)	(5.73)	(5.75)
Occ7		5.821	4.828	3.200	3.177
		(3.89)	(2.67)	(2.43)	(2.18)
Occ8		-0.025	-0.258	1.740	1.810
		(0.02)	(0.16)	(0.97)	(0.88)
Occ9		1.138	0.139	5.372	5.410
		(0.69)	(0.07)	(4.41)	(3.98)
Nonlab^2		0.114	0.021	-0.243	-0.545
		(0.32)	(0.04)	(1.96)	(1.98)
Wave2		0.186	0.640	-0.200	0.220
		(1.36)	(0.60)	(0.31)	(0.30)
Wave3		1.424	0.445	-0.593	-0.040
		(1.62)	(0.41)	(0.90)	(0.05)
Wave4		2.076	1.161	0.108	0.671
		(2.35)	(1.08)	(0.16)	(0.90)
Constant		17.380	-19.736	-22.758	-31.735
		(4.01)	(3.72)	(6.79)	(7.80)
-2lnL		7293.3	5331.9	9655.5	7413.4
Notes:		1. Absolute value of the ratio of parameter to standard error in parentheses. 2. Parameter has been multiplied by 1,000.			