

IZA DP No. 1358

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October 2004

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Discussion Paper No. 1358  
October 2004

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## **ABSTRACT**

### **Fly Me to the Moon: The Determinants of Secondary Jobholding in Germany and the UK**

This paper analyzes the determinants of secondary jobholding in Germany and the UK. Although differing in labor market regulations, moonlighting is a persistent phenomenon in both countries. Using panel data from the BHPS and the SOEP, reduced form participation equations are estimated for male and female workers separately. While the results vary across gender and countries, there is support for both main theoretical strands, i.e. the 'hours-constraints' motive as well as the 'heterogeneous-jobs' motive. In particular, there is evidence that particularly German workers who would like to work more hours are more likely to have a second job. On the other hand, the prospect of starting a new job is associated with moonlighting behavior of mainly British workers.

JEL Classification: J22, J29

Keywords: labor supply, secondary jobholding, fixed effects logit estimator, Germany, UK

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## 1. Introduction

The supply of labor in more than one job has not been on the top of labor economists' agendas for long. Although there is an established literature, it is far from extensive and only recently has there been an increasing interest in multiple jobholding along with the ever increasing literature on atypical employment. While the latter term generally covers all phenomena that refer to non-permanent, non-full-time employment, the majority of the relevant literature concentrates on (female) part-time employment, fixed-term employment, and temporary work via temping agencies (See, e.g., De Grip *et al.*, 1997 or Dekker and Kaiser, 2000).

Multiple jobholding, as another facet of atypical employment, has gone unnoticed by and large. This is somewhat surprising as this form of labor supply is as closely related to changes in labor market institutions and regulations as are both part-time and fixed term employment. Furthermore, there is evidence that moonlighting is a rather widespread phenomenon in most of the Western industrialized countries. For the US and Canada, there are several studies issued by official labor statistics institutions that present mainly descriptive evidence for trends in moonlighting over time. Stinson (1997), for example, shows for the US that multiple jobholding increased from 5.2% of all employed persons in 1970 to over 6% in the 1990's, mainly being induced by the growth of moonlighting women from 2.2% to about 6%. In Canada, moonlighting prevalence has also grown from 2% of all workers at the end of the 1970's up to about 5% in 1997 (Sussman, 1998). Again, women outnumber men (6%, compared with 5% for men).

As will be shown in more detail below, secondary jobholding in Germany has decreased from about 9% in the mid-1980s (Schwarze and Helberger, 1987; Schwarze, 1991) to a rather stable rate of about 6-7% of all employed persons in the first half of the 1990s (Schupp *et al.*, 1997; Schwarze, 1997; Schwarze and Heineck, 1999; Heineck and Schwarze, 2001). Bell *et al.* (1997) find moonlighting rates of about 10% for the UK for 1991 to 1994 which is updated by the findings of Böheim and Taylor (2003) who report moonlighting rates of 8-10% for the period between 1991 and 1998.

This paper adds to the literature in several ways. First, as far as apparent, a cross-country comparison has not been carried out before. This is of even more importance here, as moonlighting patterns for two countries are examined that are proponents of different labor market regimes, Germany and the UK. While the UK labor market may be considered liberal,

the German labor market regime is a rather restrictive one and is attributed by a large body of regulations. As constraints in the main job are the most prominent argument of the theoretical background of secondary jobholding, the comparison between Germany and the UK can help to explore underlying determinants other than labor market constraints. The study furthermore explores the determinants of moonlighting behavior for males and females separately, which has been of interest for only a few studies yet (e.g., Schwarze, 1991; Averett, 2001). In addition, while most of the previous literature uses cross-sectional data, this study explores panel data, allowing to control for unobservable heterogeneity.

The remainder of this paper is as follows: In section 2, a short survey of the relevant background literature is given. The theory of moonlighting is shortly introduced in section 3, followed by an outline of the data and methods used in this analysis (section 4). Thereafter, results are presented in section 5 before concluding remarks are given in section 6.

## **2. Background and previous findings**

When asking workers why they supply labor in more than one job, answers show that financial concerns are the main motivation to moonlight. Among possible reasons, the *'need to meet regular household expenses'* is the most important one, with about 30-35% of moonlighters citing that reason (Stinson, 1990; Cohen, 1994, Sussman, 1998; Averett, 2001). Consequently, the primary explanation for secondary jobholding used to be the notion of a fixed amount of hours an individual is allowed to work on her main or first job. If the number of realizable hours is below the desired level, labor supply constraints exist that may prevent to earn sufficient income. As will be shown in more analytical detail below, there might then be an incentive to adjust the difference between desired and realized hours of work by offering labor in a second job.

However, there are also other possible reasons for moonlighting. While 10-15% of moonlighters want to *'gain experience to build up a business'*, more than 15% simply *'enjoy the work on the second job'* (Stinson, 1990; Cohen, 1994, Sussman, 1998; Averett, 2001). These findings hint towards additional motives for moonlighting other than hours-constraints. There consequently are a few studies that extend the initial theoretical background by ideas that might be subsumed under the so-called *'heterogeneous-jobs'* motive. In general, this refers to jobs that are not perfect substitutes. Typical examples are the university professor who uses her expertise in consulting or the musician who cannot make a living from her

performances only and thus holds a regular job to keep up to her expenses.

These simple examples point to possible differences between a constrained and a non-constrained moonlighter: In the first case with hours-constraints, the main job typically is the higher paying one. As the earnings' capacity in this job is limited, workers will accept lower wages in a second job. Lower paying second jobs may also be the case for the 'heterogeneous-jobs' moonlighter: Consider the musician who might accept low earnings as long as she is allowed to play her music no matter whether she is hours-constrained on her first job or not. On the other hand, pertaining to the second example, the university professor's consulting fee may break down to a rather high wage. Here, it might be the relative security of his academic occupation preventing that the professor engages in full-time consulting only. Furthermore, the academic position and its accompanying reputation might be the basis for consulting deals.

There are some more explanations that are in accordance with the 'heterogeneous-jobs' motive. For example, women who have young children may hold two part-time jobs that suit their time-allocation needs of arranging child care better than one full-time occupation. Furthermore, as indicated above, workers who expect to change jobs or start their own business at some future point of time might be moonlighting to acquire or improve certain skills that are needed in the forthcoming occupation. Furthermore, job insecurity might be another possible reason to moonlight although there are arguments that also suggest for a negative effect on participation in secondary jobholding.

Along these lines, multiple jobholding might be both a short and long run phenomenon. Hours-constrained workers might moonlight for one or even more shorter periods in their lifetime to overcome times of economic hardship. Typical examples are the need of paying off debts or to accumulate savings for a bigger purchase. While these financial strains in general might be expected to be of short run duration, secondary jobholding might also be a continuous phenomenon if there is a need to meet regular household expenses.

The existing research on multiple jobholding covers a wide range of both theoretical and empirical topics. The seminal study is by Shishko and Rostker (1976), who were the first to combine theoretical reasoning with empirical analyses. While they acknowledge that there may be reasons for moonlighting other than hours constraints on the main job, the empirical part of their analysis is based on that rationale only. Whereas following analyses of that early period also focus on the 'hours-constraints' case (for example, O'Connell, 1979), more recent research also addresses other motives and different issues of interest. For instance, Schwarze (1991) extends the theoretical background that is based on traditional neoclassical approach

by explicitly incorporating a ‘job-quality’ factor in the model which then has to be considered as a ‘discrete choice’ model. This factor is qualified to capture the heterogeneous character of both the main and the second job as it might include aspects like, e.g., working conditions and job or income security. The findings from the empirical analyses that are based on cross-sectional data from the German SOEP from 1985/86 reinforce the importance of the extended model. He analyzes both the traditional model by applying the Tobit-estimator and the extended random utility model by estimating the moonlighting participation decision using logit-models. He concludes that the findings from the latter approach fit the data better than the model that is based on the assumption of underlying hours constraints only.

The link between labor supplied in the first and the second job is analyzed by Smith Conway and Kimmel (1998) for US males. They use data from the SIPP and employ a disequilibrium model to estimate differences between those who have a second job and those who do not. They show that male labor supply is far more elastic than usually assumed, once moonlighting is acknowledged in labor supply behavior. Furthermore, they too find evidence in support of both the ‘hours-constraints’ and the ‘heterogeneous-jobs’ motive.

Also for the US, gender differences in moonlighting behavior and moonlighting wages have been explored by Averett (2001). While she does not find substantial differences in the factors leading men and women to moonlight she concludes that the observed wage differential between male and female moonlighter cannot be explained by differences in individual characteristics. She furthermore examines non-reporting of income among multiple jobholders and recommends using care when interpreting data on secondary jobholding in general and financial data of moonlighters in particular.

The dynamics of dual jobholding have been the focus of Böheim and Taylor (2003) for the UK as well as of Paxson and Sicherman (1996) for the US, who also model the decision to take second jobs and/or change main jobs as a stochastic dynamic process. The duration of moonlighting is addressed by Marshall (2002) and Kimmel and Smith Conway (2001). Again, the main results are consistent with the presence of multiple motives for dual jobholding, with the ‘hours-constraints’ motive being the most common. The family context of unmarried moonlighting individuals has been analyzed by Allen (1998), while a household production model including multiple jobholding behavior is outlined by Highfill *et al.* (1995). The household context is also modeled by Krishnan (1990) who explores the husband’s decision to moonlight together with the wife’s decision to work using a double self-selection model. In accordance with the ‘heterogeneous-jobs’ motive, Bell *et al.* (1997) examine for the UK, whether secondary jobholding is used as a ‘hedge’ against unemployment. They analyze the

possible link between job security and multiple jobholding arguing that a second job might be held if workers believe that their main job has a high risk of termination. They, however, find only weak evidence in support for their hypothesis.

So far, with the studies on the dynamics and the duration of moonlighting being somewhat exceptional, the literature is mainly based on analyses of cross-sectional data. Therefore, one of the novelties in this analysis is the use of panel data. This allows employing panel estimators that mainly have not been used before.<sup>1</sup> That is, unobservable individual heterogeneity is controlled for that might lead to biased results in the case of cross-sectional estimates. Furthermore, as all of the preceding studies are based on single-country data, the second novelty is the transnational comparison of the German and the British case. This is of even more relevance as the German labor market has to be considered highly regulated and thereby imposing even more restrictions on workers. Liberal regimes such as the British, on the other hand, might offer a wide range of options a worker might adjust to in order to achieve maximum utility.

Evidence for existing differences in labor market regimes is provided by the OECD (OECD, 1999). Table 1 shows for Germany and the UK that measuring the overall strictness of employment protection legislation on a scale from 0 to 6, the UK has an overall score of 0.9 whereas Germany's score is 2.6.

[Table 1 about here]

While employment protection in Germany in terms of the overall strictness score has become less strict from the late 1980s to the late 1990s, the position in terms of ranking, however, worsened. Among the 26 OECD countries analyzed, Germany ranks at either position 18 or 20, with only the South European countries having even stricter employment protection legislation. The UK, on the other hand, ranks at position 2, i.e. has the most liberal labor market regime following the US which mainly has no labor market restrictions except for regulations regarding collective dismissals.

Concerning the impact of labor market restrictions on secondary jobholding, it might be argued that without or with only a few regulations specifically on working time, workers may have fewer incentives to moonlight. This is because it may then be expected that they should be able to realize the desired working hours level. However, such arguing is clearly based on the 'hours-constraints' motive which has shown to be too simple to capture individual moonlighting behavior. The empirical analysis might therefore allow exploring whether differences in the labor market regimes are associated with differences in the determinants of participation in secondary jobholding other or in addition to potential hours constraints.

### 3. Theoretical background

The standard theoretical framework that is usually employed in the analysis of moonlighting is based on the assumption of an hours-constrained worker. The seminal contribution is the study of Shishko and Rostker (1976), who explore moonlighting both theoretically and empirically. Extending the standard labor supply model, they argue that a worker who cannot spend as much time in her main job as she wants to in order to achieve the utility maximizing hours of work, may have an incentive to supply labor in a second job. They derive a set of testable implications from comparative statics that are also adapted by Smith Conway and Kimmel (1998) as well as Böheim and Taylor (2003) and are therefore not repeated in this analysis. However, the decision of a constrained/non-constrained moonlighter can easily be illustrated with adaptations of the standard labor-leisure diagram.<sup>2</sup>

Consider Figure 1, where  $Y$  is non-labor income and  $w_1$  and  $w_2$  are the wages paid in first and second job respectively.  $T$  denotes total time available,  $H_1$  is the fixed hours of work in the first job, and  $h_2$  is the time spent in a second job. The worker is assumed to maximize her utility which is determined by consumption and leisure. She would like to work  $T-L^*$  hours on her first job in order to reach utility level  $I^*$ , but cannot work more than  $H_1$  hours. The decision to supply labor in a second job then depends on the moonlighting wage offered. The second-job reservation wage is determined by the utility level ( $I_1$ ) given at the intersection of the first-job wage line and the allowable hours  $H_1$ . If the wage offered exceeds the reservation wage, the constrained worker will take a second job that makes her better off. In the diagram, the moonlighting wage,  $w_2$ , is higher than the reservation wage. Therefore, the worker supplies  $h_2$  hours of work in a second job and thus reaches a utility level,  $I_2$ , that is closer to the maximum utility level of the unconstrained case.

[Figure 1 about here]

The decision of the non-constrained moonlighter can be depicted only for the case of a higher paying second job, like, for example, the professor who is engaged in consulting. Figure 2 shows this situation. The individual that is non-constrained in her main job can work any amount of hours ( $h_1$ ) that falls in the given standard working time span  $T-H_1$ . Work in a second job might nevertheless be supplied, if the wage paid at least upholds the individual's utility level ( $I$ ). However, this wage has to be higher than the one paid in the first job. Assuming that hours of work on the second job ( $h_2$ ) are a choice variable, it can be argued that the individual facing this situation would aim at working more hours in her moonlighting job. However, due to the possible heterogeneous character of the two jobs, there likely are

other reasons that drive the worker to supply labor in both occupations.

[Figure 2 about here]

As is furthermore easily conceivable, it is not possible in the static framework to picture the decision of a non-constrained double jobholder whose wage rate on the second job is lower than that on the main job. In this case, it should be expected that the individual would work more hours on her higher paying first job. Again, there nevertheless might be different reasons as to why the individual holds two jobs.

Schwarze (1991) provides an extension of the standard moonlighting model and includes a ‘job-quality’ factor in the utility function of the (representative) worker. Consider

$$U = U(n_l, y, q) \quad (3.1)$$

where  $n_l$  is the share of time spent by leisure,  $y$  is income and  $q$  is an indicator for ‘job quality’. It includes both a set of working conditions and aspects like income security and social security benefits that are attributed to the job. Assuming a well behaved utility curve, utility is maximized subject to the total time available,

$$1 = n_l + n_1 + n_2 \quad (3.2)$$

where  $n_i, i=1,2$ , refers to the time spent in job 1 or 2. The budget constraint is given by

$$y = (1-t)w_1n_1T + w_2n_2T + Y \quad (3.3)$$

where  $t$  is the tax rate,  $w_i, i=1,2$ , is the wage in job  $i$ ,  $T$  is the total time available and  $Y$  is non-labor income.

The factor that extends the traditional theoretical approach is ‘job quality’, which is given by

$$q = a_1n_1 + a_2n_2 + \beta tn_1 + Q \quad (3.4)$$

where  $a_i, i=1,2$ , are factors that indicate the level of satisfaction that is associated with the particular job. Again,  $t$  is the tax rate and  $\beta$  can be interpreted as a parameter representing whether the individual acknowledges the usefulness of taxation and payments to social security systems;  $Q$  indicates social security features that are independent from the worker’s employment.

Schwarze (1991) also applies comparative statics and develops testable hypotheses. First, his findings for the impact of partial changes in both wages and non-labor income on moonlighting hours are in line with the usual ‘hours-constraints’ approach.

$$\begin{aligned}\frac{\partial n_2}{\partial w_2} &< > 0 \\ \frac{\partial n_2}{\partial w_1} &< 0 \\ \frac{\partial n_2}{\partial Y} &< 0\end{aligned}\tag{3.5}$$

While there is a negative effect of an increase in either the wage in the main job or in non-labor income, the effect of a change in the second job wage is ambiguous in sign because of income and substitution effects.

Without going into detail, the partial analysis furthermore suggests that an increase in the tax rate has an ambiguous effect on moonlighting, depending on the individual's 'taxation-acceptance',  $\beta$ . Negative effects on secondary jobholding are derived for both an increase in the individual's willingness to accept taxation and an increase in social security that is not connected to employment.

As interesting are the possible effects of 'job quality' on workers' moonlighting behavior. While it would be desirable to have a clear cut theoretical proposition, Schwarze (1991) shows that the quality of both first and second job are affiliated with ambiguous signs regarding the effect on multiple jobholding.

$$\begin{aligned}\frac{\partial n_2}{\partial a_2} &< > 0 \\ \frac{\partial n_2}{\partial a_1} &< > 0\end{aligned}\tag{3.6}$$

Whether improving working conditions imply an increase in the supply of labor in a second job depends on whether the subsequently increasing job quality results in a higher marginal utility of leisure. If so, moonlighting will decrease. However, it may as well be that worsening working conditions on the main job enhance the need to regenerate in the spare time.

Analogously, given that working conditions improve, leisure might then not be needed that much to recover from stress. Consequently, secondary jobholding may increase.

While the analysis of moonlighting hours is an interesting endpoint in itself, this analysis focuses on the participation decision, however, exploring 'job quality' factors.

#### 4. Data and methods

The data used are drawn from the German SOEP for Germany (SOEP Group, 2001) and the

British Household Panel Survey (BHPS) for the UK (Taylor *et al.*, 2001).<sup>3</sup> Both surveys are nationally representative studies providing detailed information on individual and household related characteristics on an annual basis. While the SOEP started in 1984, the BHPS was implemented in 1991. Both surveys provide a sufficient range of questions concerning secondary jobholding. In the BHPS, these are in particular: (1) *Has a second paid job?* (2) *Number of hours worked per month in second job?* (3) *Gross earnings from second jobs last month?* (4) *Occupation in second job?* Similar items are available in the SOEP: (1) *Has no second paid job?* (2) *Days a month engaged in second job?* (3) *Average hours on these days?* While information on gross earnings from a second job is available in each wave of the BHPS, the SOEP started to collect that information in 1997 only: (4) *Gross earnings from second jobs at this time?* Information on occupational classification of the moonlighting job, on the other hand, is regularly available.

Unlike, for example, the special supplement of the 1991 CPS on moonlighting, there is no question in either one of the surveys as to why the worker holds a second job. Such would make it rather easy to differ between a constrained and an unconstrained moonlighter.

However, there is a variety of indicators that may help to identify whether it is because of hours constraints or because of other reasons, a worker might take a second job.

Above all, both surveys provide questions on the individual's preferences over hours worked. While the BHPS directly asks for preferences ("*Thinking about the hours you work, assuming that you would be paid the same amount per hour, would you prefer to (1) work fewer hours (2) work more hours (3) continue same hours?*"), the SOEP asks for the desired number of hours ("*If you could choose the extent of your hours at work, taking into account that your earnings would change correspondingly: How many hours per week would you like to work?*"). Comparing the number of desired hours with the number of hours usually worked per week, it is therefore possible to generate appropriate indicators.

While there might be the usual caveats regarding subjective indicators, analyses show that the reported dissatisfaction with hours worked reflects actual restrictions on their choice of hours (Bryan, 2002). There is also evidence that subjective reports on constraints predict adjustments in working hours by, for example, a change of job (Böheim and Taylor, 2001). If hours constraints exist and if a job-change cannot be achieved in the short run, workers might then adjust their desired hours of work by moonlighting.

In both surveys, there are further questions on attitudes and expectations towards current and future employment that can be used to capture 'job quality'. To start with, information on job related satisfaction is used. The questions from the BHPS cover the individual's satisfaction

with (1) *job security* (2) *total pay* (3) *work itself*. Among further job related questions, there is also one question about the satisfaction with the number of hours worked. However, this question is not used, because there is no comparable question in the SOEP. Furthermore, the stated preferences identifying workers' hours constraints quite likely cover (dis)satisfaction with working hours.

There are further differences in the related indicators drawn from the SOEP. The variable on dissatisfaction with job security is generated from the original variable "*Are you concerned about your job security*", the "*very concerned*"-response is used to indicate the worker's dissatisfaction with job security. Next, there is no comparable question regarding a worker's satisfaction with the pay she receives. Therefore, a dummy variable generated from the indicator of satisfaction with household-income is employed. This should be kept in mind when interpreting the results.<sup>4</sup> Note also, that the scales of possible answers are different: In the BHPS, answers are given on a seven-point-scale from 1 '*not satisfied at all*' to 7 '*completely satisfied*'. These are collapsed into a binary variable denoting whether the individual is not satisfied (answers 1 to 3 on the scale) or satisfied (answers 4 to 7 on the scale). The SOEP-scale, on the other hand, allows for eleven possible answers with 0 meaning '*totally unhappy*' up to 10 '*totally happy*'. Here, answers 0 to 3 are taken to indicate the worker's dissatisfaction with income.

In accordance with the theoretical arguments regarding job quality, *a priori* expectations towards the effects of dissatisfaction with job security are ambiguous. First, it might be argued that secondary jobholding serves as a 'hedge' against unemployment (Bell *et al.*, 1997). However, it may also be possible that workers take even more efforts to perform well in their first job and are therefore less inclined to moonlight. Furthermore, as Schwarze (1990, p. 228) points out, it may furthermore as well be that less favorable labor market conditions that lead to concerns about job security in the first place may inhibit to supply a second job. Another indicator for (low) job quality is the (dis)satisfaction with work itself. However, in contrast to job security, it might well be expected that a worker who is dissatisfied with her first job may be more likely to hold a second job. This is because if work itself is not satisfying, but provides, for example, pecuniary stability, an individual might moonlight if the second job provides amenities other than monetary benefits.<sup>5</sup>

Dissatisfaction with total pay or income might hint towards a limited earnings' capacity that may move workers to take a second job. This is, because given the utility maximizing behavior of workers, it is quite plausible to assume that dissatisfaction with total pay is given only for cases with earnings that are 'too low'.

Both BHPS and SOEP provide some more questions on expectations on current and future work which might also be used as indicators of job quality. Starting in 1996, workers in the UK are asked whether they think that in 12 months following the interview they (1) *get a better job with [their] current employer?* (2) *take up any work related training?* (3) *start a new job with a new employer?* (4) *start up [their] own business (a new business)?* (5) *give up paid work?*<sup>6</sup>

Similar questions are available from the SOEP:<sup>7</sup> “*Is it likely that you will...*” (1) *be promoted in the company you currently work for,* (2) *gain further qualifications or education through courses,* (3) *give up your current occupation and start a completely new one,* (4) *will voluntarily become self-employed or become a freelancer* and (5) *give up your employment completely or for a period of time?* It, however, has to be noted that in contrast to the BHPS, which refers to the next 12 months, the SOEP questions refer to the next 2 years following the interview.

Positive responses to the first two items may carefully be considered to represent good job quality on the first job. Remember, however, that *a priori* expectations towards moonlighting behavior are ambiguous. In contrast, positive answers to items 3 and 4 may be understood as indicators of either hours-income constraints or lower job quality. In accordance with particularly the ‘heterogeneous-jobs’ motive, it might be expected that workers who are likely to either start a new job/occupation or become self-employed may hold a second job in order to gain experience or improve skills in the new or even different occupation. While there is no clear theoretical proposition for a relationship between the expectation to give up paid employment and moonlighting, it can be assumed that this also captures second jobs.

Therefore, a negative correlation should be observable.

Information about gross hourly wages received in either the first or second job can be derived from the data that is given on monthly earnings and the number of hours usually worked per week. However, there are some limitations with those variables. First, the sample size strongly reduces when using the SOEP data. Out of 17 waves that are the basis for this analysis, only the latest 5 waves include the needed information on second job monthly earnings. Next, affecting both the German and the British sample, there possibly exists a problem with sample selection. It would theoretically be needed to examine the effect of the (reservation) wage received in a second job for all workers. However, data on those wages are observable for moonlighters only. Using OLS and predicting second job wages for the whole sample might ignore that participation in moonlighting is not random, and hence self-selected. Heckman (1979), addressing the comparable problem of observing wages only for employed

persons, proposed a practical solution which treats the selection problem as an omitted variable problem. The correction mechanism he initially proposed is known as the two-step Heckman-correction method and has thereafter become standard in the labor supply literature. This technique basically would have to be applied here as well. However, despite its popularity, the method is not exempt from criticism. Heckman (1979) himself warns against the use of the procedure with inadequately specified selection models. Manski (1989) argues that the procedure lacks robustness and is sensitive to identification and Puhani (2000) recommends a “case by case” use of the Heckman selectivity correction and furthermore shows that if collinearity problems prevail, subsample OLS is the most robust among the simple-to-calculate estimators.

Following Puhani (2000), checks for collinearity problems have been done by calculating  $R^2$  of the regression of the selection parameter, the so-called inverse Mills ratio, on the regressors of the main (second job wage) equation.<sup>8</sup> The corresponding  $R^2$ -values range between 0.8355 and 0.9464 for Germany and between 0.8638 and 0.9896 for the UK which clearly suggests for collinearity. Due to these findings and the aforementioned considerations, the regressions are estimated without sample selectivity correction. Note that this approach is not an unusual decision (see, for instance, Montenegro, 2001 or Newell and Reilly, 2001).

There is another potential problem with using wages and hours on the first job, which arises from the possible endogeneity of the participation decision in both the first and second job (Smith Conway and Kimmel, 1998). If jobs are heterogeneous, the worker simultaneously decides upon both forms of employment. Wages from and hours worked on the first job then are not strictly exogenous as is assumed by the traditional ‘hours constraints’ theory. While this argument suggests to omit using both indicators as regressors, it is plausible to assume that both motives are relevant. Therefore, the covariates are used but there has to be careful interpretation of the results.

Non-labor income is another important theoretical parameter. However, there is a potential drawback for this indicator for the German data. Before 1995, no information regarding separate types of labor and non-labor income, like social assistance or other transfer benefits is available in the SOEP. Therefore, a variable ‘non-labor income’ is generated by subtracting a worker’s earnings as well as the spouse’s labor earnings from the overall net household-income. While second job earnings are subtracted from that indicator where possible, this variable still will quite likely include earnings from moonlighting before 1997. Therefore, the results should again be interpreted rather carefully.

Besides the factors discussed, there is a variety of other explanatory and control variables

used in the reduced form participation equations. Only those that are more plausibly affecting the decision to take a second job will be presented shortly.

Working overtime and get overtime hours paid<sup>9</sup> points to hours and earnings adjustments that might have a negative effect on moonlighting if the ‘hours-constraints’ motive prevails. There can be no prior expectations regarding part-time jobs because such occupation might be voluntary or involuntary. If part-time jobs are accompanied with moonlighting, this might on the one hand hint towards an insufficient hours capacity on the first job. It might, on the other hand, support the ‘heterogeneous-jobs’ motive as working part-time on a stable and secure job might allow to take a second job that has, for example, other non-monetary amenities.

Furthermore, holding two part-time jobs might simply be a means of workers’ labor flexibility. Temporary employment might as well be an indicator for job quality again with ambiguous expectations towards the effect on moonlighting behavior. Given that the fixed-term contract is used for a probationary period with prospects for a permanent follow-up employment, a worker may have an incentive to take strong efforts within that period to signal high productivity. Holding a second job may then be less likely. However, having a temporary job may also be a demand-side induced outcome of lower productivity. Therefore, secondary jobholding may be used as means of adapting to the possibly low labor market position of the worker. There is a variety of further control variables that are included in the estimations but are not discussed in detail to economize upon space.<sup>10</sup>

Due to the irregular availability of indicators, there are different subsamples that are used for the estimations of the reduced form moonlighting participation equations. The largest sample drawn from the BHPS covers all eleven waves available, i.e. includes data from 1991 to 2001. The unbalanced panel consists of 24,319 male and 26,289 female person-year-observations. The German sample, also an unbalanced panel, basically could include data from 1985 to 2001, hence covering 17 waves. However, data on second job earnings are available from 1997 onwards only. Furthermore, indicators on job quality were issued irregularly. The corresponding samples therefore are based on 22,181 male and 18,263 female observations. Furthermore, all German and British samples are restricted to blue- and white-collar workers aged 17 to 60 years old who are full- or part-time employed on their first job.

As for the estimation techniques, methods for both cross-sectional and longitudinal data are applied. On the pooled cross-sectional level, the logit estimator is applied. To account for the samples being pooled over individuals and time, the estimator is adjusted for individual-clustered groups. Furthermore, the panel structure of the data is used. Unobservable individual heterogeneity that might bias results from cross-sectional analyses is hence

controlled for.

In particular, the following structural model is considered:

$$y_{it}^* = \alpha_i + \mathbf{x}'_{it}\boldsymbol{\beta} + v_{it}, \quad i = 1, \dots, N, \quad t = 1, \dots, T \quad (3.7)$$

where  $y_{it}^*$  corresponds to the latent propensity of individual  $i$  at time  $t$  to supply labor in a second job.  $\alpha_i$  is the individual specific effect that differs across individuals but is constant over time. It accounts for intrinsic differences in tastes towards moonlighting and in other unobserved explanatory variables.  $x_{it}$  is the vector of covariates affecting  $y_{it}^*$ . It also includes the factors that refer to both ‘hours constraints’ and the ‘heterogeneous jobs’ motive.  $v_{it}$  is the stochastic error term that is assumed to be *IID*. As  $y_{it}^*$  is a latent variable, it is not observable. Instead, what one observes is

$$y_{it} = \begin{cases} 1 & \text{if } y_{it}^* > 0 \\ 0 & \text{otherwise.} \end{cases} \quad (3.8)$$

Assuming an underlying logistic distribution for  $v_{it}$ , the probability model that follows is

$$Prob(y_{it} = 1 | \mathbf{x}_{it}) = \frac{\exp(\alpha_i + \mathbf{x}'_{it}\boldsymbol{\beta})}{1 + \exp(\alpha_i + \mathbf{x}'_{it}\boldsymbol{\beta})}. \quad (3.9)$$

This fixed effects model can be estimated by conditional maximum likelihood. Particularly,

the probability of a sequence of outcomes  $(y_{i1}, \dots, y_{iT})$ , conditional to  $\bar{y}_i = \sum_{t=1}^T y_{it}$

$$P(y_{i1}, \dots, y_{iT} | \mathbf{X}_{i1}, \dots, \mathbf{X}_{iT}, \alpha_i, y_i) = \frac{\prod_{t=1}^T \exp(\mathbf{X}'_{it}\boldsymbol{\beta}y_{it})}{\sum_{s \in S_i} \prod_{t=1}^T \exp(\mathbf{X}'_{it}\boldsymbol{\beta}s_t)} \quad (3.10)$$

where  $S_i$  is the set of all possible combinations of  $y_{it}$  ones and  $T - y_i$  zeros, is free of the incidental parameters, i.e. independent of  $\alpha_i$  (Greene, 2000). This is because a contribution to the likelihood arises from those groups of observations that are not always zero or one.

Therefore, if the worker does not moonlight at all or is always moonlighting over the time period in question, her information does not enter the likelihood function. This, however, typically entails a huge drop in the number of cases that are used for estimation. However, the advantage of the model is that, unlike the random effects model, the  $\alpha_i$  are allowed to correlate with the vector of covariates in the fixed effects model.

The models have also been estimated using the random effects specification of the estimator.

However, corresponding Hausman-tests have been calculated that all suggest the fixed effects

model to be superior. The results from the random effects model therefore are not presented.

## 5. Results

To give some first impressions about the structure of secondary jobholding in both Germany and the UK, descriptive findings are shown before the discussion of the estimation results. Figure 3 shows that moonlighting is a persistent phenomenon in both countries. There, however, is quite some variation over time and between males and females. In Germany, it decreased from about 8-10% in the mid 1980s to about 7% in 2001, showing a peak around the German reunification in 1990 and, after an downswing in the subsequent years, increased again in the mid-1990s.

[Figure 3 about here]

From 1999 onwards, social security contributions have been levied on the so-called 'marginal employment'. As this type of part-time employment quite often had been supplied as a second job (Schwarze and Heineck, 1999; Heineck and Schwarze, 2001), moonlighting decreased in 2000 before slightly recovering in 2001. In the UK, secondary jobholding has also seen an upwards movement from, on average, about 6% in 1991, has remained on a high level between 1995 and 1999 before decreasing to a share of about 7% in 2001.

There are further differences in moonlighting participation by gender. Corroborating prior results, British women more often hold a second job than British men. The difference in participation rates, however, is rather stable over time. In contrast, females in Germany moonlight less often than German males, with an exception found for 1986, when 8.5% of both male and female workers held a second job. Furthermore, unlike the British case, participation rates do not follow the same patterns over time. Following 1986, there is a rather huge gap in participation by gender which diminishes close to nil in 1994 because of the increase in female moonlighting. In 2001, both the male and the female secondary jobholding rate is again approximately the same.

[Figure 4 about here]

Figure 4 shows that the variation in participation rates over time mainly is due to the changes in secondary jobholding by part-time employees. Interestingly, there is a strong increase in moonlighting by part-time workers in both Germany and the UK from the beginnings of the 1990s until 1996, reaching a level of almost 12% moonlighters in Germany and close to 17% in the UK. Thereafter, secondary jobholding by part-time workers decreases again in both

countries. While German workers drop back to the level of 1994, participation in secondary jobholding remains on a rather high level for part-time workers in the UK.

While there are also moonlighters among full-time workers, there are rather minor changes in participation over time. The exception is German full-time workers in 1990 when secondary jobholding shows a peak, which quite likely is a consequence of the German reunification. Furthermore, as part-time employment is the domain of women, it is not surprising that differences in participation rates between full- and part-time employees mainly follow the trends by gender shown above.

[Figure 5 about here]

The numbers of weekly hours worked in a second job are shown in Figure 5. In the 1990s, both German and British workers engaged in moonlighting supplied between 5 and hours 7 per week in that job. The diagram furthermore shows that the amount of hours supplied by British moonlighters oscillates between these upper and lower bounds without following a distinct pattern. German secondary labor supply has decreased strongly at the end of the 1980s before recovering in the beginnings of the 1990s, but turned downwards again in recent years.<sup>11</sup>

In addition to the diagrams shown, Table 2 and Table 3 also explore some of the prior expectations outlined above in an illustrative approach. Table 2 shows the distribution of preferences over hours worked, the respective moonlighting rates in the samples of German and British workers as well as the ratio of wages earned in the first and second job.

The most obvious finding is the difference in the distribution of preferences over hours worked which very likely reflects differences in the labor market regimes. Almost 60% of workers on the liberal British labor market are satisfied with the number of hours they work, thereby indicating that they achieved their optimal level of labor supply. While it at first glance may be speculative to attribute that finding to the liberal framework of the British labor market only, it may become more suggestive when looking at the figures found for the strongly regulated German labor market.

In particular, it is only about 27% of German workers who do not want to change their labor supply. However, it is interesting to note that more than half of all employed persons want to work less. Rather than being restricted upwards, which is the major argument of the traditional moonlighting theory, these workers suffer from downwards constraints. In accordance with upwards restrictions it can furthermore be seen that almost 8% of the British workers and even about 17% of German workers would like to supply more hours of work. More differences appear regarding the participation in moonlighting and the ratios of wages

in both jobs. First, although unsurprisingly, the moonlighting rate is above average for workers who want to work more hours. However, while the difference in moonlighting prevalence is of +1.8 percentage points for German workers compared to the average moonlighting prevalence, there is a difference of more than 4 percentage points for British employees. Next, it is found that German workers who are satisfied with their working hours – and hence may be considered to have achieved their optimum number of hours worked – hold a second job less often than average. British workers, on the other hand, do not moonlight more or less often given that they are satisfied with their working hours. Furthermore, while British employees who want to work less hours also moonlight less than average, their German counterparts hold a second job slightly above average.<sup>12</sup>

[Table 2 about here]

Regarding the wages earned in both jobs, German workers who would prefer to supply fewer hours receive wages in the second job that are slightly higher than those in the first job. This is in accordance with the theoretical proposition for unconstrained moonlighters as shown in Figure 2. For British workers, second job wages are higher than first job wages irrespective of their preferences over working hours. However, workers who would like to work fewer hours have second job wages that are relatively higher than those of moonlighters who either would prefer to work more hours or who are satisfied with their labor supply.

Given that moonlighting wages are higher than those on the main job, one may suggest that there are incentives for expanding the labor supply in the second job if not completely switching to that job in the first place. Table 3 then presents further descriptive findings that are related with such expectations. The prospect of a better job is attributed with moonlighting behavior that differs little from average in both Germany and the UK. Work related training, however, is accompanied with slightly higher than average secondary jobholding in Britain and even making a difference of 2.5 percentage points for German workers.

[Table 3 about here]

The most striking finding, however, is the moonlighting incidence among workers who either expect to start a new job or who expect to start to become self-employed. In both Germany and the UK, more than 10% of employees who are about to start a new occupation hold a second job and even about one in five forthcoming self-employed workers are moonlighting. Although preliminary, these two findings are in support of the ‘heterogeneous-jobs’ motive.<sup>13</sup> Subsequently, the results from both the pooled logit estimator and the (conditional) fixed effects estimator are presented. Note that while the estimations from the pooled data are clustered on individuals, the estimator does not control for unobservable individual

heterogeneity. Still, the findings can be used as benchmark comparable to both prior results from previous research that has mainly explored cross-sectional data and the findings from the following panel estimations.

All models are estimated separately for men and women. Furthermore, the regressions include information on individuals' working hours preferences and whether the worker is dissatisfied with job security, pay/household income or the job itself. Due to the limited availability of job quality and related indicators outlined above, Table 4 first shows the results from estimations that include (predicted) wages from a second job as regressors. Thereafter, estimations are presented in Table 5 that do not include information on second job wages, but use indicators for further job related expectations. While all regressions include further controls, only the indicators that are related to the theoretical propositions are discussed.<sup>14 15</sup>

Table 4 shows that the desire to work more hours is a strong predictor for moonlighting behavior of male, though not for female workers. Furthermore, controlling for unobservable heterogeneity even is attributed with increases in the changes in the logit of about 0.4 to 0.5 and an increase in statistical significance from the 10%-level to the 1%-level for British males.

As suggested by the descriptive findings, there are differences between German and British workers who want to work less hours. For both males and females in the UK, the coefficients in the fixed effects model are in accordance with theoretical reasoning. However, while the coefficient is of sound statistical significance in the pooled model for females, there is only a tendency towards the 10%-significance level for males in the longitudinal case, with a *z*-value of 1.61. German workers are different inasmuch as the desire to work fewer hours is correlated with a higher likelihood of holding a second job, even controlling for individual specific effects. While this might seem surprising at first glance, this result may be due to the higher wages achieved in the second job (Table 2).

Whereas the *a priori* expectations suggest for an ambiguous effect, job security mainly does not play a role in the decision to moonlight. While there is no effect for male British workers as well as for female German employees, the result from the pooled logit model for German males at first suggests for a negative impact. However, this finding vanishes when using the fixed effects estimator to control for individual-specific effects. For British females, on the other hand, the result from the panel estimator suggests that job insecurity and the propensity to moonlight are associated. A similar outcome is found for dissatisfaction with pay or household income. While there first seems to be a weak positive effect for both British and German men, the coefficients decrease in the fixed effects model and they are not statistically

significant. Again, there is a rather strong relationship for females in the UK indicating that the need to make ends meet may be an incentive to supply a second job. A somewhat puzzling result is found for workers who are dissatisfied with their job: While the panel estimation suggests that British males are more inclined to moonlight, German females are less so. That is, German female workers do not compensate their dissatisfaction by working in another, possibly more satisfying job.

[Table 4 about here]

There is mixed evidence for possible effects of wages. The (predicted) second job wage does not influence the moonlighting decision of German male workers. For British males, the pooled estimation result first suggests for a negative impact of second job wages on moonlighting participation, therefore indicating that the income effect would dominate the substitution effect. However, controlling for unobservable heterogeneity returns a coefficient that is not statistically significant anymore, although there still is a negative sign which is also visible for females in both Germany and the UK.

Furthermore, in line with the theoretical implications, increasing first job wages are a strong disincentive for both male and female British workers to supply labor in a second job, the logits change by about -1 in the panel regressions. While there is a weaker effect for German females, males are not affected, although the negative coefficient from the fixed effects estimation shows a *z*-value of about 1.45, which may carefully be taken as a tendency in support of *a priori* expectations. Findings for non-labor income to some extent are in line with theory inasmuch as the coefficients from the panel regressions are all negative. However, statistical significance is given for British women and, weaker though, for German men. Male workers from Germany, furthermore, are exceptional inasmuch as an increase in weekly working hours does not affect the moonlighting participation, whereas British males as well as female workers are less prone to secondary jobholding with increasing working hours (Table 4). Given that the number of working hours also is a downwards limit, the recreational aspect of leisure time may be more important for German males, although wages in second jobs tend to be higher than first job wages (recall the wage ratios shown in Table 2). On the other hand, and somewhat surprisingly, the fixed effects regression suggests that working overtime influences the moonlighting decision positively for German female and British male workers. However, given that overtime work is paid, the likelihood of secondary jobholding decreases for the latter group as well as for females in the UK. This again is not too surprising, as these workers are able to adjust a possibly given hours standard in their first job by working overtime with the same employer. As it is plausible to assume that overtime hours

are compensated with wages that are relatively higher than the first-job wage, they do not face the need to moonlight. Moonlighting participation of German workers, on the other hand, is not affected by overtime work.<sup>16</sup>

Part-time employment is a good predictor for secondary jobholding among German males, British females and, somewhat weaker, also for German females.<sup>17</sup> Furthermore, temporary jobs are positively associated with moonlighting for all German workers. In all these cases, both pooled and fixed effects regressions return rather large coefficients that are strongly statistically significant. The interpretation for part-time employment is intuitive, inasmuch as lower maximum earnings may induce workers to have another source of income. However, it may well be that there are different reasons for this effect. On the liberal British labor market, women may voluntarily supply labor in two jobs that better suit their needs of flexible working time, for example, when taking care of children. While that argument in general also holds for Germany, it may as well be assumed that part-time occupation is of involuntary nature on the strongly regulated German labor market. Therefore, female part-timers may face the need to adjust their working hours in case they want to work more hours. The findings for temporary employment in Germany suggest that these jobs may not serve as stepping stones to permanent, higher paying employment that would render moonlighting unnecessary. In contrast, the findings from the fixed effects regression imply that British males, who have a fixed term contract, are less likely to hold a second job which may cautiously be interpreted in light of a signaling effect of this type of employment.<sup>18</sup>

Table 5 presents the results from the regressions that do not include information on second job wages. However, the data allow including additional indicators that are related to workers' expectations regarding current and future employment. These indicators might be thought of as further proxies for job quality and are therefore theoretically linked to secondary jobholding. First, regarding the variables that are included in both regressions, the findings are not substantially differing, although some coefficients decrease in statistical significance or turn insignificant. For example, the prior positive effect of dissatisfaction with job security on moonlighting found for British women is cleared away.<sup>19</sup> Moreover, while the effects of preferences towards working more or less hours are basically the same for Germans, the effect for British male workers vanishes once the additional job quality proxies are included. Furthermore, there is a somewhat puzzling finding for British women who would like to supply more working hours. While there seems to be no effect in the pooled estimation, there is a negative effect in the panel model, though weakly statistically significant. This implies that females who want to work more hours are less likely to moonlight. While this might

surprise at first glance, it may well be that these women are able to adjust to working more hours in other ways as by taking a second job.<sup>20</sup>

[Table 5 about here]

Except for one puzzling finding, the effects found for the additional variables on individuals' job prospects mainly are in line with theoretical expectations. In particular, while expecting to get a better job with the current employer is associated with a decrease in the likelihood of moonlighting for British males, the fixed effects estimation for German females results in a logit increase of about 0.75, i.e. a rather strong positive effect on moonlighting participation. Further research is needed to examine whether, for example, the skills acquired in a second job might foster the promotion prospects in the first job. The results from the pooled sample suggests for a positive impact of prospects of job related training on secondary jobholding for British workers. While this would contradict theoretical arguments, unobservable heterogeneity causes spurious correlation. Consequently, results from the fixed effects estimation suggests for no statistical significant effect, although the coefficients now show the expected negative sign.

In line with theoretical considerations, starting up a new job in the near future affects secondary jobholding positively, particularly among women. While statistical significance for male German workers is found for the pooled data only, the findings from the fixed effects model indicate an increase in the logit of about 0.4 for both British and German females. The prospect of becoming self-employed is associated with a higher likelihood for moonlighting in both countries in the pooled logit model. Although statistical significance vanishes in the fixed effects model except for British female workers, these results might cautiously be interpreted such that second job is used to achieve or improve skills that are needed in the forthcoming new occupation. Being about to quit from paid employment suggests for a weak evidence of a lower likelihood of holding a second job. In accordance with theoretical reasoning, negative effects are found from the pooled model for British workers and German female workers. Furthermore, although the result from the pooled estimation is not statistically significant for German males, it is so in the panel model. Summing up briefly, there is evidence of both similarities and discrepancies in the determinants of secondary jobholding in Germany and the UK. For instance, the factors derived from traditional moonlighting theory, i.e. the effects of first job wages and non-labor income, finds stronger support for the UK case only. While these findings are in accordance with the 'hours-constraints' motive of multiple jobholding, there is also a variety of effects that support the 'heterogeneous-jobs' motive. Above all, also mainly for British workers, the

prospect of changing to a new job or of starting up an own business in the near future is associated with a higher propensity to moonlight. One possible and quite plausible reason can be that skills needed for the new job are achieved or improved on the second job. It may furthermore as well be that the new job will be gradually established from a moonlighting job held prior to the switch in employment.

## **6. Concluding remarks**

This paper presents analyses on an under-researched issue of labor supply, secondary jobholding. While there is an established, though small literature on the so-called moonlighting, this study provide some novelties. First, the analysis does not focus only on the most prominent theoretical arguments of moonlighting, the '*hours-constraints*' motive, but explores the propositions of Schwarze (1991) who explicitly addresses the '*heterogeneous-jobs*' motive and extends the moonlighting theory by job quality as determining factor. Following a brief analytical outline, the study presents a cross-national comparison, something which has hitherto not been carried out. This is of even more relevance as the countries in question, Germany and the UK, are proponents of rather different labor market regimes. The analysis furthermore uses longitudinal data so that panel estimators can be applied which only recently has been done once before (Böheim and Taylor, 2003). In contrast to prior analyses that are based on cross-sectional data, it is therefore possible to control for unobservable individual heterogeneity.

The results from the analyses show evidence in support of both theoretical strands. However, effects vary both across gender and country. In particular, while hours constraints seem to play a more important role for male workers in their decision to moonlight, the finding is consistent across estimations for German males only. This is quite plausible as, according to analyses of the OECD, the German labor market is one of the most restrictive regimes. In contrast, the British labor market can be considered to be of one the most liberal and hence presumably more flexible regimes. In fact, descriptive findings suggest that, in contrast to German workers, the main part of British workers achieve a satisfactory solution regarding the number of working hours. Furthermore, in line with traditional moonlighting theory, wages as well as working hours in the first job affect moonlighting behavior of British, but not of German workers.

The analyses further provide evidence for the '*heterogeneous-jobs*' motive. That is, workers

need not be hours-constrained but, for instance, may hold their main job for the sake of pecuniary stability and security and take a second job that provides other than monetary benefits. Another possible explanation is that workers strive to acquire skills or get experience in occupations other than the current job. Evidence for this phenomenon is found for particularly British workers, who either desire or expect to get a new job or start their own business. However, it has to be noted that the reason for the desire to change is not clear-cut: It might either be constraints in working time and hence a limited earnings' capacity of individuals or, supporting the heterogeneity of jobs, it might be other benefits that come along with the new job.

Summing up, there are both similarities and discrepancies in the determinants of secondary jobholding in Germany and the UK. That is, the distinct differences in labor market regimes do only partially transmit into individual labor supply behavior that differs with respect to secondary jobholding.

As for future research, it may be worthwhile to address the heterogeneity of first and second job in more detail. Furthermore, analyses of the duration of moonlighting as well as individuals' changes in the income distribution due to earnings from second jobs may also contribute to understand individuals' labor supply decisions.

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Table 1: Summary indicators of the strictness of employment protection legislation

	Regular employment		Temporary employment		Collective dismissals	Overall EPL strictness					
	Late 1980s	Late 1990s	Late 1980s	Late 1990s	Late 1990s	Version 1 <sup>a</sup>			Version 2 <sup>b</sup>		
						Late 1980s	Late 1990s		Late 1980s	Late 1990s	
Germany	2.7	2.8	3.8	2.3	3.1	3.2	(14)	2.5	(18)	2.6	(20)
UK	0.8	0.8	0.3	0.3	2.9	0.5	(2)	0.5	(2)	0.9	(2)

Notes: Figures in brackets show country rankings that increase with the strictness of employment protection.

<sup>a)</sup> Average of indicators for regular contracts and temporary contracts.

<sup>b)</sup> Weighted average of indicators for regular contracts, temporary contracts and collective dismissals.

Source: OECD, 1999.

Table 2: Moonlighting incidence and wage ratios by preferences over hours worked

Would like to work...	Germany		United Kingdom	
more hours	16.9		7.9	
the same hours	26.7		59.0	
less hours	56.4		33.1	

Would like to work...	Moonlighting	Wage ratio	Moonlighting	Wage ratio
more hours	8.8	1.08	12.5	0.90
the same hours	5.3	1.09	8.5	0.95
less hours	7.2	0.99	6.3	0.82
All	7.0	1.03	8.1	0.91

Notes: Wage ratio is defined as (net wage in first job/gross wage in second job).

Source: BHPS, SOEP. Own calculations.

Table 3: Job related expectations and moonlighting incidence in Germany and the UK

Person expects to ...	Germany	United Kingdom
get a better job (UK); be promoted (D)	8.0	7.2
get work related training / gain further qualification	9.5	8.5
start a new job / new occupation	10.3	10.4
start own business / become self-employed	21.3	18.9
give up paid work / employment	7.1	6.0
Overall moonlighting rate	7.0	8.1

Source: BHPS, SOEP. Own calculations.

Table 4: Job characteristics including second job wages and participation in moonlighting, regressions including additional control variables

	Males D		Males UK		Females D		Females UK	
	Pooled Logit	FE Logit	Pooled Logit	FE Logit	Pooled Logit	FE Logit	Pooled Logit	FE Logit
Would like to work more hours	0.514*** (0.098)	0.534*** (0.172)	0.229* (0.120)	0.431*** (0.157)	0.385*** (0.112)	0.288 (0.202)	0.003 (0.094)	-0.168 (0.113)
... work less hours	0.273*** (0.081)	0.365*** (0.139)	0.006 (0.077)	-0.171 (0.106)	0.205** (0.093)	0.513*** (0.172)	-0.205*** (0.073)	-0.075 (0.096)
Is dissatisfied with job security	-0.292*** (0.100)	0.116 (0.183)	0.029 (0.079)	0.051 (0.103)	-0.092 (0.109)	0.100 (0.214)	0.081 (0.069)	0.208** (0.090)
... with pay/household-income	0.230** (0.103)	0.011 (0.193)	0.145* (0.074)	0.110 (0.101)	0.147 (0.113)	-0.046 (0.204)	0.170*** (0.062)	0.240*** (0.084)
... with job itself	-0.035 (0.132)	0.091 (0.220)	0.119 (0.084)	0.220* (0.117)	-0.116 (0.138)	-0.562** (0.250)	-0.070 (0.081)	0.044 (0.102)
Log of net wage in first job	0.040 (0.118)	-0.360 (0.247)	-0.326** (0.150)	-1.136*** (0.203)	0.107 (0.122)	-0.464* (0.241)	-0.323*** (0.101)	-0.921*** (0.136)
Log of gross wage in second job <sup>+</sup>	0.122 (0.299)	0.455 (0.398)	-0.479* (0.287)	-0.232 (0.366)	-0.049 (0.302)	-0.404 (0.461)	-0.028 (0.208)	-0.042 (0.253)
Log of non-labor income	0.003 (0.012)	-0.047* (0.025)	0.021 (0.028)	-0.032 (0.038)	-0.036*** (0.014)	-0.048 (0.029)	-0.061** (0.025)	-0.085*** (0.033)
Weekly working hours	0.003 (0.004)	0.001 (0.010)	-0.011** (0.005)	-0.032*** (0.007)	-0.005 (0.005)	-0.022** (0.010)	-0.021*** (0.005)	-0.036*** (0.007)
Works overtime	0.121* (0.069)	-0.036 (0.121)	0.106 (0.106)	0.295** (0.148)	0.368*** (0.080)	0.365** (0.142)	0.126 (0.099)	0.155 (0.124)
Overtime work is paid	0.091 (0.080)	0.102 (0.139)	-0.162 (0.114)	-0.401** (0.161)	0.157 (0.117)	-0.102 (0.198)	-0.059 (0.116)	-0.266* (0.143)
Part-time employment	0.930*** (0.181)	1.146*** (0.405)	0.379* (0.216)	-0.077 (0.304)	0.295*** (0.109)	0.353 (0.228)	0.491*** (0.131)	0.533*** (0.159)
Temporary employment	0.295*** (0.110)	0.455** (0.211)	0.082 (0.139)	-0.441** (0.203)	0.357*** (0.116)	0.762*** (0.242)	0.037 (0.097)	0.173 (0.138)
<i>N</i> / Groups	22,181	2,323 / 620	24,319	3,915 / 605	18,262	1,687/466	26,289	5,935 / 846
Chi <sup>2</sup>	345.33	53.70	309.16	115.95	228.99	66.24	510.58	248.31
Log likelihood	-5,853.83	-832.53	-5,973.34	-1408.18	-4,239.30	-590.48	-7,442.67	-2,128.84

Notes: <sup>+</sup> predicted wage.

Source: BHPS, SOEP. Own calculations.

Table 5: Job characteristics including job related expectations and participation in moonlighting, regressions including additional control variables

	Males D		Males UK		Females D		Females UK	
	Pooled Logit	FE Logit	Pooled Logit	FE Logit	Pooled Logit	FE Logit	Pooled Logit	FE Logit
Would like to work more hours	0.534*** (0.122)	0.668** (0.296)	0.098 (0.150)	0.241 (0.265)	0.366*** (0.137)	0.336 (0.337)	-0.006 (0.117)	-0.307* (0.185)
... work less hours	0.284*** (0.105)	0.433* (0.229)	-0.062 (0.094)	-0.118 (0.168)	0.220* (0.117)	0.488* (0.270)	-0.307*** (0.092)	0.015 (0.152)
Is dissatisfied with job security	-0.315** (0.125)	-0.151 (0.292)	-0.066 (0.097)	0.101 (0.170)	-0.222 (0.139)	0.085 (0.321)	-0.028 (0.089)	-0.023 (0.151)
... with household-income/pay	0.099 (0.132)	-0.200 (0.335)	0.132 (0.092)	-0.208 (0.164)	-0.025 (0.144)	-0.235 (0.349)	0.115 (0.080)	0.379*** (0.141)
... with job itself	0.188 (0.152)	0.441 (0.357)	0.065 (0.103)	0.420** (0.192)	0.190 (0.166)	-0.134 (0.371)	-0.193* (0.104)	-0.095 (0.168)
Expects to be promoted/get a better job	0.119 (0.106)	0.277 (0.250)	-0.317*** (0.104)	-0.346* (0.187)	-0.022 (0.142)	0.746** (0.342)	-0.009 (0.091)	0.076 (0.155)
... get job related training/courses	0.068 (0.086)	0.111 (0.209)	0.204** (0.088)	-0.078 (0.152)	0.088 (0.101)	0.014 (0.232)	0.127* (0.074)	-0.125 (0.127)
... start a new job	0.308** (0.138)	0.182 (0.335)	0.101 (0.099)	0.422** (0.180)	0.109 (0.162)	-0.039 (0.378)	0.293*** (0.085)	0.424*** (0.143)
... become self-employed/start up own business	1.025*** (0.166)	-0.097 (0.342)	0.943*** (0.144)	0.310 (0.266)	1.298*** (0.185)	0.618 (0.449)	0.813*** (0.160)	0.912*** (0.337)
... quit from paid employment	-0.030 (0.211)	-0.932* (0.520)	-0.672* (0.357)	0.006 (0.694)	-0.442** (0.203)	-0.330 (0.454)	-0.506** (0.205)	-0.207 (0.341)
Log of net wage in first job	0.062 (0.131)	-0.435 (0.446)	-0.254* (0.144)	-1.202*** (0.325)	0.126 (0.141)	-0.542 (0.396)	-0.236** (0.116)	-0.751*** (0.226)
Log of non-labor income	0.009 (0.014)	-0.022 (0.038)	0.008 (0.032)	-0.009 (0.062)	-0.031** (0.015)	-0.060 (0.049)	-0.069** (0.028)	-0.174*** (0.059)
Weekly working hours	-0.001 (0.005)	0.004 (0.019)	-0.014** (0.006)	-0.043*** (0.011)	-0.009 (0.006)	-0.018 (0.017)	-0.022*** (0.006)	-0.007 (0.012)
Works overtime	0.187** (0.083)	0.134 (0.195)	0.025 (0.127)	0.214 (0.242)	0.526*** (0.099)	0.559** (0.231)	0.135 (0.120)	0.069 (0.212)
Overtime work is paid	0.134 (0.095)	-0.219 (0.213)	-0.025 (0.135)	-0.455* (0.262)	0.214 (0.135)	-0.415 (0.303)	0.016 (0.136)	-0.243 (0.231)
Part-time employment	0.778*** (0.215)	0.664 (0.665)	0.623*** (0.239)	-0.704 (0.461)	0.223* (0.125)	0.537 (0.364)	0.434*** (0.150)	1.003*** (0.261)

Temporary employment	0.286** (0.136)	0.534 (0.356)	0.094 (0.167)	-0.640** (0.319)	0.359** (0.141)	0.754** (0.382)	0.072 (0.122)	0.252 (0.237)
<i>N</i> / Groups	12,773	856 / 315	13,569	1,492 / 375	10,535	676/257	14,718	2,141 / 517
Chi <sup>2</sup>	358.18	37.30	232.75	100.90	239.79	47.81	406.43	150.43
Log likelihood	-3,401.69	-291.32	-3,429.80	-499.73	-2,506.19	-219.92	-4,104.96	-723.32
<i>Source</i> : BHPS, SOEP. Own calculations.								

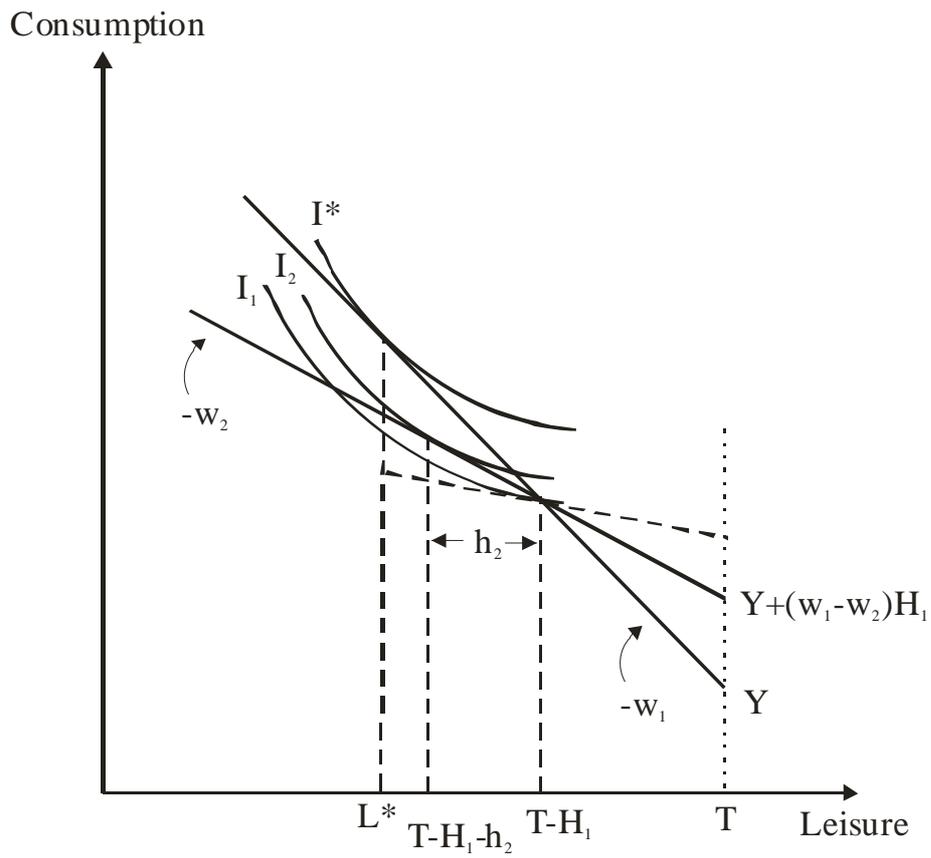


Figure 1: Utility maximizing hours-constrained double jobholder

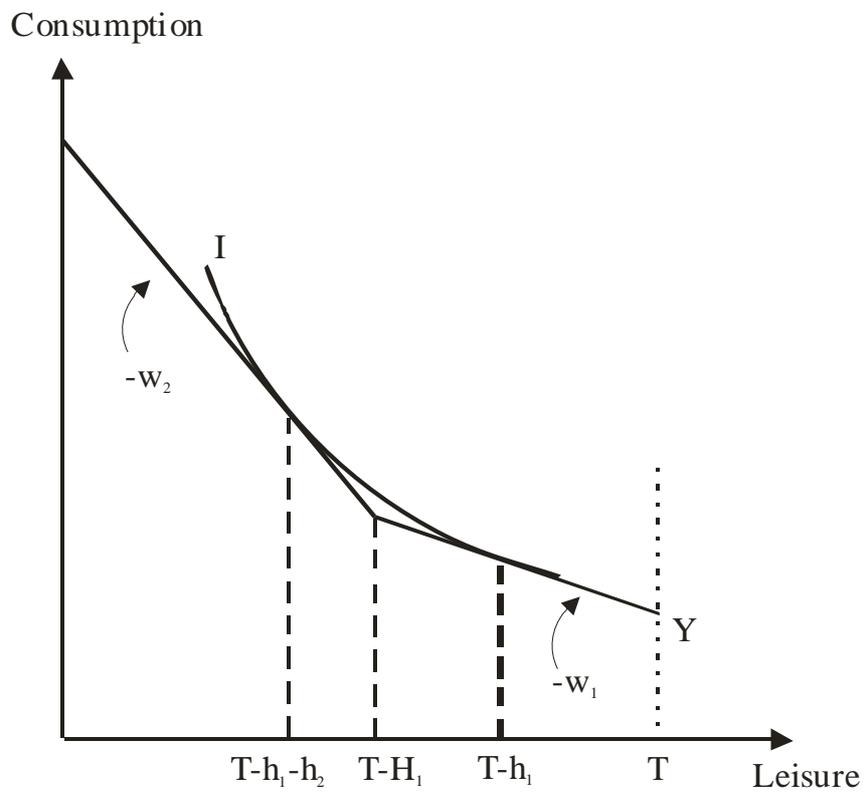


Figure 2: Utility maximizing non hours-constrained double jobholder

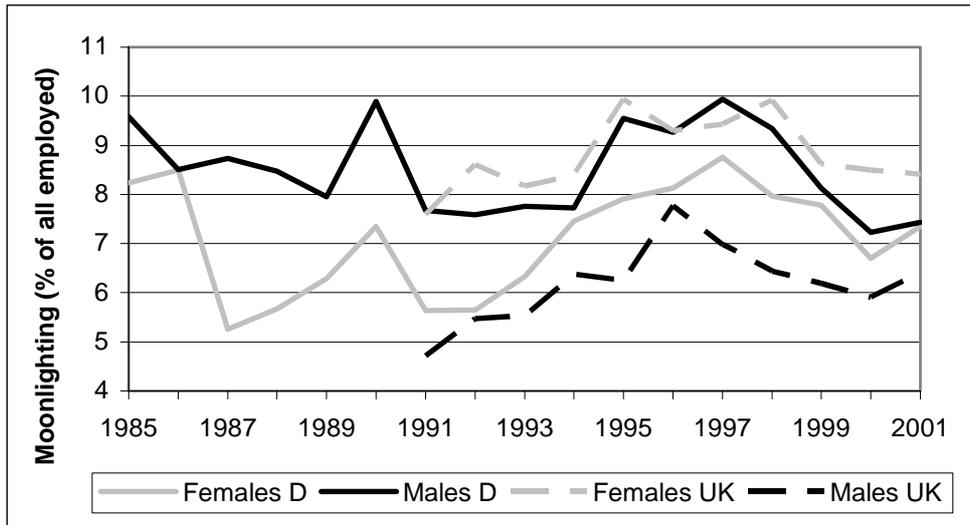


Figure 3: Moonlighting prevalence in Germany and the UK (% of all employed persons)

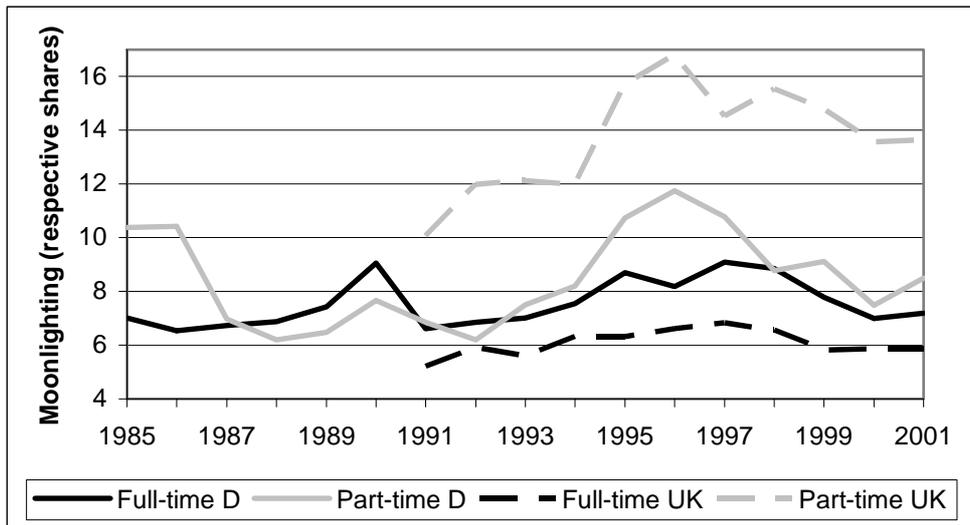


Figure 4: Moonlighting in Germany and the UK (by full- and part-time employment)

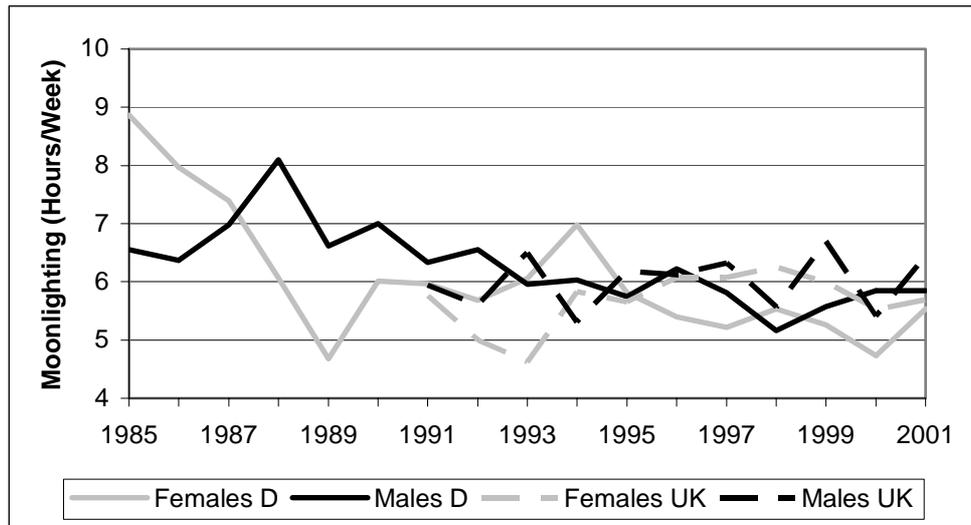


Figure 5: Weekly second job hours in Germany and the UK

\* We like to thank Silke Anger for helpful comments on an earlier draft of this paper. The SOEP data were made available through the DIW Berlin, the BHPS data through the ESRC Data Archive. The BHPS data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex. Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here. All remaining errors are ours. Adopting the journal's policy, the data used in this analysis are documented and available for replication purposes upon request. Note, however, that there are some restrictions due to data protection issues.

<sup>1</sup> As far as apparent, the exception is the study of Böheim and Taylor (2003). While their focus is on the dynamics of multiple jobholding, they also estimate the determinants of moonlighting participation using a random-effects probit model.

<sup>2</sup> The diagrams mainly follow Averett (2001).

<sup>3</sup> For more information, see also: <http://www.diw.de/english/sop/index.html> and <http://iserwww.essex.ac.uk/bhps/>.

<sup>4</sup> While there is a comparable 'satisfaction with household-income' variable in the BHPS, it is not used because it is available from 1996 only.

<sup>5</sup> In the middle or long run, it should, however, be expected that the individual will change to a new job that provides both monetary and other benefits.

<sup>6</sup> Note that there is a change in the questionnaire from 1998 onwards. In 1996 and 1997, the original question is 'How likely do think it is that you will...'. Possible answers are 'very likely', 'likely', 'unlikely' and 'very unlikely'. In this analysis, the first two outcomes are collapsed into a binary indicator to compare with the 'yes-no' dichotomy of the items from 1998 to 2000.

<sup>7</sup> Note that the corresponding questions were issued irregularly over time. In particular, the questions regarding promotion, starting a new job or quitting from paid employment are given in 1985, 1987, 1989, 1991-1994,

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1996, 1998, 1999 and 2001. In addition, the item covering the intention to become self-employed, is asked along the noted waves from 1991 onwards, the question about work related training was added in 1994.

<sup>8</sup> The second job wage equations have been estimated using the cross-sectional data. The covariates used for both the German and the British sample are ‘male’, ‘age’, ‘years of education’, ‘part-time employment’, ‘temporary employment’. A ‘West German’ dummy variable is additionally used for the German sample. The Heckman-selection instruments are ‘wants to work more hours’, ‘number of dependent children’ and ‘works in a company with less than 10 (UK) or 20 (D) employees’.

<sup>9</sup> For the SOEP, there are further variables indicating whether the worker is compensated for overtime work by leisure or by both leisure and payments. In addition, for a limited range of waves, there is information on whether compensation by leisure is offered day- or hours-wise. While these indicators might provide further insights, there are not used because there are no comparable data from the BHPS.

<sup>10</sup> The following socio-economic characteristics are included: ‘age’ and ‘age squared’, dummies on the ‘highest qualification/educational level achieved’, ‘years spent in education’, ‘person is married’, ‘spouse is employed’, ‘number of dependent children’ and two dummies indicating whether the ‘dependent children are of age 0 to 4 years’ or ‘5 to 15 years’. Regional dummies are included for both the British and the German sample. Job-related covariates are: ‘public/governmental employer’, ‘duration of employment’, three ‘firm-size dummies’, twelve ‘branch dummies’ and ten ‘occupational dummies’. To account for possible adjustments to desired working hours by a change of job, there is a further dummy variable indicating whether the individual has changed to the current job only recently, i.e. has ‘job tenure less than one year’. See the Appendix for descriptive statistics of the samples used.

<sup>11</sup> While it is not shown in detail, note that the decrease of the number of hours supplied by German moonlighters to a fairly constant level in the 1990s is accompanied with an inversion of secondary jobholding supplied either occasionally or regularly. In 1985, about 52% of second job were supplied occasionally, 35% were jobs held regularly (the difference in total percentage from 100% stems from the third category observed: ‘*work in family business*’). Thereafter, occasional moonlighting decreased whereas regular moonlighting increased. In 1993, the shares of both types of secondary jobholding were about the same. The drift apart continued so that in 2001, 50% of second jobs were held regularly while about 39% were supplied occasionally.

<sup>12</sup> Note that incidence rates shown in Table 2 are averages over the time periods in the respective sample. Analogously to the diagrams, there has been some up and down over time particularly for workers who state to be restricted upwards. The moonlighting behavior of workers who either are satisfied with their number of hours worked or who want to work less is fairly stable over the periods observed.

<sup>13</sup> Crosstabulating the distributions of classifications of first and second jobs held by moonlighters in both Germany and the UK, it shows that there is only little correspondence between the category of the main job and that of the second job. This again might carefully be interpreted in support of the ‘heterogeneous jobs’ motive. While it might be rewarding to inspect the relationship between the types of jobs in more detail, this issue is not the focus in this analysis and is therefore not examined further.

<sup>14</sup> There is a range of further control variables that is included in the regressions. To summarize, there is evidence that the length of education as well as the type of qualification achieved does not affect moonlighting participation in both Germany and the UK. Furthermore, there is weak evidence from the pooled cross-sectional

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regressions that agricultural workers are more likely to have a second job in both countries. Being a female technician, professional or clerk also affects moonlighting positively. On the other hand, German males who are occupied as professional, metal or constructional worker, and British men who are clerks or provide personal services are less likely to supply labor in more than one job.

<sup>15</sup> To economize upon space, descriptive statistics and full estimation results are not included in the paper, but are available upon request.

<sup>16</sup> There are further SOEP-variables indicating whether overtime work is compensated hours-wise or day-wise. However, experiments with these indicators, which are not available in the BHPS, did not yield non-trivial results.

<sup>17</sup> Note that the coefficient from the fixed effects estimation for German women is statistically insignificant with a  $z$ -value of 1.55.

<sup>18</sup> For the effects of temporary employment in the UK, see Booth et al. (2002a, 2000b).

<sup>19</sup> Corroborating the results of Bell *et al.* (1997), it might therefore well be concluded that moonlighting does not serve as hedge against unemployment.

<sup>20</sup> As Böheim and Taylor (2001) show, such adjustment quite likely might be the change to another job.