Research Article

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Is There a Business Cycle Effect on the Incidence of Dual Job Holding?

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Abstract: This paper examines the extent to which the incidence of dual job holding is cyclically sensitive in the context of hours constraints on a worker's weekly labor supply to their main job. Random effects logit models of the probability of dual job holding are estimated separately for men and women for each of three mutually exclusive, hours-constrained regimes: overemployment, unconstrained hours, and underemployment. As measured by the deviation of each individual's current regional unemployment rate from their time-averaged mean regional unemployment rate, transitory business cycle movements have no effect on the probability of dual job holding. However, a permanent/steady-state increase (decrease) in the local unemployment rate reduces (raises) the probability of dual job holding among hours-unconstrained workers for both males and females. Furthermore, permanent employment contracts reduce the likelihood of having two jobs.

Keywords: dual job, labor supply, hours constraint, business cycle

JEL Classification: J01, J22, J49

1 Introduction

Changes in economic conditions over the business cycle have important repercussions for the labor market. The unemployment rate is expected to fluctuate in a

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countercyclical fashion as the economy expands or contracts and new jobs are created or eliminated. Not clear, however, is the behavior of dual job holding over the business cycle. During the recent COVID recession the rate of multiple job holding in the US dropped from 5.1% to 4.0% and bounced back during the economic recovery, suggesting that multiple job holding is pro-cyclical (BLS 2022). However, the rate of multiple job holding remained fairly stable during the Great Recession (Lalé 2015) and it dropped during the first stage of the economic recovery, suggesting that multiple job holding followed a countercyclical pattern.

In this study we expand on the previous literature by disaggregating dual job holders according to whether or not they are constrained in working their desired weekly hours. Specifically, we partition all workers into three mutually exclusive categories: those who are working less than their desired hours (underemployed), those who are working their desired hours (unconstrained), and those who are working more than their desired hours (overemployed). Our analysis focuses on the propensity toward dual job holding within each of these hours-constraint regimes and is separately conducted for males and females.

On theoretical grounds, the incidence of dual job holding can vary procyclically or countercyclically. Employers can be expected to adapt their labor demands to business cycle movements. Among the margins of adjustment are the number of workers (employment) and hours per worker (the work week). These decisions are driven by comparisons of the hourly wage costs of employment in relation to overhead labor costs (non-wage overhead labor costs that do not vary with hours). If the fixed costs associated with hiring and laying off workers are high enough, employers may prefer to hoard labor during a downturn of the economy and cut back on the hours worked. Under these circumstances, workers will be more likely to find themselves in a situation of underemployment and therefore seek a second job to bridge the concomitant loss of income stemming from the gap between their desired and their actual hours of work.[1] Thus, we would expect the preference for dual job holding to increase during a recession. Conversely, during an expansion of the economy, employers may ask employees to work overtime instead of hiring more workers. This decision would lead to a decrease in the incidence of dual job holding during an expansion because the increase in the hours worked on the main job together with the increase in the effective marginal wage due to overtime regulation would decrease the propensity to take a second job (Shishko and Rostker 1976). These arguments would suggest that dual job holding should be countercyclical.

1 A similar argument would apply in the case of a type of added worker effect for joint labor supply in which if a spouse loses their job, the other spouse seeks a second job to compensate for the reduction in family income.

However, since labor demand is also expected to decline during a recession, the fact that more workers are seeking a second job during a recession does not necessarily lead to more workers having a second job. Moreover, we would expect firms to first discharge workers with the lowest job attachments during a contraction of the economy. To the extent that secondary jobs tend to be non-traditional arrangements, it is more likely that dual job holders would lose their second job before regularly employed workers. As such, the rates of dual job holding would tend to exhibit a procyclical pattern. Ultimately, whether the dual job rate is procyclical or countercyclical is an empirical question.

Interestingly, not every dual job holder seeks a second job in response to an underemployment condition on the main job. In fact, there is strong evidence that the largest proportion of workers hold two jobs for reasons other than a constraint on desired weekly hours (Choe et al. 2018). These alternative motives include: (1) a way to gradually transition to a new primary job or to self-employment (Panos et al. 2014); (2) seeking utility enhancing characteristics on a second job that are not available on the main job because jobs are not perfect substitutes (Kimmel and Conway 2001);[2] or (3) two jobs may be complimentary with one another such as when the worker uses the credentials earned on one job to provide consulting services on the side (Paxson and Sicherman 1996). Typically these motives are grouped under the "job portfolio" label by the previous literature. Contrary to the rate of dual job holding due to underemployment conditions, which is the result of the relative shift in labor demand and supply over the business cycle, the rate of dual job holding under the job portfolio motive should be subject only to fluctuation of labor demand because there is no reason to believe that the motivation for holding a portfolio of jobs should be affected by the business cycle.[3] Consequently, the rate of dual job holding under the job portfolio regime should be clearly procyclical.

For the analysis in this paper we follow (Choe et al. 2018) and define a constrained dual job holder as one who would have preferred to work either more hours or fewer hours on their main job. The main job is defined as the job in which the dual job holder works the most hours. Under the job portfolio framework, workers are dual job holders who are either satisfied with their hours worked on the main job or would have preferred to work fewer hours on the main job (overemployed).

2 Examples of heterogeneous jobs include an artist who moonlights during the weekend as a server in a restaurant or an individual who takes a second job that offers health insurance.

3 A notable exception to this conclusion is the decision to hold two jobs as a form of hedging against the risk of unemployment. However, the current literature finds little evidence for such behavior (Bell et al. 1997).

2 Literature Review

The previous literature has not been able to precisely pinpoint the nature of the behavior of dual job rates over the business cycle, probably because of its theoretical ambiguity. For example, Amuedo-Dorantes and Kimmel (2009) found that the dual job rate for males does not fluctuate over the business cycle but the female dual job rate does. Surprisingly, though, they found that the female dual job rate behaved countercyclically during the 80s, it was not responsive to business cycles during most of the 90s, and it behaved procyclically afterward. This observed behavior would be consistent with a change in the composition of dual job holders over time, with hours-constrained workers being more prevalent in the latter part of the period under analysis. However, since information about the motivation for holding two jobs is absent from their data set, this hypothesis cannot be tested and the change in the nature of cyclicality of dual job rates remains unexplained.

Using a sample of 27 European countries between 1998 and 2011, Zangelidis (2014) finds that dual job rates are negatively related to national unemployment rates, but that long-term unemployment (measured by the percentage of people who remain unemployed for more than 12 months) increases the incidence of dual job holding. Contrary to Amuedo-Dorantes and Kimmel (2009), the author finds that women are less sensitive to the worsening of economic conditions. Using CPS data from 1998 to 2013, Hirsch, Husain, and Winters (2016) finds that dual job rates are slightly procyclical but this result becomes insignificant after conditioning on Metropolitan Statistical Area fixed effects. This conclusion is robust to using alternative measures of the business cycle such as the local unemployment rate and local employment growth. All of these studies are conducted using household based surveys. There is evidence, however, of measurement error in the estimation of the multiple jobholding rate based on household surveys (Hirsch, Husain, and Winters 2016) which could lead to an attenuation bias. In fact, using administrative data from a new employer-employee linked dataset, Bailey and Spletzer (2021) found stronger evidence of a procyclicality in the multiple jobholding rate in the US.

Another factor that could explain this weak relationship between the business cycle and dual job holding is the time frame of the analysis. For example, using aggregate measures of dual job holding for the U.S. 48 lower states from 1994 to 1998, Partridge (2002) finds some evidence of procyclicality in the dual job holding rates in the short run, but no statistically significant relationship in the long run. This result would be consistent with the interpretation that most of the dual jobs created during the economic expansion disappear in the long run, thus suggesting that the dual job market acts as a buffer for tight markets, but eventually this effect fades out as regional labor markets adjust, possibly due to migration. Still, even

this literature does not reach a consensus about the behavior of dual job holding rates over the business cycle. In fact, Panos et al. (2014), using a sample of British data from BHPS, concludes that dual job holding is countercyclical in the short run, although it becomes insignificant in the long run.

Our study contributes to the literature on the behavior of dual job holding over the business cycle by incorporating in our model some motivation for holding two jobs and the nature of constraints on weekly labor supply faced by individual workers. This is an important extension because many studies have concluded that dual job holders are not a homogenous group of workers and as such they may respond differently to fluctuations in labor market conditions.

3 Conceptual Framework

We investigate the business cycle effect on the incidence of dual job holding for each hours-constraint regime in a random effects setting. In each regime, workers face binary decisions between having two jobs (dual job holding) and having one job (unitary job holding). An individual's binary job choice decision is framed in terms of a random effects logit model (for ease of presentation, we suppress the superscript for gender):

$$\begin{aligned}\text{Prob}(D_{jit} = 1|X_{it}) &= \text{Prob}(X_{it}\beta_j + \nu_{ji}) \\ &= \text{Prob}(\epsilon_{jit} < X_{it}\beta_j + \nu_{ji}), \quad j = \text{under, uncons, over}\end{aligned}$$

where D_{jit} is an indicator for dual job holding, X_{it} is the regressor observation vector, ν_{ji} is an i.i.d $N\left(0, \sigma^2_{j\nu}\right)$ random effect, and ϵ_{jit} is an idiosyncratic error term that follows the logistic distribution $\Lambda\left(0, \frac{\pi^2}{3}\right)$. A measure of the relative importance of random effects in the data generating process for dual job holding is the fraction ρ of the total error variance accounted for by the random effects variance: $\rho = \frac{\sigma^2_{j\nu}}{\sigma^2_{j\nu}+\sigma^2_{j\epsilon}}$. The variables included in X_{it} control for the local unemployment rate, the wage rate on job 1, non-labor income, age, education, marital status, number of dependent children under the age of 6, industry, and occupation.[4]

The central variable of interest is the local unemployment rate. Let U_{it} represent the local unemployment rate for the ith individual at time t. Let U_{mi} represent

4 As shown in Choe et al. (2018), the dual job labor supply model for weekly hours is a function of the wage rates for job 1 (the main job) and job 2 (the second job). In the present context of the random effects logit model for dual job holding choices, the wage rate on job 2 is not included because it is not defined for unitary job holders.

the time-averaged values of the local unemployment rates for individual i, where $U_{mi} = \frac{\sum_{t=1}^{T_i} U_{it}}{T_i}$ and T_i is the number of time series observations for individual i. In a simple dual job holding, linear probability model with coefficients α_{uc} and γ_{um}, the total effect of the local unemployment rate on the incidence of dual job holding would equal $\alpha_{uc}U_{it} + \gamma_{um}U_{mi}$. Note that in steady state, $U_{it} = U_{mi} \forall t$. Following Panos et al. (2014), minor algebraic manipulation yields an equivalent representation that partitions the local unemployment rate total effect into the business cycle effect and the persistent/permanent or steady state effect:

$$\begin{aligned}\alpha_{uc}U_{it} + \gamma_{um}U_{mi} &= \alpha_{uc}(U_{it} - U_{mi}) + (\alpha_{uc} + \gamma_{um_i})U_{mi} \\ &= \alpha_{uc}\Delta U_{it} + \gamma_{up}U_{mi},\end{aligned}$$

where α_{uc} is the effect of the business cycle on dual job holding, $\Delta U_{it} = U_{it} - U_{mi}$ is the deviation of the current local unemployment rate from the time-averaged local unemployment rate, and $\gamma_{up} = \alpha_{uc} + \gamma_{um}$ is the permanent/steady state effect of the local unemployment rate on the probability of dual job holding.

In the present case of a random effects logit model with three hours-constraint regimes, we consider a straightforward method for obtaining the marginal effects of the local unemployment rate variables on the probability of dual job holding. We begin by setting the random effects equal to their expected values of 0. The conditional probability that an individual in the jth regime will be a dual job holder in period t is given by

$$P(X_{it}\beta_j) = \frac{\exp(X_{it}\beta_j)}{1 + \exp(X_{it}\beta_j)}.$$

The parameter vector β_j captures the linear effects of the variables on the log odds. We denote the logit parameters for ΔU_{it} and U_{mi} as $\beta_{j\backslash uc}$ and $\beta_{j\backslash up}$, respectively. Based on a well-known result for logit models (see Greene (2012), p. 689), the marginal effects of the local unemployment variables on the probability of holding two jobs may be expressed as

$$\begin{aligned}\alpha_{juc_{it}} &= \frac{\partial P(X_{it}\beta_j)}{\partial \Delta U_{it}} \\ &= (\beta_{j\_uc})\left[P(X_{it}\beta_j)\right]\left[1 - P(X_{it}\beta_j)\right] \\ \gamma_{jup_{it}} &= \frac{\partial P(X_{it}\beta_j)}{\partial U_{mi}} \\ &= (\beta_{j\_up})\left[P(X_{it}\beta_j)\right]\left[1 - P(X_{it}\beta_j)\right].\end{aligned}$$

For purposes of obtaining an estimate of the sample average marginal effects of the local unemployment rate variables, we evaluate the marginal effects at the

sample dual job holding proportion obtained over all individuals and time periods ($\overline{P}_j$):

$$\alpha_{j\_uc} = (\beta_{j\_uc})(\overline{P}_j)(1-\overline{P}_j)$$
$$\gamma_{j\_up} = (\beta_{j\_up})(\overline{P}_j)(1-\overline{P}_j).$$

Implicitly, these sample proportion marginal effects incorporate the unobserved random effects. In the empirical analysis, the parameters $\beta_{j\backslash uc}$ and $\beta_{j\backslash up}$ are replaced by their corresponding estimated values. For discrete business cycle changes and permanent unemployment rate changes, the implied total effects on the probability of dual job holding are given by

$$\Delta\overline{P}_{\Delta Uj} = \alpha_{j\_uc}\Delta(\Delta U_{it})$$
$$\Delta\overline{P}_{U_{mi}j} = \gamma_{j\_uc}\Delta U_{mi}.$$

4 Data

The estimation of the model specified in the previous section is carried out using data from the British Household Panel Survey (BHPS) which was started in 1991. The last year the survey was administered was 2008.[5] The initial sample consisted of 5050 households representative of the British population south of the Caledonian Channel. Over time the sample was expanded to represent the entire UK population. By 2001, about 10,000 households were included in the sample. We define the local unemployment rate as the annual unemployment rate for each of the nine English regions (North East, North West, York and the Humber, East Midlands, West Midlands, East, London, South West, and South East), plus Wales, Scotland, and Northern Ireland. Using the geographical location of the head of the household, we match the local unemployment statistics obtained from the Office of National Statistics (https://www.ons.gov.uk/timeseriestool) to each respondent in BHPS. Since the local unemployment rates are missing for 1991, our sample does not include the first wave of BHPS. The conceptual framework spelled out in the previous section does not include the option of not holding any job at all. Also, self-employed individuals can freely adjust their hours of work to their desired target, thus we restrict

5 BHPS respondents were asked if they were willing to participate in the Understanding Society: the UK Household Longitudinal Study survey (UKHLS) starting in 2009. About 60% of BHPS agreed to be part of the new survey. While it is possible to link the respondent's record in the BHPS to the one in UKHLS, the hours-constraint question was not included in the latter survey. Therefore,we cannot utilize data from the UKHLS in this study.

our analysis only to employed workers. Our sample consists of 85,932 person-year observations for 14,709 individuals. Dual job holding accounted for 8.3% of the total person-year observations.

Figure 1 plots the incidence of dual job holding among the three categories of hours-constrained workers along with the overall UK unemployment rate over the period of our study. The unemployment rate generally declined over the period of our study with a small rise after 2005. Among those who were overemployed on their main job, dual job holding tended to be procyclical as it generally moved in the opposite direction from the unemployment rate (11 out of 16 years). Among underemployed workers and workers unconstrained on their main job, dual job holding did not exhibit any systematic relationship to the overall unemployment rate. For these workers, dual job holding moved in the same direction as the unemployment rate about as many times as it moved in the opposite direction without any runs.

Tables 1 and 2 report the descriptive statistics for the separate male and female samples. All monetary values have been adjusted for inflation using 2008 as the base year. When individuals hold multiple jobs, job 1 (or main job in the language of BHPS) is the job with the most hours worked. To derive the hourly wage on job 1, we divide monthly labor earning from job 1 by the sum of standard weekly hours

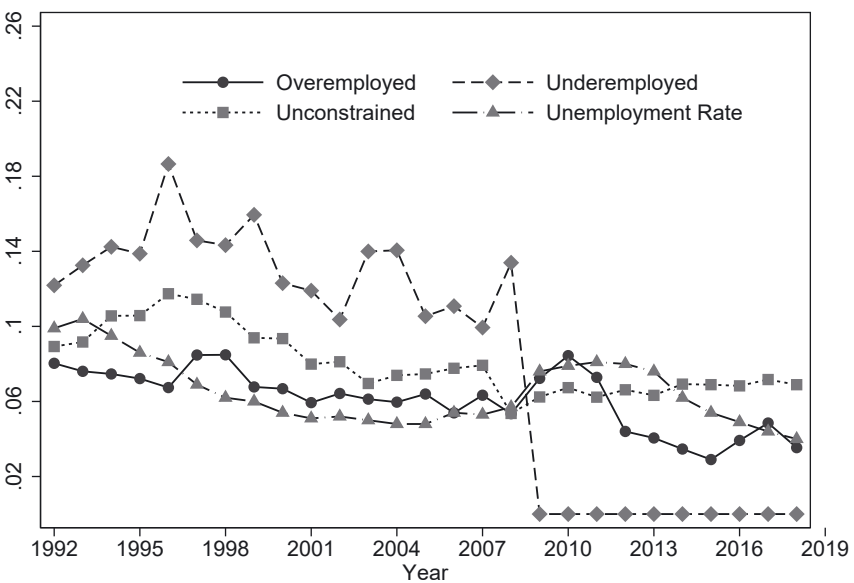

Figure 1: Incidence of dual job holding across different labor supply regimes.

Table 1: Summary statistics: means and differences – males.

Variable	Underemployed ($N = 2838$)			Unconstrained ($N = 24140$)			Overemployed ($N = 14716$)		
	Unitary	Dual	Diff	Unitary	Dual	Diff	Unitary	Dual	Diff
Local unemployment rate (m)	0.062	0.061	0.001	0.062	0.061	0.001[a]	0.063	0.064	−0.001
Wage rate on job 1	12.110	11.061	1.049[a]	14.947	13.836	1.111[a]	15.911	15.796	0.115
Weekly non-labor income	35.188	39.609	−4.421	32.435	33.974	−1.539	31.320	31.907	−0.587
Age	32.921	32.255	0.666	37.713	36.237	1.476[a]	40.788	38.485	2.303[a]
Married (=1)	0.581	0.565	0.016	0.712	0.671	0.041[a]	0.804	0.780	0.024[c]
Number of children	0.658	0.575	0.083	0.619	0.679	−0.060[a]	0.641	0.787	−0.146[a]
Permanent contract	0.898	0.854	0.044[b]	0.959	0.931	0.028[a]	0.978	0.959	0.019[a]
Degree (omitted)	0.132	0.158	−0.026	0.174	0.192	−0.018[c]	0.185	0.240	−0.055[a]
Other higher degree	0.074	0.068	0.006	0.090	0.084	0.006	0.102	0.093	0.009
A level	0.283	0.382	−0.099[a]	0.271	0.270	0.001	0.267	0.252	0.015
GCSE	0.278	0.261	0.017	0.256	0.268	−0.012	0.243	0.244	−0.001
Other qualification	0.114	0.078	0.036[c]	0.103	0.106	−0.003	0.092	0.098	−0.006
No qualification	0.119	0.053	0.066[a]	0.106	0.080	0.026[a]	0.111	0.073	0.038[a]
Agriculture/fishing	0.012	0.009	0.003	0.013	0.027	−0.014[a]	0.011	0.012	−0.001
Energy/water supply	0.030	0.009	0.021[b]	0.037	0.023	0.014[a]	0.043	0.023	0.020[a]
Mining/quarrying	0.085	0.040	0.045[a]	0.097	0.071	0.026[a]	0.100	0.069	0.031[a]
Manufacturing (omitted)	0.231	0.165	0.066[a]	0.222	0.155	0.067[a]	0.226	0.183	0.043[a]
Construction	0.134	0.124	0.010	0.108	0.114	−0.006	0.105	0.104	0.001
Wholesale/accommodation	0.153	0.171	−0.018	0.137	0.135	0.002	0.147	0.107	0.040[a]
Trans/comm	0.119	0.137	−0.018	0.150	0.141	0.009	0.155	0.151	0.004
Finance/real estate	0.095	0.106	−0.011	0.114	0.137	−0.023[a]	0.108	0.133	−0.025[b]

Notes: Based on British Household Panel Survey (1992–2008). All income variables are gross figures with prices in 2008. [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

Table 1: (continued)

Variable	Underemployed ($N = 2838$)			Unconstrained ($N = 24140$)			Overemployed ($N = 14716$)		
	Unitary	Dual	Diff	Unitary	Dual	Diff	Unitary	Dual	Diff
Other services	0.141	0.239	−0.098[a]	0.122	0.198	−0.076[a]	0.104	0.219	−0.115[a]
Legislators & senior officials (omitted)	0.068	0.047	0.021	0.159	0.124	0.035[a]	0.237	0.231	0.006
Professional	0.097	0.134	−0.037[b]	0.131	0.164	−0.033[a]	0.133	0.181	−0.048[a]
Associate professional & technical	0.100	0.115	−0.015	0.122	0.114	0.008	0.115	0.109	0.006
Clerical & secretarial	0.127	0.115	0.012	0.106	0.098	0.008	0.084	0.069	0.015[c]
Craft	0.140	0.193	−0.053[b]	0.079	0.107	−0.028[a]	0.053	0.079	−0.026[a]
Personal & protective service	0.017	0.028	−0.011	0.013	0.019	−0.006[c]	0.006	0.009	−0.003
Sales	0.201	0.143	0.058[b]	0.183	0.174	0.009	0.178	0.166	0.012
Machine operatives	0.133	0.078	0.055[a]	0.125	0.105	0.020[b]	0.134	0.101	0.033[a]
Others	0.114	0.149	−0.035[c]	0.079	0.094	−0.015[b]	0.059	0.055	0.004
N (person-years)	2516	322		22,320	1820		13,742	974	

Based on British Household Panel Survey (1992–2008). All income variables are gross figures with prices in 2008. [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

Table 2: Summary statistics: means and differences – females.

Variable	Underemployed ($N = 3188$)			Unconstrained ($N = 27288$)			Overemployed ($N = 13762$)		
	Unitary	Dual	Diff	Unitary	Dual	Diff	Unitary	Dual	Diff
Local unemployment rate (m)	0.062	0.061	0.001[c]	0.063	0.062	0.001[a]	0.064	0.062	0.002[a]
Wage rate on job 1	9.217	9.176	0.041	11.420	10.937	0.483[a]	13.261	12.550	0.711[a]
Weekly non-labor income	38.761	36.172	2.589	37.067	35.132	1.935	33.439	33.794	−0.355
Age	35.471	35.665	−0.194	38.440	38.320	0.120	39.809	38.720	1.089[a]
Married (=1)	0.621	0.592	0.029	0.724	0.708	0.016[c]	0.753	0.708	0.045[a]
Number of children	0.775	0.747	0.028	0.634	0.732	−0.098[a]	0.517	0.629	−0.112[a]
Permanent contract	0.897	0.836	0.061[a]	0.945	0.919	0.026[a]	0.968	0.928	0.040[a]
Degree (omitted)	0.097	0.117	−0.020	0.145	0.184	−0.039[a]	0.204	0.274	−0.070[a]
Other higher degree	0.073	0.089	−0.016	0.103	0.116	−0.013[b]	0.131	0.132	−0.001
A level	0.198	0.223	−0.025	0.213	0.191	0.022[a]	0.192	0.203	−0.011
GCSE	0.330	0.333	−0.003	0.296	0.277	0.019[b]	0.284	0.247	0.037[b]
Other qualification	0.156	0.117	0.039[b]	0.118	0.116	0.002	0.093	0.071	0.022[b]
No qualification	0.147	0.121	0.026	0.125	0.115	0.010	0.095	0.074	0.021[b]
Agriculture/fishing	0.004	0.004	0.000	0.005	0.011	−0.006[a]	0.003	0.012	−0.009[a]
Energy/water supply	0.009	0.015	−0.006	0.018	0.009	0.009[a]	0.015	0.009	0.006
Mining/quarrying	0.013	0.008	0.005	0.026	0.015	0.011[a]	0.032	0.022	0.010[c]
Manufacturing (omitted)	0.053	0.042	0.011	0.073	0.048	0.025[a]	0.094	0.059	0.035[a]
Construction	0.170	0.098	0.072[a]	0.119	0.080	0.039[a]	0.092	0.086	0.006
Wholesale/accommodation	0.215	0.172	0.043[b]	0.154	0.144	0.010	0.129	0.095	0.034[a]
Trans/comm	0.081	0.076	0.005	0.115	0.100	0.015[b]	0.128	0.086	0.042[a]
Finance/real estate	0.208	0.238	−0.030	0.254	0.255	−0.001	0.268	0.321	−0.053[a]
Other services	0.248	0.346	−0.098[a]	0.238	0.337	−0.099[a]	0.238	0.312	−0.074[a]

Notes: Based on British Household Panel Survey (1992–2008). All income variables are gross figures with prices in 2008. [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

Table 2: (continued)

Variable	Underemployed ($N = 3188$)			Unconstrained ($N = 27288$)			Overemployed ($N = 13762$)		
	Unitary	Dual	Diff	Unitary	Dual	Diff	Unitary	Dual	Diff
Legislators & senior officials (omitted)	0.038	0.032	0.006	0.090	0.064	0.026[a]	0.164	0.108	0.056[a]
Professional	0.056	0.098	−0.042[a]	0.103	0.133	−0.030[a]	0.161	0.202	−0.041[a]
Associate professional & technical	0.103	0.119	−0.016	0.153	0.159	−0.006	0.180	0.187	−0.007
Clerical & secretarial	0.251	0.153	0.098[a]	0.279	0.207	0.072[a]	0.249	0.183	0.066[a]
Craft	0.400	0.431	−0.031	0.254	0.295	−0.041[a]	0.154	0.222	−0.068[a]
Personal & protective service	0.004	0.008	−0.004	0.002	0.004	−0.002	–	–	–
Sales	0.007	0.002	0.005	0.012	0.004	0.008[a]	0.015	0.009	0.006
Machine operatives	0.025	0.021	0.004	0.033	0.025	0.008[b]	0.037	0.028	0.009
Others	0.115	0.136	−0.021	0.073	0.110	−0.037[a]	0.041	0.062	−0.021[a]
N (person-years)	2717	471		24,651	2637		12,842	920	

Notes: Based on British Household Panel Survey (1992–2008). All income variables are gross figures with prices in 2008. [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

and overtime hours worked on job 1 multiplied by 4.3. Non-labor income is computed as annual family non-labor income divided by 52. The variable 'Permanent contract' is an indicator for whether or not the individual's employment corresponds to a permanent contract. Educational/vocational qualifications are grouped into six categories: Degree, Other higher degree, A-level, GCSE, Other qualification, and No qualification.[6] The information about dual job status pertains to the month before the interview date. Finally, the hours-constraint regime for each individual is identified in our data by the answer to the survey question "*Thinking about the hours you work, assuming that you would be paid the same amount per hour, would you prefer to …*", with respondents having to choose among three possible scenarios: (1) work fewer hours (Overemployed), (2) work more hours (Underemployed) and (3) continue with same hours (Unconstrained). Workers can move across hours constrained regimes over time as well as between unitary and dual job holding. For this reason, we do not report the number of individuals for each hours constrained regime as the sum of the numbers of individuals appearing in each regime would exceed the total number of individuals in our sample.

Table 1 reveals that for male workers there were 41,694 observations across individuals and time periods. Hours-unconstrained employment accounted for 57.9% of these observations, while underemployment accounted for 6.8% of the observations and overemployment accounted for 35.3%. Not surprisingly, the incidence of dual job holding was the highest among underemployed workers (11.3%) followed by unconstrained workers (7.5%) and overemployed workers (6.6%). The average unemployment rates are virtually the same across the three hours-constraint regimes with the rates being marginally higher in the overemployed regime compared to the underemployed and hours unconstrained regimes. In fact the average unemployment rates for unitary and dual job holding are identical between the underemployed and hours-unconstrained regimes; however the difference in unemployment rates between unitary and dual job holding is positive and statistically significant only for the unconstrained-hours regime. This might suggest that dual job holding is procyclical in this case; however, the difference in local unemployment rates is quite small. Among male workers, employment under the terms of a permanent contract is more prevalent among unitary job holders in all three hours-constrained regimes.

6 'Degree' corresponds to advanced degrees, i.e. doctorates and masters' degrees. 'Other higher degree' corresponds to bachelor's degrees. 'A'-level corresponds to secondary school 13 years of education. 'GCSE' stands for General Certificate of Secondary Education that involves a concentration on a particular subject and can include practical work training. 'Other qualification' picks up other educational or vocational training. 'No qualification' corresponds to the absence of any formal educational or vocational education.

Table 2 reveals that for female workers there were 44,238 observations across individuals and time periods. Unconstrained weekly hours account for 61.7% of these observations, while underemployment accounted for 7.2% of the observations and overemployment accounted for 31.1%. As was the case for males, the incidence of dual job holding among females was the highest among underemployed workers (14.8%) followed by unconstrained workers (9.7%) and overemployed workers (6.7%). Overall, women were less likely to be hours-constrained but more likely than men to be dual job holders, specifically among the underemployed and the hours-unconstrained. In many cases, the patterns in the data are quite similar to those found in the male sample. As was the case for males, the average local unemployment rates were quite similar across hours-constraint regimes and between unitary and dual job holders. There was a tendency for the average local unemployment rates to rise monotonically as we move from underemployment to unconstrained hours to overemployment. Although the differences between the average local unemployment rate faced by unitary job holders and the unemployment rate faced by dual job holders were small, they were uniformly positive and statistically significant. The fact that dual job holders face lower unemployment rates than their unitary job holding counterparts across all three hours-constraint regimes might suggest that dual job holding was procyclical for women. As is the case for men, the incidence of permanent contracts among women is higher for unitary job holders in all three hours-constrained regimes.

5 Empirical Results

Table 3 reports the estimated random effects logit models for males. The business cycle effect of the local unemployment rate is statistically insignificant for all three hours-constraint regimes. The steady state/permanent effect of the mean local unemployment rate is statistically significant only for hours-unconstrained male workers and is negative. We briefly summarize the statistically significant effects for select remaining variables. Current real hourly earnings on the main job has a negative and statistically significant effect on the probability of dual job holding for male underemployed and unconstrained hours workers. Thus, higher wages on one's main job reduce the incentive for holding a second job among those who report working less than their desired hours on their main job. Age reduces the incidence of dual job holding among hours unconstrained and overemployed male workers. The number of children under the age of 6 had a positive and statistically significant effect on the probability of holding two jobs among overemployed male workers. Employment under the terms of a permanent contract reduced the probability of dual job holding among hours unconstrained and overemployed males.

Table 3: Random effects logit models of dual job choice – males.

	Underemployed		Unconstrained		Overemployed	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Δ (Local unemployment rate)	−4.896	(7.436)	3.690	(2.669)	0.545	(3.666)
Local unemployment rate (m)	−1.674	(5.215)	−6.735[c]	(3.713)	−1.168	(4.656)
Wage rate job 1 /10	−0.570[a]	(0.193)	−0.225[a]	(0.074)	−0.118	(0.094)
Weekly non-labour income/100	0.302	(1.534)	0.381	(0.737)	−1.070	(1.059)
Age/10	0.051	(0.106)	−0.151[a]	(0.056)	−0.275[a]	(0.081)
Married	−0.051	(0.228)	−0.140	(0.114)	−0.137	(0.171)
Number of children	0.047	(0.111)	0.035	(0.052)	0.228[a]	(0.068)
Permanent contract	−0.337	(0.264)	−0.582[a]	(0.163)	−0.808[a]	(0.297)
Other higher degree	0.097	(0.475)	0.273	(0.241)	−0.210	(0.302)
A-level etc.	0.593[c]	(0.360)	0.086	(0.189)	−0.360	(0.253)
GCSE etc.	0.084	(0.378)	0.225	(0.199)	−0.286	(0.263)
Other qualification	−0.399	(0.475)	0.056	(0.249)	−0.224	(0.333)
No qualification	−1.103[b]	(0.510)	−0.190	(0.261)	−0.798[b]	(0.355)
Agriculture/fishing	−0.672	(0.953)	1.093[a]	(0.364)	0.457	(0.653)
Energy/water supply	−0.996	(0.792)	0.056	(0.276)	−1.036[b]	(0.417)
Mining/quarrying	−0.543	(0.452)	−0.131	(0.181)	−0.662[b]	(0.263)
Construction	0.147	(0.353)	0.428[a]	(0.163)	0.174	(0.225)
Wholesale/accomodation	0.334	(0.331)	0.372[b]	(0.156)	−0.022	(0.222)
Trans/comm	0.298	(0.349)	0.503[a]	(0.159)	0.132	(0.214)
Finance/real estate	0.134	(0.380)	0.639[a]	(0.169)	0.348	(0.230)
Other services	0.701[b]	(0.328)	0.986[a]	(0.164)	0.996[a]	(0.217)
Professional	0.882[c]	(0.504)	0.471[a]	(0.168)	0.417[b]	(0.211)
Associate professional & technical	0.599	(0.475)	0.134	(0.165)	−0.016	(0.218)
Clerical & secretarial	0.092	(0.478)	0.230	(0.178)	0.039	(0.267)
Craft	0.273	(0.468)	0.337[c]	(0.191)	0.631[b]	(0.280)
Personal & protective service	1.093	(0.767)	0.259	(0.389)	1.209[c]	(0.726)
Sales	−0.031	(0.466)	0.347[b]	(0.170)	0.308	(0.221)
Machine operatives	−0.123	(0.514)	0.206	(0.192)	0.096	(0.257)
Others	0.384	(0.484)	0.383[b]	(0.195)	−0.180	(0.321)
Constant	−3.028[a]	(0.807)	−3.687[a]	(0.402)	−3.423[a]	(0.569)
p	0.561[a]	(0.054)	0.718[a]	(0.013)	0.753[a]	(0.014)

Notes: Based on British Household Panel Survey (1992–2008). [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

This result points to dual job holding as a hedge against job insecurity, at least for unconstrained and overemployed workers. Workers at the lower end of the educational spectrum are less likely to be dual job holders if they face constraints on their desired hours of work. Consistent with this finding, being in an occupation

classified as 'Professional' increases the probability of dual job holding. The importance of random effects in modeling dual job holding among male workers is evident by the fact that the fraction of the total error variance attributable to random effects (ρ) is statistically significant for all three hours-constraint regimes and ranges in value from 56.1% to 75.3%.

Table 4 reports the estimated random effects logit models for females. As was the case for males, the business cycle effect of the local unemployment rate is statistically insignificant for all three (hours-constraint) regimes. Also, the steady state/permanent effect of the mean local unemployment rate is statistically significant only for hours unconstrained female workers and is negative. Current real hourly earnings on the main job has a negative and statistically significant effect on the probability of dual job holding for women in all three hours-constraint regimes. Higher weekly non-labor income discourages dual job holding among women whose hours are not constrained on the main job. Being married reduces the probability of dual job holding among women who are either unconstrained in their hours or who are overemployed. The number of children in the household under the age of 6 encourages dual job holding among women who are either unconstrained in their hours or are overemployed. For women, employment under the terms of a permanent contract had a negative effect on dual job holding for workers in all three hours-constraint regimes. As with male workers, this result points to dual job holding as a hedge against job insecurity. Among the hours unconstrained and overemployed, lower education qualifications discourage dual job holding. Women in the 'Professional' occupation category are more likely to be dual job holders. As was the case for men, the fraction of the total error variance attributable to random effects (ρ) is statistically significant for all three hours-constraint regimes. For women, ρ ranges in value from 56.8% to 64.0%.

Given that the permanent effect of the mean local unemployment rate was statistically significant among hours-unconstrained workers for both men and women, we can obtain some sense of the magnitude of these effects on dual job holding. In the case of males, $\widehat{\beta}^{m}_{\text{uncons\_up}} = -6.735$, and the sample proportion (over all person-years) for dual job holding is $\overline{\overline{P}}^{m}_{\text{uncons}} = 0.075$ In the case of females, $\widehat{\beta}_{\text{uncons\_up}} = -10.757$, and the sample proportion of dual job holding is $\overline{\overline{P}}^{f}_{\text{uncons}} = 0.097$. Accordingly, the corresponding marginal effects of the steady state unemployment rate on the probability of dual job holding among hours-unconstrained workers are given by

$$\widetilde{\gamma}^{m}_{\text{uncons\_up}} = \left(\widehat{\beta}^{m}_{\text{uncons\_up}}\right)\left(\overline{\overline{P}}^{m}_{\text{uncons}}\right)\left(1 - \overline{\overline{P}}^{m}_{\text{uncons}}\right)$$

$$= -0.467$$

Table 4: Random effects logit models of dual job choice – females.

	Underemployed		Unconstrained		Overemployed	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Δ (Local unemployment rate)	1.668	(7.550)	2.039	(2.168)	−2.641	(3.790)
Local unemployment rate (m)	−2.507	(4.886)	−10.757[a]	(2.978)	−3.762	(4.137)
Wage rate job 1/10	−0.408[b]	(0.182)	−0.303[a]	(0.073)	−0.477[a]	(0.121)
Weekly non-labour income/100	−1.763	(1.490)	−1.278[b]	(0.630)	0.605	(0.908)
Age/10	0.030	(0.086)	−0.017	(0.044)	−0.056	(0.068)
Married	−0.032	(0.185)	−0.304[a]	(0.087)	−0.239[c]	(0.134)
Number of children	−0.069	(0.091)	0.097[b]	(0.040)	0.204[a]	(0.066)
Permanent contract	−0.642[a]	(0.233)	−0.408[a]	(0.118)	−0.794[a]	(0.219)
Other higher degree	0.163	(0.395)	−0.078	(0.173)	−0.228	(0.241)
A-level etc.	0.319	(0.342)	−0.390[b]	(0.154)	−0.496[b]	(0.225)
GCSE etc.	−0.046	(0.334)	−0.437[a]	(0.154)	−0.846[a]	(0.225)
Other qualification	−0.321	(0.388)	−0.453[b]	(0.192)	−0.766[a]	(0.296)
No qualification	−0.664	(0.417)	−0.772[a]	(0.201)	−1.202[a]	(0.327)
Agriculture/fishing	−0.788	(1.401)	0.113	(0.441)	1.556[b]	(0.747)
Energy/water supply	−0.122	(0.857)	−0.151	(0.324)	−0.193	(0.535)
Mining/quarrying	0.066	(0.856)	−0.352	(0.279)	−0.174	(0.401)
Construction	−0.944[b]	(0.471)	−0.356[c]	(0.192)	0.117	(0.304)
Wholesale/accommodation	−0.562	(0.442)	0.395[b]	(0.175)	0.078	(0.285)
Trans/comm	0.008	(0.488)	0.219	(0.184)	0.039	(0.293)
Finance/real estate	−0.163	(0.443)	0.271	(0.171)	0.513[b]	(0.260)
Other services	0.260	(0.421)	0.702[a]	(0.168)	0.524[b]	(0.259)
Professional	0.917[c]	(0.536)	0.624[a]	(0.165)	0.279	(0.217)
Associate professional & technical	0.381	(0.479)	0.634[a]	(0.155)	0.259	(0.210)
Clerical & secretarial	−0.583	(0.458)	0.322[b]	(0.145)	0.241	(0.206)
Craft	0.453	(0.439)	0.739[a]	(0.150)	0.924[a]	(0.221)
Personal & protective service	1.032	(1.267)	1.009[c]	(0.611)	0.000	(0.000)
Sales	−1.350	(1.368)	−0.308	(0.458)	0.161	(0.576)
Machine operatives	−0.916	(0.836)	0.585[b]	(0.256)	0.379	(0.415)
Others	0.362	(0.487)	0.867[a]	(0.182)	0.986[a]	(0.306)
Constant	−1.739[b]	(0.808)	−2.797[a]	(0.349)	−2.827[a]	(0.547)
p	0.568[a]	(0.047)	0.639[a]	(0.014)	0.640[a]	(0.024)

Based on British Household Panel Survey (1992–2008). [a], [b] and [c] indicate significance at 1, 5 and 10 percent levels respectively.

$$\widetilde{\gamma}^{f}_{\text{uncons\_up}} = \left(\widehat{\beta}^{f}_{\text{uncons\_up}}\right)\left(\overline{\overline{P}}^{f}_{\text{uncons}}\right)\left(1-\overline{\overline{P}}^{f}_{\text{uncons}}\right)$$

$$= -0.942.$$

Ultimately, the responsiveness of dual job holding among hours-unconstrained workers to a change in the steady state unemployment rate can be captured by estimated point elasticities:

$$\begin{aligned}\eta^{m}_{\text{uncons\_up}} &= \left(\widetilde{\gamma}^{m}_{\text{uncons\_up}}\right)\left(\frac{\overline{\overline{U}}^{m}_{\text{uncons}}}{\overline{\overline{P}}^{m}_{\text{uncons}}}\right)\\ &= -0.39\\ \eta^{f}_{\text{uncons\_up}} &= \left(\widetilde{\gamma}^{f}_{\text{uncons\_up}}\right)\left(\frac{\overline{\overline{U}}^{f}_{\text{uncons}}}{\overline{\overline{P}}^{f}_{\text{uncons}}}\right)\\ &= -0.61,\end{aligned}$$

where $\overline{\overline{U}}^{m}_{\text{uncons}} = \overline{\overline{U}}^{f}_{\text{uncons}} = 0.063$ since the mean local unemployment rates among hours-unconstrained male workers and female workers turn out to be equal. Although dual job holding is more responsive to steady state unemployment rate changes for women, the responses are relatively inelastic for both men and women.

To put things in perspective, we consider the effects on the rate of dual job holding of a one standard deviation change in the permanent unemployment rate as represented by the time-averaged local unemployment rate. The overall (males and females combined, all hours-constrained regimes, and all years) mean local unemployment rate in percents was $\overline{\overline{U}} = 6.3\%$ and the between standard deviation was 1.9. Accordingly, we let $\Delta U = 1.9$ represent a hypothetical 1.9 percentage point change in the permanent/steady state unemployment rate. The effects on the dual job holding rates for hours-unconstrained workers from this permanent increase in the local unemployment rate are determined according to

$$\begin{aligned}\Delta\overline{\overline{P}}^{m}_{\text{uncons}} &= \left(\widetilde{\gamma}^{m}_{\text{uncons\_up}}\right)(\Delta U)\\ &= -0.887\\ \Delta\overline{\overline{P}}^{f}_{\text{uncons}} &= \left(\widetilde{\gamma}^{f}_{\text{uncons\_up}}\right)(\Delta U)\\ &= -1.790.\end{aligned}$$

Accordingly, a permanent 1.9 percentage point increase in the local unemployment rate would decrease the probability of hours-unconstrained workers holding a second job by 0.887 percentage points for men and by 1.790 percentage points for

women. These effects imply decreases in the dual job holding rates among hours unconstrained workers from 7.5% to 6.6% for men and 9.7% to 7.9% for women. Furthermore, one can readily determine the effects on the overall sample dual job holding rate. The overall sample effect is a weighted average of the effects for hours-unconstrained male and female workers:

$$\begin{aligned}\Delta\bar{\bar{P}} &= \left(\Delta\bar{\bar{P}}^{m}_{\text{uncons}}\right)\left(\frac{N^{m}_{\text{uncons}}}{N}\right) + \left(\Delta\bar{\bar{P}}^{f}_{\text{uncons}}\right)\left(\frac{N^{f}_{\text{uncons}}}{N}\right) \\ &= -0.818,\end{aligned}$$

where $N^{m}_{\text{uncons}} = 24,140$ is the number of person-years for the hours-unconstrained male workers, $N^{f}_{\text{uncons}} = 27,288$ is the number of person-years for the hours-unconstrained female workers, and $N = 85,932$ is the sample total person-years. We can conclude that a permanent increase in the local unemployment rate equal to 1.9 percentage points faced by hours-unconstrained workers would culminate in a reduction in the overall dual job holding rate by -0.818 percentage points. This represents a reduction in the overall dual job holding rate from 8.3% to about 7.5%. A crude elasticity calculation yields

$$\begin{aligned}\eta_{PU} &= \left(\frac{\Delta\bar{\bar{P}}}{\bar{\bar{P}}}\right)\left(\frac{\bar{\bar{U}}}{\Delta U}\right) \\ &= \left(\frac{-0.818}{8.3}\right)\left(\frac{6.3}{1.9}\right) \\ &= -0.327.\end{aligned}$$

Thus, the labor market response across all employed workers to a one standard deviation increase in the steady state local unemployment rate is relatively inelastic.

Because the effects of a one standard deviation decrease in the steady state local unemployment rate are symmetric, these effects are simply the opposite signs of those calculated for a one standard deviation increase. In this case $\Delta U = -1.9$ implies that the induced changes in the proportions of hours-unconstrained male and female workers would be increases in the amounts of 0.887 and 1.790 percentage points, respectively. Thus, the dual job holding rates among hours unconstrained workers would increase from 7.5% to 8.4% for male workers and from 9.7% to 11.5% for female workers. These effects imply an increase in the overall sample dual job holding rate of 0.818 percentage points, or an increase in the rate from 8.3% to 9.1%. The elasticity of the simulated increase in the steady state unemployment rate would be $\eta_{PU} = 0.327$.

6 Discussion

As evidenced by annualized GDP growth rates, there were no recessions in the UK during the period of our study (Baffes et al. 2023). GDP growth rates for the UK were positive except for the last year (2008) but fluctuated up and down. Although the UK macro unemployment rate did not exhibit any pronounced cyclicality over the period of our study, the regional unemployment rates varied both over time and cross-sectionally. The sample average of the local unemployment rate (U_{it}) was 6.3% with a coefficient of variation equal to 0.33 which reflects a relatively modest dispersion of the local unemployment rate across individuals and years. In fact the coefficient of variation for the local unemployment rate was equal or nearly equal to 0.33 for dual job holders and unitary job holders in every hours-constraint regime for both men and women.

Our model identifies business cycle effects off of the variation in the deviation of the current regional/local unemployment rate associated with each individual from each individual's time-averaged mean local unemployment rate. Given the panel nature of our data, the total variation in the local unemployment rate in each hours-constraint regime is equal to the sum of the variation arising over time for each individual (within) and the variation arising from differences in the time-averaged means (between) (see Greene (2012), p. 357–358):

$$\underbrace{\sum_{i=1}^{n_j}\sum_{t=1}^{T_i}(U_{jit}-\overline{\overline{U_j}})^2}_{\text{total variation}} = \underbrace{\sum_{i=1}^{n_j}\left[\sum_{t=1}^{T_i}(U_{jit}-U_{mi})^2\right]}_{\text{within variation}} + \underbrace{\sum_{i=1}^{n_j}T_i\left(U_{mi}-\overline{\overline{U_j}}\right)^2}_{\text{between variation}}, \quad j=\text{under, uncons, over,}$$

where $\overline{\overline{U_j}}$ is the overall sample local unemployment rate mean for the jth hours-constraint regime. For male workers, the within variation for the local unemployment rate as a percent of the total variation was 20% among underemployed workers, 41% among hours-unconstrained workers, and 38% among overemployed workers. The pattern and values for the within variation percent of the total variation for female workers were very similar: 17% among underemployed workers, 41% among hours-unconstrained workers, and 35% among overemployed workers. At least for underemployed workers, the lack of a business cycle effect on dual job holding might be associated with the small contribution of within individual time variation in local unemployment rates to total variation in the local unemployment

rates. We also looked into the possibility that changes in geographical regions of residence could affect the within variation calculations. If the geographic mobility rate were high, this could bias the within variation upwards. As it turns out, this is not a problem since only about 1.5% of the person-years observations in each of our male and female samples involved a change in regional location from the previous year.

Interestingly, the incidence of switching hours-constraint regimes or dual job holding status was fairly common. For male workers, switching between hours-constraint regimes or dual job holding status occurred at least once during the period of the study at a rate of 67 per 100 workers. Similarly, switching rate for female workers was at a rate of 68 per 100 workers.

7 Summary and Conclusions

This paper seeks to identify business cycle effects on the probability of dual job holding through variation in the deviation between the local/regional unemployment rates faced by workers and their time-averaged means in a panel data setting. Permanent or steady-state local unemployment rate effects are identified off of variation in the local unemployment rate time-averaged means. We estimate random effects logit models of the probability of dual job holding from a sample drawn from the UK BHPS. We condition on demographic personal characteristics, industry, and occupation. A novelty of our approach is the tripartite division of our sample according to three mutually exclusive constraints on weekly hours faced by workers on their main jobs: working less than one's desired hours (underemployed), working one's desired ours (unconstrained), or working more than one's desired hours (overemployed). The corresponding random effects logit models of the probability of dual job holding are separately estimated for men and women.

The literature is mixed on the effects of business cycles on dual job holding. Our findings indicate an absence of business cycle effects on the probability of dual job holding. Therefore, inferences about the cyclicality of dual job holding are largely in agreement with what one might conclude on the basis of the unconditional patterns presented in Figure 1. Among both hours unconstrained and underemployed workers, the lack of any systematic relationship in the raw data between overall dual job holding and the current unemployment rate is maintained in the estimated models. The counteracting factors from the demand and supply sides of the labor market are apparently offsetting. Furthermore, there are no apparent business cycle effects on the incidence of dual job holding among overemployed workers. This is in contrast to the appearance of procyclical effects of unemployment on dual job holding among overemployed workers manifest in the macro data. Overall, we find a

consistently negative impact of holding a permanent contract on the probability of dual job holding. This would suggest that dual job holding serves to some extent as a hedge against employment loss.

In terms of permanent changes in the local unemployment rates, we do find that the steady state/permanent effects of local unemployment rates on the probability of dual job holding is statistically significant and negative for hours-unconstrained workers. For permanent moves to tighter labor markets, workers who are working their desired hours on their main jobs would be more likely to have a second job. This long-run effect could reflect wage rate increases available for second jobs as employers seek to hire more workers in tighter labor markets. These steady state marginal effects are much larger for women. Although these effects for both men and women are confined to hours-unconstrained workers, the total effect on dual job holding in the broader labor market are not inconsequential because the hours-unconstrained regime accounts for 60% of the sample observations.

While there is very little regional geographic mobility, we do find that there is a fair amount of switching between hours-constrained regimes and between unitary and dual job holding. This evidences an adaptive and dynamic labor market. From a policy point of view, our results suggest that labor policies which permanently alter the long run equilibrium unemployment rate could have important repercussions on the secondary job market of dual-job seekers, at the very least for those operating under the job portfolio paradigm. As these individual maximize their utility by holding two jobs, any restriction on their ability to find a second job would be associated with a welfare loss. Although the immediate effect of changes in the permanent unemployment rate on dual job holding were confined to workers who report working their desired weekly hours, this group accounts for 60% of the total person-years observations in our sample. Overall, the impact of permanent changes in the local unemployment rate on dual job holding was relatively inelastic.

Although the data required for our analysis are only available pre-Covid, the analysis presented in this paper offers guidance for studying dual job holding in a Covid-19 labor market environment. There are two main questions that arise in an environment in which significantly more individuals work remotely. First, what does dual job holding mean for individuals who work remotely? Dual job holding status would still of course have to require two employers. Secondly, what does hours-constrained status mean for those who work remotely? Given potential employer difficulties for monitoring and documenting hours actually worked at home, would hours actually worked versus payroll hours more closely resemble the discretion over hours enjoyed by the self-employed? Given such potential unobserved discretion, a reduction in actual overemployment could occur. Of course

one would expect that the opportunity to work remotely would be less prevalent in situations in which it is difficult to monitor a worker's actual effort.

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