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## Marginal employment - a dead end? A survival analysis based on West German spelldata

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**Marginal Employment – a Dead End? A Survival Analysis based  
on West German Spelldata.**

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## Introduction

Germany's labour market is generally considered to be highly regulated and inflexible<sup>1</sup>. It is still very much dominated by full-time employment contracts which include sizeable contribution payments of both employees and employers to Germany's social security system. Employers, however, have the possibility to offer low-wage, low-hours contracts that are largely exempt from mandatory social security contributions. Because these employment relationships are restricted to less than 15 hours per week and can pay only up to 630 marks per month they are usually referred to as marginal employment ("geringfügige Beschäftigung"). Yet, the attention devoted to these contracts in the public discussion has been anything but marginal (see for instance Wagner (1988), Fuest/Huber (1998)). Indeed, when the social democrats were elected into office in late 1998, restricting the scope and the number of marginal employment relationships was high on the agenda of their coalition government. Legislation has been changed in April 1999 but discussion is still going on.

Because marginal employment is not easily identified in the available German micro data, the political and academic discussion of the issue was characterized by an absence of "hard" facts on the matter. In the meantime, several studies have quantified and characterized marginal employment at a given point in time. Kolb and Trabert (1996), for instance, use the 1994 wave of the German Socio-Economic Panel (GSOEP) to project a total of 3.35 million persons for whom marginal employment was their only employment relationship (as opposed to working in marginal employment as a second job). Not surprisingly, the majority of persons who exclusively participate in the labor market via marginal employment are women.

This paper focuses on the longitudinal aspects of marginal employment. We study the duration and number of marginal employment spells of individuals and provide evidence on whether marginal employment is just an episode in most people's labour market careers or rather a dead end in unskilled, low-paid work that does not entitle to social security benefits.

The remainder of this paper is organized as follows. In the next section we describe the institutional framework of marginal employment such as its legal definition and its

implications for the entitlement of the marginally employed to social security benefits. We then turn to the problem of how to identify marginally employed people in the data used for this analysis (GSOEP). To motivate the empirical results of our paper, we present a brief theoretical discussion that focuses on the labor supply aspects of marginal employment. In the following section we present the empirical analysis in which we characterize the role of marginal employment in individuals's labor market careers and analyze the duration of marginal employment spells. A summary of our finding concludes the paper.

## **Institutional background**

German law defines several possibilities for an employment relationship to be exempted from social security contribution payments. We will focus on the case that has been a prominent focus of the public debate: low-hours, low-paying jobs of (in principle) unlimited duration, that we will refer to as "marginal employment". According to the legal definition, employment relationships are "marginal" if individuals work less than 15 hours a week and their monthly paycheck does not exceed 630 DM. The earnings threshold was annually set by the labour secretary until 1999 and was 390 DM in 1984 (first year of our observation period) and 560 DM in 1994 (last year). Since 1999 the threshold is frozen at 630 DM.

If an employment relationship satisfies these conditions, both the employer and the employee are exempt from mandatory contributions to the German social security system (which includes health, disability and unemployment insurance as well as old-age pensions and costs of nursing care). Benefits from the system are tied to contributions. Hence, as long as the marginally employed do not earn entitlements in other ways (voluntary contributions, contributions of their spouse) they do not have access to many of the system's benefits.

Despite the exemption from social security payments, the government does collect some money from the parties that form marginal employment relationships by imposing a tax equal to 20% of an employee's compensation. In practice, it is the employer who usually pays this substitute for the personal income tax of the employee.

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<sup>1</sup> See for instance the most recent global competitiveness report of the World Economic Forum.

## Identifying spells of marginal employment in the data

The data are taken from the first 12 waves (1984-1994) of the GSOEP, a representative panel survey of households and their members aged 16 and above (Wagner/Schupp/Rendtel 1994). Longitudinal information on a person's labour market status is collected by asking respondents to check the respective category for each month of the past year in a multiple-choice labour market calendar. The relevant category for our purpose is labelled "in part-time or marginal employment". Hence, we take all persons who exclusively<sup>2</sup> select this category in any month and then try to separate part-time employees (who are working in jobs with no legal limits on hours and earnings and who will generally make mandatory social security payments) from the marginally employed. Since the GSOEP only provides information on hours worked at the survey date (at which a respondent may or may not be in marginal employment) we rely solely on (labour) earnings to identify persons who are in a spell of marginal employment some time during the year. There is no by-the-month earnings information and we have to rely on annual labour earnings (divided by 12) to check whether a candidate person/spell satisfies the earnings criterion of the definition of marginal employment.

Annual labor earnings may be an average of, say, earnings from a spell of marginal employment during the first 3 month of the year and earnings from a subsequent 9 month spell of full-time employment. Hence, in such cases the available earnings information (divided by 12) may exceed the legal earnings threshold simply because of this averaging even if the earnings in each of the first three month were below the upper limit for marginal employment . We have no way of resolving this problem for short spells<sup>3</sup> and proceed by comparing the available annual earnings information (divided by 12) with a threshold that equals the legal upper limit plus 20% tolerance.<sup>4</sup> If observed earnings fall below this threshold we take this as proof for having identified a marginal employment relationship. After having passed this earnings test, the duration of the

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<sup>2</sup> "Eclusively" means that we will ignore persons that work in marginal employed in addition to a full-time job (which is a separate category in the labor market status-calendar).

<sup>3</sup> If (parts of) a spell occur in several years then we will focus on comparing observed labour earnings with the legal upper limit in those years where a person is never in full-time employment during any month of the year.

<sup>4</sup> This tolerance does not affect our results.

marginal employment spells is measured by the number of consecutive month a respondent selects the category “in part-time or marginal employment”.

## **Theoretical background**

Given that we have no data on firms, we focus our discussion primarily on the labor supply aspects of marginal employment. Since the majority of marginally employed are women we will mainly view the decision for how long to supply hours of work in marginal employment from their perspective.<sup>5</sup>

Working in marginal employment means trading off current advantages and future disadvantages.

Current benefits include a flexible time-schedule that leaves room for non-labour activities, like raising children or receiving education. This is particularly important in Germany where child-care facilities tend to have inflexible and restricted opening hours (see Kreyenfeld/Hank 1999) and schools usually do not provide afternoon activities for pupils. Moreover, as will be discussed below, the German income tax system favours the "(male) breadwinner" household, where one of the adults (usually the male) is the sole provider of household income (Gustafsson/Wetzels/Vlasblom/Dex 1996). These circumstances discourage full-time work and favour part-time work or even non-participation in the labour market.

Suppose that under the conditions just outlined a woman would like to participate in the labour market but full-time work is not a desirable option. In this case, there is an alternative to marginal employment in the form of regular, non-marginal part-time employment. What are the factors that may lead women to accept marginal employment? Firstly, there may simply be more opportunities for marginal employment and locating these opportunities is likely to be less costly than searching for regular part-time employment. Secondly, the German tax system provides a tax advantage for married couples that has its maximum impact on after-tax household income if one partner works in marginal employment. This is because the taxable income of spouses is

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<sup>5</sup> Schwarze (1998) develops a model to analyze decisions of married women to enter marginal employment.

averaged to determine the tax-bracket<sup>6</sup> of the progressive German income-tax scheme. Since income from marginal employment is tax-free (employers pay the 20% tax-bill) the spouse of a marginally employed partner enjoys the same tax-rate as a single person with half the taxable income. Hence, after-tax household income may be higher for couples with one marginal and one full-time income than for a couple with one part-time and one full-time income.

On the negative side, marginal employment will lead to reduced future social security benefits and possibly lower career earnings as it is highly unlikely that work experience in low-wage, low-skill marginal employment will increase a person's human capital and might be rewarded by future employers. Yet, it is important to point out that even though marginal employment will, by itself, not lead to entitlement to social security benefits, the marginally employed (in particular, married women) will be entitled to social security in other ways (in particular, via the contribution payments of their spouse).

This tradeoff between current advantages and future disadvantages will shape an individual's decision on how long to remain in marginal employment. Clearly, both advantages and disadvantages depend on a person's family situation. This will be reflected in our empirical analysis, where we include several variables that characterize the family background of the marginally employed.

Variables used in the empirical analysis are

- gender (male=1)
- age
- years of completed education
- per-capita household income
- earnings of the partner (spouse)
- number of previous spells
- cumulative duration of previous spells
- number of children in the household below the age of 16

as well as dummy variables for

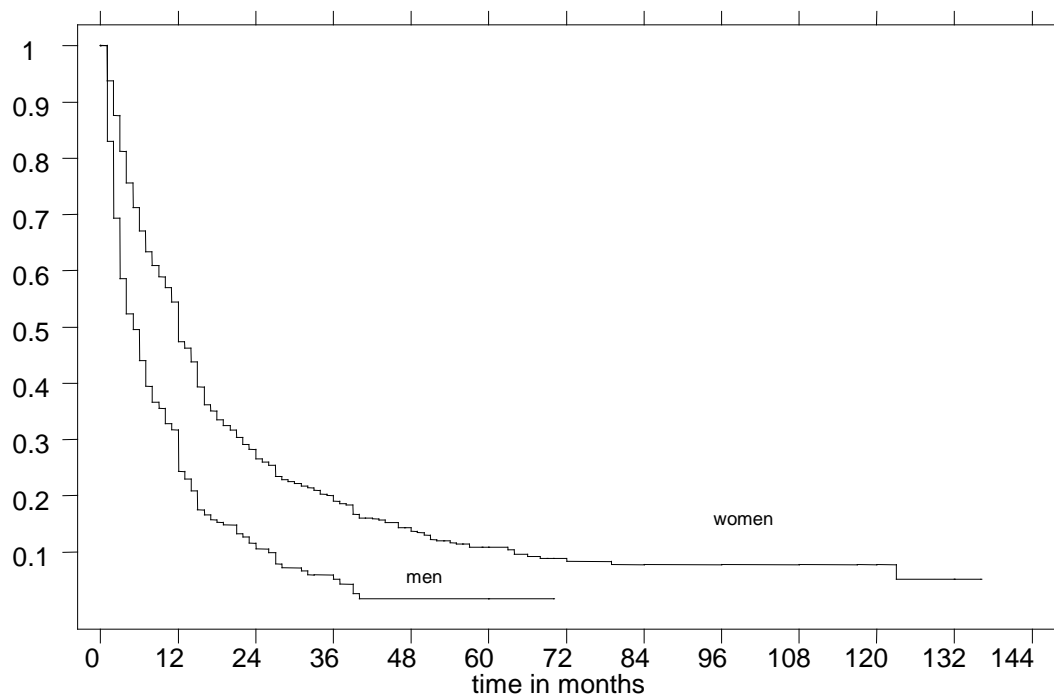
- presence of a spouse
- aspects of maternity leave policy
- being the person that runs the household
- spell begins/ends in January or December

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<sup>6</sup> The tax-rate found in this way is then applied to the average income and the resulting amount is doubled to determine the tax liability.

## Empirical results

We have already described that spells of marginal employment were identified in the GSOEP data in a two-step procedure: candidate spells/persons chose “in part-time or marginal employment” as their exclusive labor market status during at least one month of a given year and their labour earnings fell below the upper threshold of legal limit plus 20%. Out of a total of 5707 candidate spells, 789 had to be eliminated because of non-reported income. Of the remaining spells, roughly one third (=1630 spells) passed the earnings test and were included in the sample. Among these 1630 spells 63% are uncensored, while 20% are left-, 11% right- and 6% are left and right censored.



	probability to last X months		
	75%	50%	25%
<b>No. of months/men</b>	2	5	12
<b>No. of months/women</b>	5	12	27
<b>Total</b>	4	11	23

Database: German Socio-Economic Panel, 1984-1995, own calculations.

**Figure 1: Kaplan-Meier-survivor function: Duration of marginal employment**

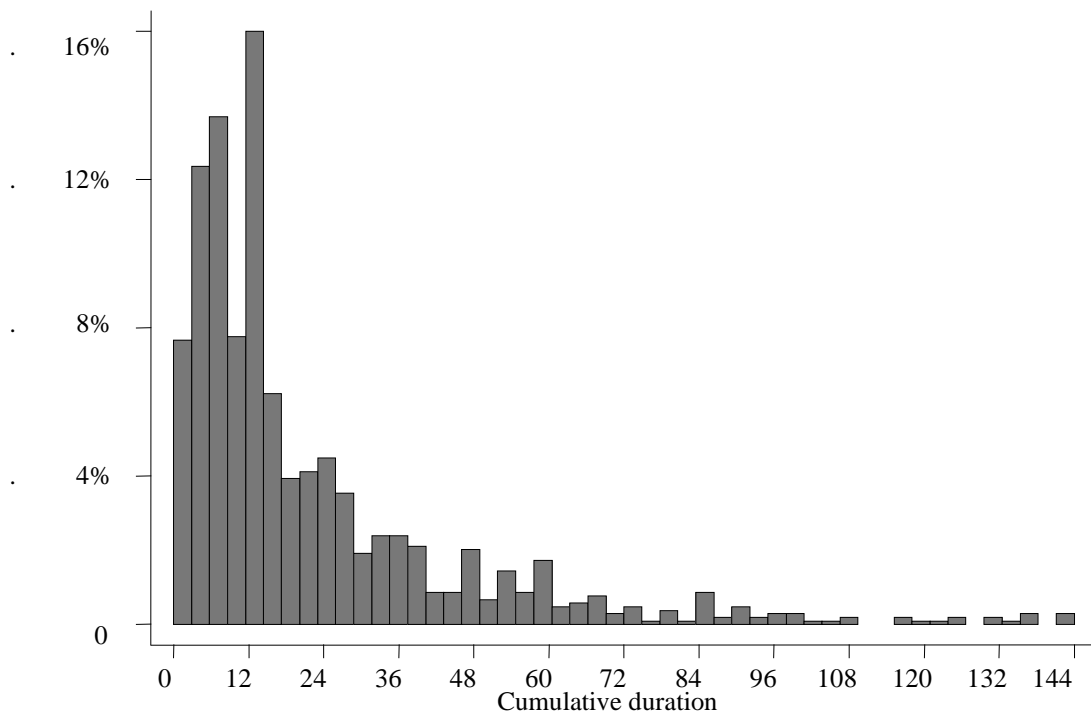
The average length of the uncensored spells is 11 month but the distribution of spell length is highly right skewed with a median spell length of 7 month. 40% of the spells



last 5 month or less and only 30 % last for more than a year. Yet, there are some spells that last throughout the entire observation period.

Turning to Kaplan-Meier-estimates, we find a median of 11 months for uncensored and right censored spells. Additionally, our results show a big gap in the duration of marginal employment between women and men. A spell of marginal employment typically lasts 12 months for women and only 5 months for men (see Figure 1).

Most persons (60%) in the data have just one spell of marginal employment but 40% have two or more spells and we therefore have also calculated the total time a person has spend in marginal employment during the observation period. The distribution of the cumulative spell length is displayed in Figure 2



**Figure 2: distribution of cumulative time spent in marginal employment**

Roughly 40% of all persons in the sample spend at most one year in marginal employment, another 30% have been in marginal employment between one and two years. Hence, it appears that for the majority of people in the sample marginal employment is a more or less temporary episode.

One of the benefits enjoyed by those who voluntarily choose marginal employment is that its low time requirement allows to pursue other activities. Not surprisingly, 45% of the respondents -while being marginally employed- identify themselves as a housewife (househusband).

If marginal employment is for many individuals an episode rather than a career it is interesting to investigate which (non-)labor market activities usually happen before and after spells of marginal employment.

Marginal employed is most frequently preceded by being a *housewife* (34%). Other frequent predecessors are being in *part-time or marginal employment* (25%), in *education* (15%), or in *full-time employment* (13%).

Half of all spells of marginal employment are followed by being a *housewife*, one fourth by *in education* and 8% by *full-time employment*.<sup>7</sup> Hence, direct transitions from and into full-time employment are not typical for the marginally employed who rather appear to alternate between part-time or marginal employment and labor-force non participation.

Turning to the regression analysis of spell duration, we have estimated several specifications of the Cox-proportional-hazard model (Cox/Oakes 1984, Blossfeld/Rohwer 1995) to determine how spell duration depends on the characteristics of the individual as well as those of her partner.

Variables characterizing the individual in marginal employment include gender, age, years of completed education and number and duration of previous spells of marginal employment. We also include dummy variables that indicate if other kinds of spells (housewife, student, unemployed) overlap with time spent in marginal employment. Household income and dummy variables for the presence of a partner and children are included to characterize the family environment.

We follow Hujer and Schneider (1989) in correcting for the “heaping effect” (the spuriously high number of spells that begin in january and end in december) via dummy variables.

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<sup>7</sup> This is in contrast to Jungbauer-Gans/Hönisch (1998) who find no transition into full-time employment.

Table 1: Cox-Proportional-Hazard-Regression: Duration of Marginal Employment Model 1 (incl. all spells)

Covariate	Hazard-ratio	z	P> z
gender (female = 1)	0.711	-3.657	0.000
age in years	0.988	-3.903	0.000
years of completed education	1.037	2.416	0.016
per-capita household income	0.999	-2.875	0.004
number of children	0.881	-3.043	0.002
spouse (1 = yes)	0.799	-2.315	0.021
number of previous spells	1.229	6.222	0.000
cum. durat. of previous spells	0.990	-2.781	0.005
january-effect	0.543	-8.089	0.000
december-effect	0.394	-11.507	0.000
No. of spells in calculation: 1203		Log likelihood = -5497.61	
chi2(10) = 441.26		No. of failures: 910	
		Prob > chi2 = 0.0000	

Database: German Socio-Economic Panel, 1984-1995, own calculations.

Table 2: Cox-Proportional-Hazard-Regression: Duration of Marginal Employment Model 2 (incl. only spells with spouse)

Covariate	Hazard-ratio	z	P> z
age in years	0.986	-3.341	0.001
years of completed education	1.088	3.997	0.000
number of children	0.905	-2.155	0.031
maternity (1 = yes)	1.636	0.689	0.491
running the household (1 = yes)	0.740	-3.258	0.001
income/spouse	0.999	-3.300	0.001
number of previous spells	1.198	4.889	0.000
cum. durat. of previous spells	0.991	-2.235	0.025
january-effect	0.569	-5.901	0.000
dezember-effect	0.322	-10.499	0.000
No. of spells in calculation: 791		Log likelihood = -3169.38	
chi2(11) = 292.03		No. of failures: 566	
		Prob > chi2 = 0.0000	

Database: German Socio-Economic Panel, 1984-1995, own calculations.

Our results show positive effects for *age*, *household income*, *presence of a spouse*, *number of children living in a household* and *gender* (being female). In contrast, the duration of marginal employment is shorter for individuals with above-average human capital (model 1, see table 1).

Turning to model 2, we find that spell durations increase with increasing *income of the spouse* which is a proxy variable for the tax advantage of married couples. Also, *running the household* decreases the transition rate out of marginal employment. In this model we omit gender because more than 90% of all housekeepers are women. The findings for *number of children* and *income of the spouse* support the relevance of the breadwinner model to understand marginal employment (see table 2).

On the average, the duration of marginal employment is longer for individuals with previous spells/experience in marginal employment. We find no significant influence of the *maternity* variable which reflects German maternity leave regulations.

Next we have a look at the destination after leaving marginal employment. We estimate Competing-risk models to determine how the state after marginal employment depends on the observable characteristics. In these models, three dummies represent the socioeconomic state at the beginning of the marginal employment spell ( $0=housewife$ ). First, we analyze the transition from marginal employment into full-time work. Our specification is not very powerful in explaining this type of transition, which rarely occurs in the data. Obviously, moving from marginal employment to full-time employment is not common. Only two of the state variables influence this transition strongly (see table 3).

Table 3: Cox-Proportional-Hazard-Regression: Transition to “Fulltimejob”  
Model 1 (incl. all spells)

Covariate	Hazard-ratio	z	P> z
age in years	1.019	0.997	0.885
years of completed education	1.042	0.843	0.319
per-capita household income	0.999	-0.144	0.885
number of children	1.139	0.825	0.409
spouse (1 = yes)	1.476	1.077	0.281
status: student	7.740	3.683	0.000
status: Unemployed	10.687	4.871	0.000
status: pensioner	0.506	-0.786	0.432
december-effect	0.452	-2.849	0.004
No. of spells in calculation: 1207		Log likelihood = -480.81	
chi2(9) = 53.46	No. of failures: 74	Prob > chi2 = 0.0000	

Database: German Socio-Economic Panel, 1984-1995, own calculations.

Table 4 shows that we do a better job explaining transitions to “running the household”. Here we find also significant effects for *per-capita household income* and for *number of previous spells*. Anyway, both specifications are dominated by the socioeconomic state at the beginning of the marginal employment spell. This suggests that marginal employment usually is an episode of time spent in a “secondary” job.

Table 4: Cox-Proportional-Hazard-Regression: Transition to “Running the Household” Model 1 (incl. all spells)

Covariate	Hazard-ratio	z	P> z
age in years	1.002	0.308	0.758
years of completed education	1.025	0.970	0.332
per-capita household income	0.999	-3.859	0.000
number of children	0.931	-1.304	0.192
spouse (1 = yes)	3.006	3.242	0.001
status: student	0.237	-4.127	0.000
status. unemployed	1.216	0.560	0.575
status: pensioner	0.076	-4.896	0.000
december-effect	0.288	-10.192	0.000
number of previous spells	1.119	4.362	0.000
No. of spells in calculation: 1198		Log likelihood = -2665.06	
chi2(9) = 458.41	No. of failures: 439		Prob > chi2 = 0.0000

Database: German Socio-Economic Panel, 1984-1995, own calculations.

From a modelling perspective, we can learn from our results that modelling the heaping-effect in the analysis of this type of spell data is very important. Maybe this is less valid for more stable forms of employment.<sup>8</sup>

## Summary and conclusions

The analysis of the duration of marginal employment carried out in this paper draws quite a heterogeneous picture. Whereas the bulk of the spells last less than two years and some even less than one month, the distribution of spell durations has a long right tail with some spells lasting more than 12 years.

We have pointed out that certain features of the German social security and tax system make marginal employment a favourable option for married women, which clearly

<sup>8</sup> For an analysis of job duration of full time jobs in Germany see Bergemann/Schneider 1998.

shows up in their significantly higher spell durations. This is evidence in favour of the “breadwinner model”. Interestingly, some of the variables (*like children, sex, household income or income of the spouse*) that tend to reduce female labour supply at the intensive (participation) and extensive margin (number of hours, given participation) have a positive influence on spell duration in our sample of the marginally employed.

Frequent moves between non- and marginal employment provide further evidence that marginal employment may present a flexible option to adapt labour supply behavior to various phases of the lifecycle. On the other hand, we have not made a serious attempt to quantify and include the future disadvantages in terms of reduced social security payments or less career probabilities that may be brought about by marginal employment. In future work, we will extend the observation window after marginal employment and concentrate on “*housewives*”.

Our results indicate that those interested in reducing the extent and duration of marginal employment may get closer to their goal -without imposing further direct legal restrictions on this segment of the labour market- by altering women’s incentives through more and better child care facilities and less tax breaks for “breadwinner” households.

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