

# **Doing well in reforming the labour market?**

## **Recent trends in job stability and wages in Germany**

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June 22, 2012

*preliminary draft – please do not quote*

### **Abstract**

The German “employment miracle” with a weak decline in employment and low unemployment during the great recession seems to be a good example for a successful labour market reform. While the aggregate level of job turnover seems to be stable over time, there are nevertheless concerns about rising inequality in the labour market. In this paper we analyze the quality of newly started jobs between 1998 and 2008 using a huge administrative data set which allows to look at job durations and earnings for different groups of workers over time. A microeconomic model of job stability is estimated to control for a wide range of individual, firm and regional characteristics. The preliminary results show a fairly constant level of overall job stability, unskilled workers being a noticeable exception. A strong drop in real wages is observed for low-skilled and medium-skilled workers, in line with “wage moderation” explanations of the employment miracle.

### **Keywords:**

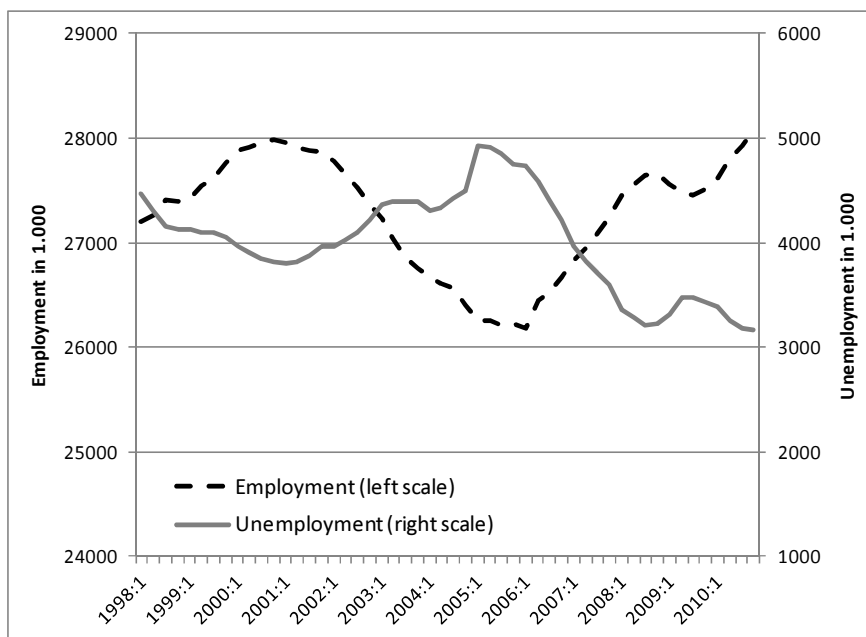
Labor market reform; job quality; job duration; Germany; 1998 – 2008; survivor functions

## 1 Introduction

Career prospects of persons in marginal jobs and persons (re-)entering the labour market have now been a concern of labour market research and policy since about two decades. In the 1980s and 1990s the German labour market was criticized for example by the OECD, because the strictness of employment protection legislation and the resulting restraints for firms to flexibly adjust labour input were seen as major causes for the persistence of unemployment and especially long-term unemployment.

After reforms of employment protection as well as reforms of the unemployment benefit system in the early 2000s the labour market in Germany seems to perform surprisingly well. Three years after the reform of unemployment benefit (Hartz IV) in 2005 unemployment has decreased by one third. This is accompanied by a rise in employment of about the same size (1.5 million persons, see Graph 1). While transitions from unemployment to non-employment might have become more important because of e.g. stricter handling of sanctions in the employment agencies, there is some empirical evidence suggesting positive effects of the so called Hartz reforms on the matching efficiency (Fahr/Sunde 2009; Klinger/Rothe 2012).

**Graph 1: The development of employment and unemployment in Germany, 1998 - 2010**



Source: German Federal Employment Agency, quarterly average of monthly data, seasonally adjusted.

With respect to the absence of stronger job losses during the great recession in 2008/2009, this “employment miracle” might have been caused rather by flexibilization via working time accounts and short-time work than by a relaxed employment protection legislation (Burda/Hunt 2011). The relatively high level of employment maintained during a strong recession possibly implies that in the

last decade jobs have become more stable for a larger share of the work force despite the legal changes promoting flexibility in the labour market reforms.

A corresponding argument is that the reforms of employment protection mainly addressed new working contracts without changing the level of protection for existing jobs, thus deepening labour market segmentation (Boeri 2011, 1199).

In this paper we study the “quality” of newly started jobs in the period from 1998 to 2008. A job is defined as “new” if it implies employment with a new firm or – if in the same firm as before – a person has not been employed in that firm for at least three months. The durations of these new jobs as well as entry wages are used as indicators of job quality. In a first step, we perform a descriptive analysis of job tenures and earnings for various labour market groups over time. A second step consists of a multivariate analysis of job tenures which allows to condition on a wide range of individual, firm-side and regional influences.

## **2 Recent labour market reforms**

Changes in labour market institutions e.g. as a result of labour market reforms may influence employment stability and worker flows. Recent reforms on the German labour market (so called Hartz reforms) were implemented in three yearly waves from 2003 to 2005 (for detailed information see Jacobi/Kluve 2007). The main idea of the reforms was to improve effectiveness and efficiency of labour market services and policy measures.

The first two reforms, Hartz I and II, started in 2003 and were targeted at activating the unemployed e.g. by implementing new start-up subsidies and placing them into labour market programs that promised to be more effective. The labour market was deregulated, for instance, concerning temporary agency work, fixed-term contracts and employment protection and parts of placement services were outsourced into the private sector.

The main issue of Hartz III in 2004 was the re-structuring of the Federal Employment Agency and its local employment offices with the aim of rising efficiency within the organization and improving service quality.

Hartz IV, implemented in 2005, was the most severe and most criticized reform. It combines the previously existing unemployment assistance and social assistance into one means-tested unemployment benefit type II. This benefit is paid as a lump sum amount corresponding to the subsistence level and is no more dependent on the former wage. Entitlement is conditional on the income of other household members as well. Savings and financial assets up to a certain amount have to be spent before getting the benefit. Both these innovations increase the costs of becoming and staying unemployed. In addition, the period of entitlement to the unemployment benefit type I was shortened.

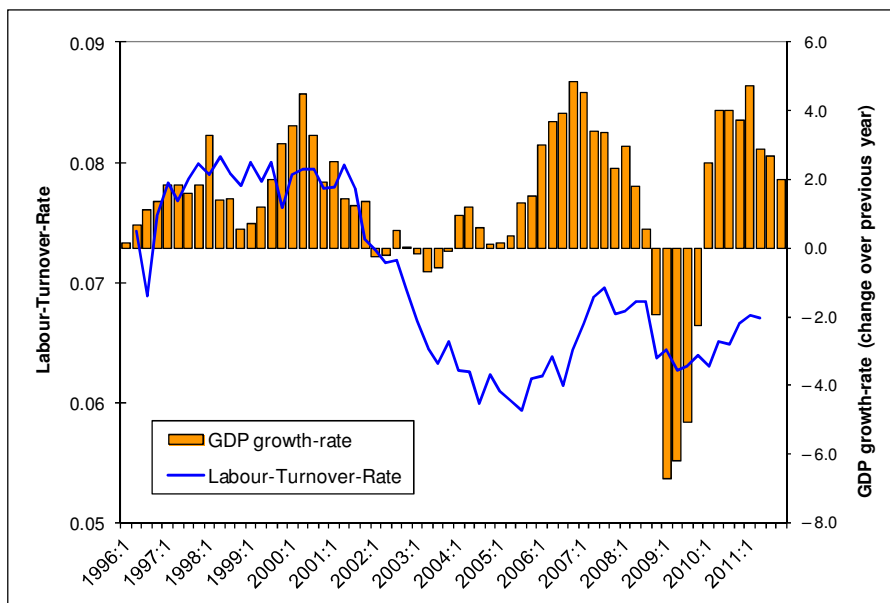
For the purpose of this paper, mainly two effects of the Hartz reforms are expected. The deregulative elements of the first reforms should rise flexibility in the labour market and thus lower job stability. The potential decrease in reservation wages brought about by the Hartz-IV-reform might lead to increasing competition for new jobs and thus a tendency towards lower wages.

### 3 Evidence on labour turnover, job stability and job quality

Despite the exceptional performance of the German labour market during and after the great recession, with stable employment and low unemployment, there is a growing debate on the quality of jobs that made the German job miracle possible. While overall tendencies are well documented, there is also concern about rising inequality and less social security - at least for certain groups.

The general trends in worker turnover do not point to a general reduction in the duration of employment relationships, see Graph 2. Moreover, the labour-turnover-rate declined after the economic expansion in 2000 and 2001 and did not reach the level of 7 or 8 percent per quarter since then.

**Graph 2: Labour-Turnover-Rate over the Business Cycle**



Source: Labour-Turnover-Rate, quarterly average of monthly data of the German Federal Employment Agency, GDP, quarterly data of the Federal Statistical Office, seasonally adjusted.

However, a high level of job stability does not apply for the workforce as a whole, as documented by the growing use of formerly “atypical” working contracts like fixed-term work and temporary agency work. Thus, especially the quality of newly created jobs remains an important issue (Konle-Seidl/Trübswetter 2011).

As a start to look at the quality of new jobs, we study job durations and earnings. Job duration is sometimes used to measure job quality in the literature (e.g. Kahn 2008). The longer a job lasts the better is the quality of that job. Again, the higher the wage is, the better the job.

The literature on job duration shows that age, gender and skill level influence job stability (Bergemann/Mertens 2011; Boockmann/Steffes 2011). Boockmann/Steffes (2008) find that unemployed workers face a higher risk of unstable employment and shorter durations than workers changing from job-to-job. However, when firm heterogeneity is accounted for, the difference in job duration between both groups decreased, indicating that previously unemployed persons select into firms with low-duration jobs.

Giannelli, Jaenichen and Villosio (2011) analyze job and employment durations in Germany and Italy over a period of earlier labour market reforms. Concentrating on job entrants some evidence for a decrease in job stability is found.

Business cycle effects on labour market transitions and job durations are also important. In general, re-employment as well as job-to-job transition rates are large and procyclical. In recent years the business cycle effect on re-employment and job-to-job transitions decreased (Schaffner 2011). The business cycle might have asymmetric effects: during a recession low skilled workers face a higher risk to lose their job but. They are however not the first to be hired in the following upswing, because employers have many options to choose from after the crisis, when unemployment is relatively high (Machin/Manning 1999: 3129f.).

#### **4 Data description**

As we are interested in the job quality of newly started jobs and the effect of recent labor market reforms (Hartz Reforms) on job duration and wages, we built up an integrated data set to allow for worker and firm heterogeneity.

We use a two per cent random sample of the Integrated Employment Biographies (SIAB) of the Institute for Employment Research (IAB) for the years 1998 to 2008. This data set includes daily information on the complete employment history of employees liable to social security in Germany, and many further information like age, gender, education, work experience, unemployment history, wages top-coded at social security contribution threshold. To simplify, we look at workers in West Germany only.

In principle it is possible to distinguish between workers employed in a “standard” job, subject to social security contribution, apprentices, marginal employment and other mini-jobs. For our descriptive analysis we concentrate on “standard” jobs and dropped marginal employment spells, because they are only captured since 1999, as well as apprentices. Part-timers can be identified, however there is no exact information on usual working time. When analyzing wages we look at full-time employees only. Newly started jobs with a fixed term contract and temporary agency jobs are included, it might be possible to identify temporary agency work using the industry variable.

Each employment spell contains a firm identifier that gives us some additional information on the firm level, e.g. firm size, economic sector (industry) and firm level employment structure (e.g. skill level). To control for business cycle effect, we merge administrative data of the Federal Statistical Office (destatis) and Regional Accounts (VGR der Länder) containing information on regional GDP growth and regional unemployment development on the regional level of 326 districts (NUTS 3, Kreise) in West Germany.

Finally we include monthly dummies for seasonal adjustment and yearly dummies to evaluate institutional effects of the Hartz-reforms in 2003, 2004 and 2005.

## **5 Method/ Results**

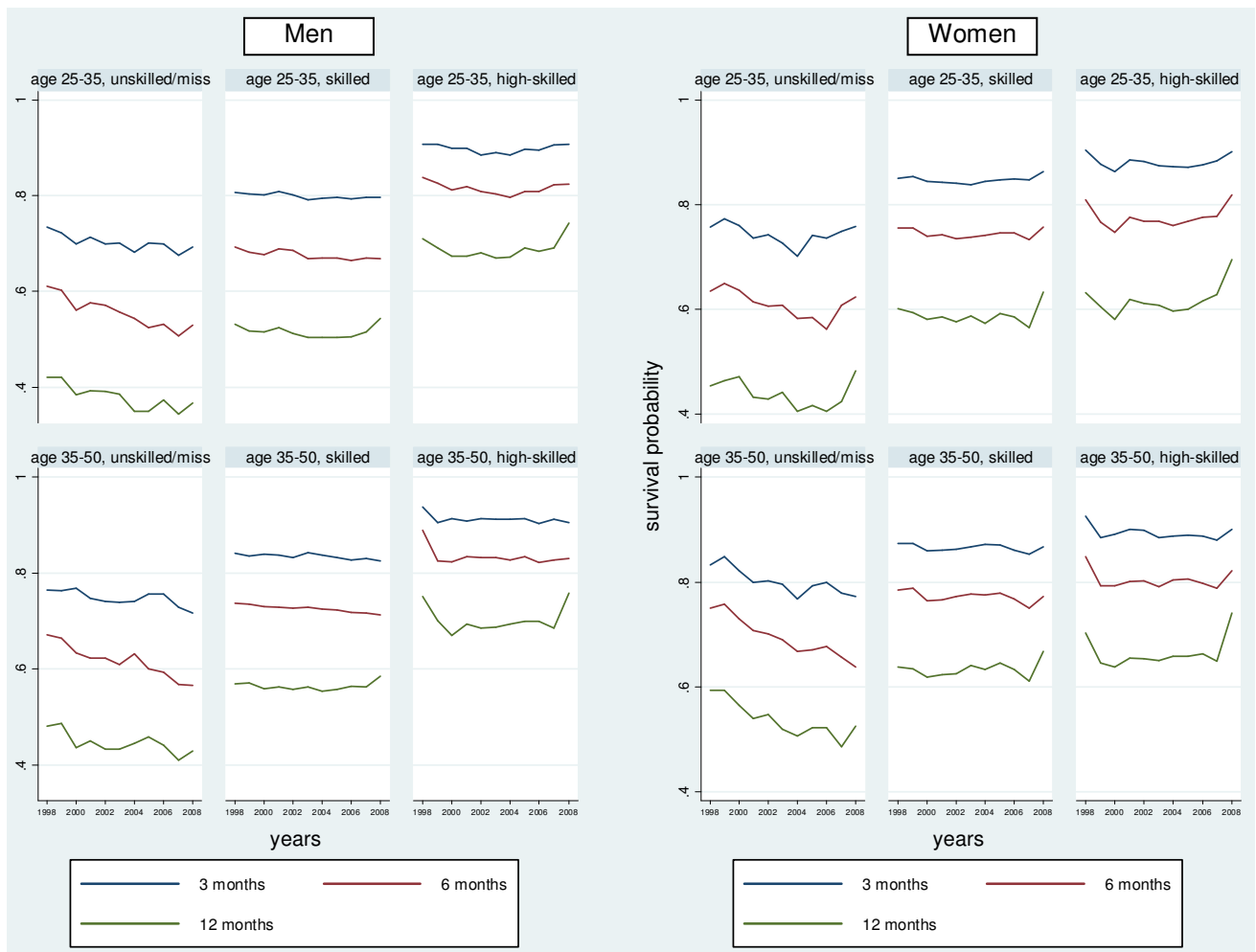
### **5.1 Descriptive analysis**

We adopt non-parametric methods of duration analysis to look at changes in the distribution of the durations of new jobs from 1998 to 2008. To analyze entry wages, we compare quantiles of the distribution of log wages over time. Both steps are performed for different groups of workers, distinguishing gender, age and skill. In order to simplify the description, we confine the analysis to two age groups, one consisting of workers aged 25 to 35 and the other one of workers aged 35 to 50. The skill variable is regrouped into three categories. The first, “unskilled”, comprises workers with lacking skill information as well as workers with lower than medium education and without vocational training. The category “skilled” consists of workers with up to medium education, workers with vocational training and workers with a level of education qualifying for professional college or university attendance. Workers in the last category, “high-skilled”, own a degree from college or university.

#### **5.1.1 Job stability of newly started jobs**

Tenure is defined as an uninterrupted period of work with the same employer (identified by the establishment number). Interruptions up to 90 days between 2 employment spells are ignored. Graph 3 shows the probabilities to stay in a job after 3, 6 and 12 months, for job spells starting between 1998 and 2008.

**Graph 3: Tenure of Workers in West Germany, Survival Probabilities by Sex, after 3, 6 and 12 Months, 1998-2008**



Source: SIAB, own calculations, N=699.296.

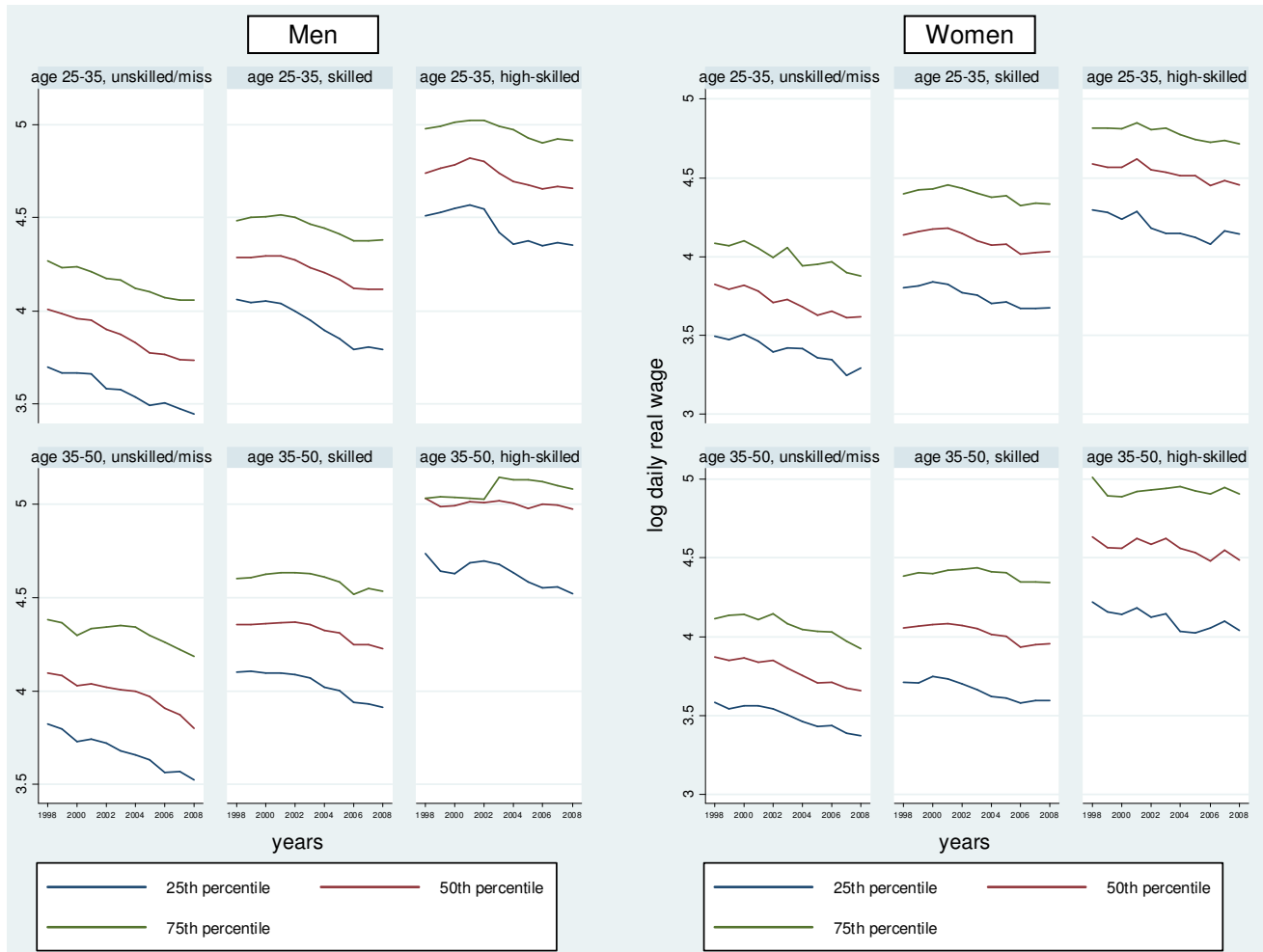
We see a positive effect of the skill level for men and women, with the difference between skilled and high-skilled female workers being rather small, however. Skilled workers, the largest group, have job tenures which are relatively constant over time. The job stability of high-skilled workers decreases from 1998 to 2000 and increases from 2006 on. The expected reduction in job tenure after the Hartz reforms is observed only for unskilled workers. And even within this group, job tenures of younger women have a tendency towards longer durations in the last years of the observation period.

Another finding of this graph is that the trends in job stability within groups are more or less parallel: the lines indicating changes in survival probabilities after 3, 6 and 12 months do not diverge over time (the peaks towards the end of our observation window are probably caused by a higher share of censored observations).

### 5.1.2 Wages in newly started jobs

Wages are analyzed for full-time workers only. We look at the 25<sup>th</sup> percentile (low wage), the median wage and the 75<sup>th</sup> percentile of various groups. We use real wages that are deflated by a consumer price index.

**Graph 4: Percentiles of the Wage Distribution for Fulltime Workers in West Germany by Sex, 1998-2008**



Source: SIAB, own calculations, N=597.560.

The results are displayed in Graph 4. First of all, we find again positive skill effects for each of our subgroups. This pattern is stronger for men than for women. Another important point is the decrease of real wages over time for most groups with the exception of older and higher skilled workers. A relatively strong decline is observed also for the 25<sup>th</sup> percentile within the groups of skilled and high-skilled workers (that is for workers with the lowest earnings in these groups) when starting a job after 2002 or 2003.

Different from job durations, for some groups, the distributions of wages get more dispersed for some groups: this is most visible for high-skilled workers, both men and women.



Because wages are right-censored at the threshold for social security contributions, the 75<sup>th</sup> percentile unfortunately is not informative for the wage distribution of male high-skilled workers, as for this group, more than a quarter has entry wages above the threshold.

## 5.2 Job duration model

As a first step towards multivariate analyses of job durations before and after the Hartz reform a piecewise constant duration model for newly started jobs is estimated separately for men and women in West Germany. The tenure spells are censored at a maximum length of 24 months which allows to extend the period of starting dates until 2006, given that the employment data are observed until 2008 only.

The model is similar to the job stability model presented in Giannelli et al. (2011), however estimated for a later time period and including all new job spells, while the former only looked at labour market entrants.

The estimated effects of the covariates on employment stability are presented in the form of hazard ratios; for both sexes we estimated two model versions, the second version controlling for a gamma-distributed error term to allow for unobserved heterogeneity (see Table 1).

The time pieces at the top of the table are included to model changes in the risk of job termination over the duration of spells. The evolution of job stability over time is estimated by including a set of year dummies. In this form, the model estimates the same duration dependence pattern and duration trends over year for all groups. Heterogeneity within certain groups thus will be looked at in a later step of our work.

The estimation results:

- time pieces: while the hazard ratios for men are slightly declining, implying a declining risk of leaving the job over the duration of a spell, for women this negative duration dependence is not pronounced
- year dummies: for men, there is a clear increase in job durations over time. The hazard ratio of the year dummy for 2006, however, is somewhat higher than for 2005, indicating a lower job stability in the last year observed. For women, there is a similar pattern with a general trend towards a higher job stability. However, looking at the differences in the hazard ratios between 1998 and 2006, the changes in job durations are smaller for women compared to men.
- quarter of entry: controlling for seasonal influences
- local labour demand: unemployment rate is significant and positively related to the risk of leaving a job. The size of the influence is negligible, however. Gdp growth is not significant.
- federal state: control variables

**Table 1: Duration Model for West Germany by Sex, 1998-2006**

	Job duration				Job duration - includes unobserved heterogeneity -			
	Male		Female		Male		Female	
	hazard ratio	z	hazard ratio	z	hazard ratio	z	hazard ratio	z
<b>Duration</b>								
0-31 days	0.002	-194.800	0.001	-185.640	0.002	-210.870	0.001	-209.820
32-61 days	0.002	-182.460	0.001	-177.290	0.002	-205.240	0.001	-207.570
62-91 days	0.002	-189.440	0.001	-186.850	0.002	-202.350	0.001	-206.890
92-122 days	0.002	-189.690	0.001	-180.750	0.002	-194.060	0.001	-205.980
123-183 days	0.001	-211.160	0.001	-197.890	0.002	-203.740	0.001	-221.140
184-365 days	0.001	-209.480	0.001	-202.130	0.002	-194.440	0.001	-236.390
366-548 days	0.001	-229.270	0.001	-201.750	0.001	-181.690	0.001	-239.920
549-730 days	0.001	-241.050	0.001	-197.680	0.001	-162.900	0.001	-238.560
<b>Year of entry (ref. 1998)</b>								
1999	0.913	-7.280	0.932	-4.750	0.903	-8.200	0.932	-5.410
2000	0.921	-5.560	0.981	-1.360	0.908	-6.930	0.981	-1.350
2001	0.890	-8.310	0.985	-0.880	0.870	-8.930	0.985	-0.980
2002	0.851	-7.520	0.916	-4.600	0.831	-10.690	0.916	-5.160
2003	0.821	-10.840	0.854	-6.270	0.798	-11.640	0.854	-8.300
2004	0.820	-8.920	0.914	-4.030	0.797	-11.140	0.914	-4.530
2005	0.801	-11.220	0.877	-5.960	0.775	-11.570	0.877	-6.190
2006	0.818	-8.880	0.899	-4.760	0.797	-10.340	0.899	-5.010
<b>Quarter of entry (ref. 1st quarter)</b>								
2nd quarter	1.303	21.980	1.214	16.430	1.360	26.500	1.214	17.140
3rd quarter	1.231	17.860	1.138	10.030	1.282	20.910	1.138	11.400
4th quarter	1.210	14.930	1.218	15.320	1.260	17.820	1.218	16.360
<b>Local labour demand (district level)</b>								
unemployment rate	1.010	4.810	1.011	5.370	1.012	6.510	1.011	6.300
gdp growth	1.000	0.250	0.999	-0.900	1.000	0.230	0.999	-0.870
<b>Federal state (ref. Nordrhein-Westfalen)</b>								
Schleswig-Holstein, Hamburg	1.057	2.830	1.056	3.230	1.060	3.490	1.056	3.300
Niedersachsen, Bremen	1.044	3.380	1.069	4.130	1.050	3.420	1.069	4.690
Hessen	0.965	-1.300	0.972	-1.340	0.958	-2.760	0.972	-1.800
Rheinland-Pfalz, Saarland	1.050	2.760	1.007	0.350	1.056	3.120	1.007	0.410
Baden-Wuerttemberg	0.961	-2.370	0.983	-0.870	0.957	-2.940	0.983	-1.110
Bayern	1.041	2.360	1.003	0.200	1.043	2.930	1.003	0.240
<b>Firm size (ref. &lt; 19 employees)</b>								
20-49	0.906	-7.880	1.033	2.440	0.895	-8.860	1.033	2.480
50-249	0.844	-13.250	1.002	0.150	0.824	-17.280	1.002	0.160
250-999	0.655	-21.840	0.844	-10.670	0.617	-32.040	0.844	-12.570
1000 and more	0.539	-19.330	0.719	-13.420	0.500	-37.270	0.719	-18.880
<b>Industry (ref. business services)</b>								
agriculture, mining	1.288	5.980	1.447	5.790	1.342	11.620	1.447	9.970
energy, traffic and information	0.835	-7.270	0.859	-6.490	0.808	-12.570	0.859	-6.420
manufacturing	0.634	-19.870	0.764	-14.040	0.596	-36.940	0.764	-18.490
construction	0.912	-4.040	0.748	-7.780	0.899	-6.630	0.748	-7.870
trade and retail	0.707	-17.550	0.840	-10.510	0.668	-25.350	0.840	-12.850
personal and domestic services	0.960	-1.500	1.119	5.570	0.961	-2.060	1.119	7.070
social and public services	0.770	-12.910	0.741	-18.280	0.726	-19.930	0.741	-24.920
<b>Foreigner</b>	1.543	26.860	1.358	18.140	1.652	36.610	1.358	21.870
<b>Age (ref. 30-34)</b>								
age 25-29	1.133	13.930	1.170	12.100	1.160	12.540	1.170	13.430
age 35-39	0.956	-3.770	0.882	-9.720	0.949	-4.180	0.882	-10.010
age 40-44	0.939	-5.570	0.845	-11.340	0.929	-5.420	0.845	-12.360
age 45-49	0.898	-8.580	0.808	-12.850	0.882	-8.550	0.808	-14.100
<b>Skill level (ref. vocational training with at most intermediate degree)</b>								
no degree/ no information on educational level	1.195	6.210	1.262	8.080	1.239	9.540	1.262	9.850
no vocational training with at most intermediate degree	1.211	11.310	1.299	17.760	1.252	14.790	1.299	18.370
Abitur/equivalent; with or without vocational training	1.056	3.790	1.067	4.510	1.072	5.030	1.067	5.160
University/Technical/Professional College degree	0.795	-15.490	1.123	8.580	0.770	-20.540	1.123	9.210
<b>Part-time (min. 18h/week)</b>	1.318	15.950	0.922	-7.830	1.410	17.420	0.922	-8.570
<b>Frailty term (log 0)</b>					-0.847	-9.920	-17.083	-0.030
<b>Wald chi<sup>2</sup></b>	3,629,631		2,745,033		1,206,192		2,652,172	
<b>Log pseudolikelihood</b>	-190,260		-147,729		-190,190		-147,729	

Source: SIAB Federal Statistical Office, own calculations.

- firm size: strong influence, monotonically decreasing job leaving hazards with size
- industry: for men, manufacturing is the industry with the most stable jobs.
- foreigner: less job stability for foreigners, both men and women.
- age: monotonically decreasing job leaving hazard with age. This is remarkable: the model is estimated for new jobs only, and the result implies the highest stability for job entries of persons aged 45-49.
- skill level: job stability very high for the reference group of persons with vocational training and for men with university degree
- part-time: job stability higher than for full-timers, if female!
- unobserved heterogeneity: for men, estimated as significant. Hazard ratios very close to those for the model without unobserved heterogeneity.

## **6 Conclusion**

We study the quality of newly started jobs in the period from 1998 to 2008. The durations of these new jobs as well as entry wages are used as indicators of job quality. The empirical evidence is based on a huge administrative data set, showing distributions of job tenure and earnings for different groups of workers over time.

A microeconomic model of job stability is estimated to control for a wide range of individual, firm and regional characteristics. The preliminary results show a fairly constant level of overall job stability, unskilled workers being a noticeable exception. A strong drop in real wages is observed for low-skilled and medium-skilled workers, in line with “wage moderation” explanations of the employment miracle.

Future empirical work should be more tailored to single groups of workers: e.g. unskilled, temporary agency work, marginal employment. Another extension of the presented duration model is the distinction of job-to-job changes versus unemployment-to-job changes. The analysis should be completed by looking at determinants and distribution of wages in more detail.

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