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The German part-time wage gap: bad news for men

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Abstract:

Despite the increasing occurrence of part-time employment in Germany, the effects on wage rates are rarely studied. I therefore use GSOEP panel data from 1984 to 2010 and apply different econometric approaches and definitions of part-time work to measure the so-called part-time wage gap of both, men and women. A very robust finding is that part-time working men are subject to higher wage cuts than women. The specification accommodating all available information and the biasing effect of unobserved individual characteristics yields a wage cut of about 10 percent in West and East Germany. Furthermore, the type of contract makes a big difference. While marginal employees own lower wage rates, irrespective of region and sex, female part-time employees covered by social security have no significant drawback once differences in firm and job characteristics (in OLS regressions) or individual fixed-effects (in panel regressions) are taken into account. The results also reveal that work experience in part-time employment generates no positive returns, implying that reduced working hours do not only cause short-term effects. Another novel of my study is the look at the part-time wage gap over time. While there are good reasons to believe that the part-time wage gap shrinks, the empirical evidence reveals that wage differentials in West-Germany increased over time. This finding also surprises in light of the supposition that the wage penalty tends to be lower in times when part-time work is widespread and employers get accustomed to alternative working time schemes.

Keywords: Part-time work, wage structure, working hours

JEL Classification: J22, J24, J31.

1 Introduction

Part-time work became more and more popular in the last decades. In 2010, the part-time share among West-German male employees was almost four times higher than in the year 1984, when it amounts to negligible 1.5 percent. The corresponding share for female workers increased from 27.9 percent in 1984 to 48.7 percent in 2010. Also in East Germany, reduced working hours became widespread in the meanwhile. While the part-time share among men is higher than in West Germany (11.3 percent), women are less likely to work part-time compared to their West German colleagues (34.6 percent) (Statistisches Bundesamt 2012). This trend can also be observed in many other OECD countries, especially in the Netherlands, Austria, Italy, Ireland, Belgium and Spain. With the exception of Italy and Spain, growth has been predominantly voluntary (OECD 2010).

The reasons for the change in contracted hours are manifold. First, there seems to be a permanent excess demand for part-time jobs with 30-35 hours (Holst 2007 and 2009, OECD 2010). Furthermore, the share among female employees in East and West-Germany desiring to work less than 35 hours per week increased over time (own calculations based on the GSOEP 1984-2010). Allart and Bellmann (2007) can show that employees' preferences represent the most important motive for the incidence of part-time jobs in Germany and the Netherlands. Hence, demand-side factors play a minor role in explaining the increase in part-time employment (see also Euwals and Hogerbrugge (2006) for the Netherlands). Second, several new laws entitle employees in Germany to reduce their working hours if no urgent organisational reasons exist. With the exception of older workers, all workers can automatically return to their full-time hours if desired (Part-Time Work and Fixed-Term Employment Contracts Law [TzBfG], Nursing Care Leave Act [PflegeZG]). As a result of this rather generous part-time request regulation, the share of full-time female workers aged between 25 and 49 years with caring responsibility, wanting to work fewer hours, amounts to only 6 percent and is lower than in most other OECD countries (OECD, 2010).

Even if reduced working hours seem to meet the preferences of many workers, it is important to survey the wage distribution of all part-time and full-time workers. Wage cuts for part-time employment may be interpreted as compensating wage differentials for favourable work-time schedules or may be caused by labour demand-side economic factors (such as labour costs or productivity), but they may also be a result of discrimination. Theoretically, all three types of discriminating behaviour may occur: (i) preferences for discrimination, (ii) statistical discrimination or (iii) monopsony power and overcrowding. Provided that the new labour market regulations establishing the rights of part-time employees as well as the high profile of part-time work strengthened the standing of part-time employees, discriminating behaviour may be reduced over

time. Apart from a temporary financial burden, part-time employees may be allocated to jobs requiring lower skills and offering fewer options for promotion causing long-term wage effects. In that case, lower part-time wage rates may induce negative labour supply effects and intensify the ongoing skills shortage, the shrinking fertility due to increasing problems to reconcile work and family life and the shortage of time in households with family members in need of care.

The empirical identification of wage cuts for part-time employees is not trivial, though. While labour supply theory implies that employment as well as the desired number of hours worked is determined by the wage rate, there exist a bunch of economic reasons why working hours may affect wages. Simple regressions of wage functions are hence biased due to endogeneity. The instrumental variable approach, any type of Heckman-selection models and simultaneous wage-hours-models are extensively used to tackle this issue (Blank 1990, Bardasi and Gornick 2000, Wolf 2002, Gustafsson et al. 2003, Baffoe-Bonnie 2004, Rodgers 2004, Hardoy and Schøne 2006, Manning and Petrongolo 2008, Wahlberg 2008a and 2008b, Wilson 2010 as well as Matteazzi et al. 2012). Since the exclusion restrictions typically used in these studies (number and age structure of the children in the household, marital status, other family income) rely on rather strong and partly unrealistic assumptions, Manning und Petrongolo (2008) argue that the exogeneity assumption underlying the ordinary least square estimates may not be worse. Aaronson und French (2004) are the only ones who use an institutional characteristic of the U.S. social security system as a true exogenous instrumental variable for working hours. Using panel data is hence a promising alternative to disentangle the wage effect of time-constant and unobserved characteristics from the true impact of working hours (see e.g. Hirsch (2005) for the U.S., Booth and Wood (2008) for Australia, Connolly and Gregory (2009) as well as Wilson (2010) for Great Britain, Kranz and Rodriguez-Planas (2011) for Spain, Russo and Hassink (2008) for the Netherlands). The majority of all studies detect significant negative wage effects of part-time employment. Furthermore, there exists some empirical evidence that part-time spells yields lower returns to experience compared to full-time employment (Beblo and Wolf 2002, Olsen and Walby 2004, Hirsch 2005, Russo und Hassink 2008, Fernandez-Kranz et al. 2011). Therefore, the exact accommodation of work histories is crucial to distinguish between current and long-term effects of reduced hours.

The list of studies about the part-time wage gap in the German labour market addressing these issues is very short, though. Brehmer and Seifert (2008) as well as McGinnity and McManus (2007) use German panel data between 1989 and 2007 and run fixed-effects wage regressions. Potential differences in the returns to experience in full-time and part-time jobs and hence the impact of part-time spells in the work history are not considered. Paul (2012) estimates a trivariate random-effects model in order to accommodate both the endogeneity of actual and past working hours of German

women as well as unobserved heterogeneity and selection. They all conclude that the initial gap in observed wages of women is more or less closed once individual characteristics and occupations are taken in to account. Part-time working men, however, are subject to higher wage cuts in permanent as well as in fixed-term employment (Brehmer and Seifert 2008). All the existing studies neither look at differences between East and West-Germany, where the extent of part-time work still differs significantly, nor at the evolution of part-time wage gaps over time.

The aim of this paper is therefore to provide a comprehensive analysis on the wage structure of part-time and full-time working men and women in East and West-Germany in the period between 1984 and 2010. The results contribute to the existing literature in four directions. First, I use time series data from the German Socio Economic Panel (GSOEP), permitting measuring unbiased wage effects of part-time work. Second, I use the comprehensive information on individual work history and many other labour market characteristics in order to disentangle short- and long-term effects of part-time employment. Third, the long time-series allow me to detect changes of the part-time wage gap over time. Given the increasing importance of part-time employment and the new legislation in favour of part-time employees, their relative remuneration may have changed over time. Finally, I investigate the wage structure separately for men and women in East and West Germany such that differences in the wage structure are easily comparable.

The following section briefly summarizes economic approaches to understand the part-time wage gap. Section 3 describes the data in use and the construction of the hourly wage rate variable. I also provide a first look on the distribution of working hours and wages. The econometric approach to measure the effect of working hours on wage rates is expounded in section 4 and the empirical results are presented in Section 5. Section 6 shows and discusses the results of various sensitivity analyses and the final section concludes.

2 Economic Theory and the part-time wage gap

Economic theory provides several explanations for the dependence of hourly wages may on the number of working hours. The part-time wage gap may hence be due to differences in labour costs, productivity, preferences for specific workplace characteristics or result from institutional frameworks.

Labour costs of firms do not increase proportionally with hours worked, because part-time jobs cause relatively higher fixed costs (for example, recruiting and training costs, arranging a work place and coordination costs). As a result, firms' willingness to pay for part-time employees tend to be

lower than for full-time employees (see e.g. Oi 1962 or Montgomery 1988). Hamermesh und Rees (1988) can show that these fixed costs increase with the qualification level of employees, inducing even higher wage cuts of high-skilled part-timers. Lindbeck und Snower (2000) argue that also employees in „holistic“ organisations, endowed with extended decision making and responsibility, working in teams and sharing jobs by multitasking, require higher investments in training than employees in so-called „tayloristic“ firms. Unless the organization of work across employees explicitly accommodates the possibility of reduced working hours, holistic organisations are more likely to pay lower wage rates for part-time employees due to higher cost for training and reorganisation.

Secondly, the number of working hours may also affect productivity and hence the firms' willingness to pay. Barzel (1973) argues that productivity will first rise slowly due to “start-up” effects at the beginning of a working day. Thus, the productivity of the last hour of a “normal” working day still exceeds the average daily productivity, which leads to lower wage rates for part-time workers. If, however, the fatigue effect occurs before the standard eight hours shift, reduced working hours may raise hourly productivity (Moffit 1984; Tummers and Woittiez, 1991). Furthermore, shorter hours may reduce unproductive time, or “slack”. In this setting, gross part-time wages should be higher. In contrast, the literature on contract theory with asymmetric information argues that long working hours can serve as a screening instrument to detect workers with high motivation, strong commitment and presumably higher productivity to the firm (Landers et al., 1996). This approach is, however, based on the assumption that the correlation between working hours and productivity is positive.

The third argument is based on differences in the elasticity of labour supply. Ermisch and Wright (1991) argue that part-time workers are not only less willing to pay high commuting costs than full-timers, but they are also less likely to move because in general part-time workers are female and second earners in the household. As a result, their labour supply is likely to be less elastic than the supply of full-timers. Provided that employers make use of their monopsony power in the local labour market, profit maximization entails paying lower wages to part-time workers.

Differences concerning workplace characteristics yield the fourth source of wage differentials. Since both, job characteristics as well as preferences for specific working conditions may vary by the number of (desired) working hours, positive or negative wage differentials may be derived from the theory of compensating wage differentials (Rosen 1986). Reduced working hours, for instance, aiming to facilitate the reconciliation of work and family life, but increasing the organizational effort on the part of the firm, would cause a wage cut for part-timers. Contrary, the use of part-time

employees may improve total productivity (e.g. if opening hours can be expanded) and hence raise the willingness to pay for these nonstandard contracts. Given the evidence that part-time employment in Germany is less triggered on behalf of the firms, but rather conform to employees' preferences (Allaart und Bellmann 2007), the theory of compensating wage differentials predicts negative wage cuts for part-time employees. Also the lack of adequate part-time jobs in Germany; continuously point out by Holst and Schupp, 1994, 1998; Holst 2007; Holst and Seifert 2012), lead one to suppose that the possibility to reduce working hours is a rare and desirable job characteristic. *Ceteris paribus*, firms can reduce the wage rate of part-timers if employees are willing to "pay" for the opportunity to work short hours.

Fifthly, the institutional framework may affect hourly wage rates. Most of the jobs without social security coverage, the so-called "marginal jobs", are taxed by a lump sum tax at the expense of the employer. The empirical results of Schwarze (1998) lead one to suppose that employers shift the entire tax burden on to the marginal employees, resulting in a wage cut of nearly 15% compared to full-time employees. Marginal jobs may therefore be subject to higher wage cuts than part-time jobs covered by social security. However, the law on part-time employment and fixed-term contracts – implemented in 2001, prohibits discrimination against employees working less than regular working hours (§4 Abs. 1 TzBfG).

According to the cross-country study of part-time employment by the OECD (2010), part-time jobs, on average, carry a penalty in terms of wages. The observed ratio of part-time to full-time employees, however, varies across countries. Taking into account individual and job characteristics, the wage penalty tends to be lower in countries with higher part-time shares, where employers are accustomed to alternative working time schemes. This pattern is especially clear for men (OECD 2010). Also Bell and Freeman (2001) argue that wage cuts for male part-time employees are especially high, if very long working days represent the social norm. Applying this finding to the time-series case, I expect the part-time wage gap to shrink over time as the part-time share increases. Apart from this force of habit, the introduction of the Part-Time Work and Fixed-Term Employment Contracts Law in 2001 strengthened the rights of employees and helped to establish part-time work as one of different standard working-time regimes. This new legislation should also have improved the relative remuneration employees with reduced working hours.

In short, there are good reasons for supposing that there exist wage differences between full-time and part-time jobs in Germany, and especially between jobs with and without social security coverage. Depending on the importance of the different effects, the resulting wage gap could be either positive or negative. A question that has to be answered by an empirical analysis.

3 Data and Description of the Sample

The empirical analysis is based on 27 waves of the German Socio Economic Panel (GSOEP). The GSOEP is a yearly microdata panel which has been conducted in annual interviews of individuals and households since 1984 in West Germany and since 1990 in East Germany. The first census in 1984 covered almost 6000 households, whereof 4500 are sampled randomly from the West-German population. The other 1500 households represent a stratified sample of immigrants of guest workers from Italy, Spain, Turkey, Yugoslavia and Greece who lived in Germany in the period during which the interview was conducted. In the meanwhile, several additional samples are drawn, amongst others East German households (since 1990) and three supplement samples of German households (1998, 2000 and 2006).

Since we are interested in the wage structure in the German labour market, we dropped all self-employed and those working in the farming sector. Furthermore, we restrict the sample to employees aged between 20 and 60 years who are not in apprenticeship in the period during which the interview was conducted in order to exclude peculiarities due to the stepwise entry into the labour market after schooling or vocational training and partial retirement programs. Finally, all observations with missing labour market information are excluded. The final sample contains 7350 individuals in 2010 and almost 183.000 observations in all 27 survey years.

The GSOEP only provides information on weekly working hours and monthly wages. Hence, the definition of hourly wage rate is of mayor importance for the analysis of the part-time wage gap. In principle, I use agreed weekly working hours to calculate the hourly wage rate.¹ Since actual work time may differ from the agreed working hours, I define three cases where average actual working hours are used to determine hourly wages:

- (1) Overtime hours are paid (if average actual working hours are not available, I take the sum of agreed working hours and the number of overtime hours the last month)
- (2) Overtime hours are not compensated at all (if average actual working hours are not available, I take the sum of agreed working hours and the number of overtime hours last month)
- (3) agreed working hours are not available and no reported overtime hours

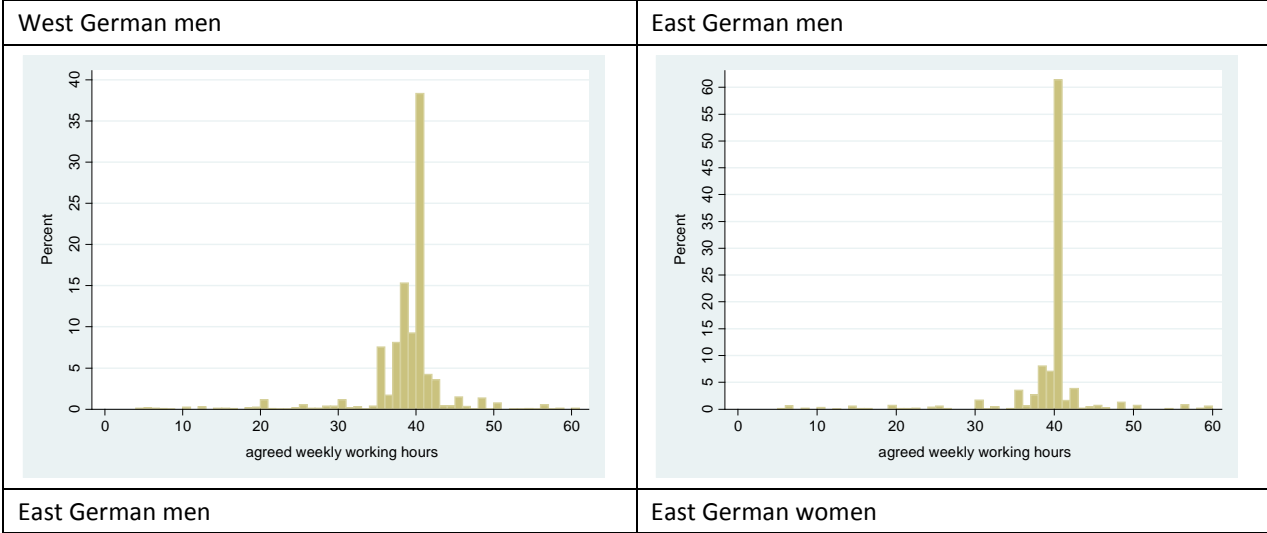
¹ Buligesu et al. (2009) note that actual working hours in the GSOEP – observed for only one week – exhibit considerable dispersion, which induces a spurious negative correlation between the working hours and the calculated wage rate and hence bias the estimated part-time effects downwards.

Note, however, that the average weekly working hours reported by the respondent may differ from the working hours referring to the salary of the last month. To capture this imprecision of the calculated hourly wage rate in case of paid or uncompensated overtime hours, I add a dummy-variable equal to one if the hourly wage rate is not based on agreed working hours.

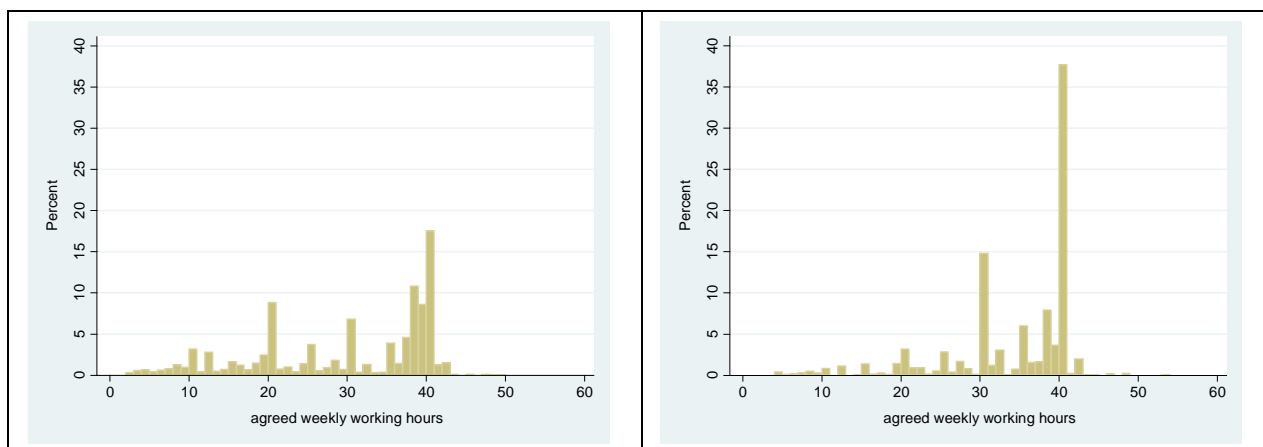
Furthermore, missing agreed working hours are imputed if all other variables hint at active employment. Individuals whose employment status indicate full employment and overtime work happens but is not disbursed are assumed to work under a 40-hours contract, part-time employees agreed on a 20-hours contract and marginal employees are assumed to work 10 hours on average.²

The distribution of agreed weekly working hours is illustrated in Figure 1. Men and East German women exhibit a mayor peak at 40 hours. Among East German men, more than 60 percent of all employees work these standard full-time hours. Among West German men, weekly working hours between 35 and 39 hours cover almost all other contracts. West German women exhibit a distribution with three peaks, namely at 20, 30 and 40 hours, whereby the peak at 40 hours is still the highest. But also the hours categories in between are represented in our sample. East German women have a bimodal distribution of working hours with a second smaller peak at 30 hours.

Figure 1: Distribution of agreed weekly working hours in 2010



² The imputed working hours represent the most frequent number of agreed working hours within the corresponding employment status.



Source: Own calculations based on the selected sample of the GSOEP 2010 (weighted figures).

As expected, hourly wage rates vary by the number of working hours. Table 1 shows the average wage rates of five working hour regimes. In West Germany, employees with less than 15 hours per week – presumably marginal jobs for the most part – earn the lowest wage rates. Compared to full-time contracts, the wage cut for small part-time jobs (≥ 15 and < 25 hours) amounts to almost 3 Euros for men and 2 Euros for women. But also employees with extended part-time jobs (≥ 25 and < 35 hours) earn lower wage rates than full-timers. The wage rates for East German part-time working men are difficult to interpret due to the low number of observations and the wage distribution for women is rather flat. Hourly wage rates of employees working more than 45 hours per week are in general rather lower, which may partly be ascribed to the imprecision of the calculated hourly wage rate in case of paid or uncompensated overtime hours.

Table 1: Hourly wage rates (in €) by number of weekly working hours (2010)

	West Germany		East Germany	
	Men	Women	Men	Women
Weekly working hours < 15 hours	9.48	11.08	7.20	12.86
Weekly working hours ≥ 15 & < 25 hours	15.87	13.55	16.08	12.54
Weekly working hours ≥ 25 & < 35 hours	17.45	14.06	13.07	12.07
Weekly working hours ≥ 35 & < 45 hours	18.54	15.52	13.74	13.11
Weekly working hours ≥ 45	14.79	11.95	13.72	9.09

Source: Own calculations based on the selected sample of the GSOEP 2010 (weighted figures). The shaded numbers correspond to less than 50 observations and should hence be interpreted with caution.

It is not surprising that part-time and full-time employees do not only differ in wages, but also in terms of education, work history, occupations, individual characteristics and their distribution across firms. Table 4 in the Appendix presents the means of labour market relevant variables by region, gender and working time regime. As to education, it is interesting to note that men with reduced working hours are much more likely to have a university degree than traditional full-time employees. In contrast, the share of female part-time employees with a degree is smaller than the corresponding

figure for full-time women. A universally valid finding is that the share of unskilled employees is higher among part-time employees. This result fits to the notion that the part-time penalty for unskilled workers is expected to be small, because these part-timers generate low training costs and their productivity rather shrinks the longer the working day.

The distribution of part-time employees across firms also shows some specifics. First, male part-timers are more often employed in the public sector and in the service sector than full-timers. The opposite holds for East German women. Second, employees with reduced working hours avoid or are excluded from the more traditional industry sectors (except the textile industry). Third, smaller firms are more likely to integrate employees with reduced working hours in West Germany. Since overtime hours and the reorganisation of work cannot yield many resources in small businesses, they rely on flexible working hours to adjust for demand shocks, extend the operating time and improve firm's competitiveness.

Finally, the figures illustrate that deviations from standard full-time employment is not a short-term phenomenon, but correlates strongly with the employment history. Employees working reduced working hours today spent more years in part-time employment and fewer years in full-time employment than current full-timers. Furthermore, overall work experience is smaller and the mean sum of unemployment spells is longer among part-timers. Presumably, employees with shorter hours also exhibit less firm-specific human capital because mean tenure is lower, especially for men. Only East-German women do not differ by tenure and work time schedule. Also other personal characteristics, like the marital status or the age of the youngest child, vary with the number of working hours. Again, the effects differ by gender. While part-time working men are less likely to be married and have younger kids, the opposite holds for women. Interestingly, Hirsch (2005) reveals the same result with respect to the marital status for the US. These findings lead to the supposition that part-timers not only differ with respect to the list of observable variables, but also in many unobservable characteristics, complicating the identification of causal effects of working hours on wage rates.

4 Empirical methods to approach the part-time wage gap

Wage rates affect labour supply decisions and changes in working hours affect wage rates. Hence, the principle challenge in estimating the part-time pay penalty is to overcome this identification problem. Simple cross section regressions of hourly wage rates on the number of working hours suffer from potential endogeneity of the latter. If, for instance, one's individual earnings capacity is regarded as rather low, desired working hours is expected to be few – provided that labour supply is

actually positively related to the wage rate. Furthermore, individuals with a strong commitment to the world of paid work and long-term ambitions make greater investments in their human capital, are better deployable in working teams and hence more valuable for a company than workers with erratic labour supply preferences. Finally, a potential measurement error in reported hours harms the exogeneity assumption of the part-time indicator, if the part-time status is derived from the reported number of working hours and hourly wage rates are calculated based on monthly/weekly earnings and working hours per month/week (Borjas 1980). One way to handle these problems is to apply an instrumental variable approach that typically uses the number of small children in the household or other household characteristics as instruments for the working hour regime in the wage equation (see e.g. Manning and Petrongolo 2008 as well as Wilson 2010). If the presence of children reduces women's labour supply without affecting their productivity, this approach yields consistent results. If, however, child caring responsibilities do limit individual productivity or restrict one's job opportunities (because some jobs request exceptional flexibility and cannot be organised by employees with reduced hours), the resulting wage effects overestimate the true wage gap due to reduced working hours. Another way to accommodate the endogeneity of working hours is to estimate a simultaneous model of labour supply and wage rates. Again, the identification of the effect of hours on wages relies on the goodness of the exclusion restriction. While there exist some applications for women (see e.g. Browning 1992 or Wolf 2002), this strategy risks to fail in the case of men, because it is rather difficult to find adequate instruments for men's working hours. The third strategy which can be applied with cross section data is a two-step estimator where the correction term in the wage equation (potentially one for each labour supply regime) results from a (ordered) probit model of labour supply (see e.g. Hardoy and Schöne 2006). However, this approach also requires appropriate exclusion restrictions in the labour supply equation which are not obvious for men.

In this empirical analysis, I investigate the impact of part-time work on wage rates for both, men and women, and therefore refrain from searching for instrumental variables and exclusion restrictions. Instead, I use the panel structure of the GSOEP to identify the wage effects of reduced working hours. Equation (1) describes the standard log-linear wage equation:

$$(A) \ln W_{it} = \alpha + X_{it}\beta + \delta PT_{it} + \Phi_i + \mu_{it},$$

The dependent variable $\ln W_{it}$ is the log of gross hourly wages of an employed individual i in year t . X_{it} is a vector of explanatory variables including individual and job-specific characteristics and β the corresponding vector of coefficients. α denotes the constant term. PT_{it} represents a dummy variable equal to one if employee i works part-time and δ measure the resulting wage effect. The unexplained

part of observed wage rate is captured by the individual specific fixed effect Φ_i and the random error term μ_{it} with mean zero and constant variance. Since the individual fixed effect may be correlated with the part-time status but cannot be observed, δ may suffer from the omitted variables bias.

To limit this bias, I include as much information as available about the individual's current labour market characteristics and labour market history. If unobservable individual characteristics correlate with the current working time schedule, this should also hold for past part-time spells. I hence follow Hirsch (2005) and use the comprehensive information on the employment history to capture large parts of these unmeasured worker attributes. Limited motivation or a disposition to shirk, for instance, may cause lower individual wages but also affect past and present labour supply. Adding past part-time periods or unemployment spells to the wage equation reduces the potential correlation between the error term and the estimated coefficient of the binary part-time variable. As a result, the wage effect for current part-time employment should diminish. Apart from accounting for the labour market history, supplementary information on employers and employees is added step by step in order to better encompass unobserved individual productivity.

But still, individual fixed effects may remain in the error term. In a second step, I therefore run fixed-effect panel estimates of equation (A). This ensures that time-constant fixed effects do not bias the coefficient of the part-time indicator variables. Using fixed-effects models is no panacea, though. First, sufficient individuals switching their working hours are required in order to determine the wage effects of working hours with statistical significance. Second, measurement errors magnify the attenuation bias caused by calculated hourly wage rates (Borjas 1980). And third, this approach assumes symmetric effects of reducing and increasing labour supply. According to (Hirsch 2005), longitudinal estimates without considering selection into the labour force approximate the average treatment effect among the treated. Again, I estimate various specifications with different sets of explanatory variables.

Since there exist a bunch of different concepts of measuring part-time employment, I apply three alternative definitions: (A) part-time work according to the self-assessment of the respondent (including marginal employment), (B) part-time work according to the self-assessment of the respondent (excluding marginal employment, which is captured by a separate binary variable ME_{it}) and (C) working hours categories according to the individual's contractual hours ($H1_15_{it}$ indicates weekly working hours less than 15, $H15_25_{it}$ captures contracts as of 15 hours and less than 25 hours, ...). The corresponding wage equations for definition (B) and (C) are as follows:

$$(B) \ln W_{it} = \alpha + X_{it}\beta + \delta_1 ME_{it} + \delta_2 PT_{it} + \Phi_i + \mu_{it}$$

$$(C) \ln W_{it} = \alpha + X_{it}\beta + \delta_1 H1_15_{it} + \delta_2 H15_25_{it} + \delta_3 H25_35_{it} + \delta_4 H45_60_{it} + \Phi_i + \mu_{it}$$

Finally, I investigate the time trend in the wage effects of working hours. Starting from the OLS wage regression, I interact a trend variable with the indicator variables for part-time work and marginal employment. To test whether the Part-Time Work and Fixed-Term Employment Contracts Law from the year 2001 influenced the valuation of part-time employees, I interact the part-time indicator with another dummy variable equal to one if the survey year is 2001 or later. The coefficient of this interaction term indicates whether the part-time pay penalty changed since 2001 or not. To test whether these results are robust even if individual fixed effects are taken into account, I run separate panel estimates for the years before and after the year 2001.

5 Results

The presentation of the estimation results is reduced to the different part-time variables and their standard errors.³ All numbers represent percentaged wage cuts of employees with reduced working hours relative to standard full-time employees.

5.1 Cross section estimates

Table 2 presents the cross section estimation for the year 2010. The coefficients of the self-reported part-time status PT_{i2010} are reported in Panel A. Since the set of variables that should be controlled for in order to obtain a reliable estimate of the wage gap is not obvious (see e.g. Manning and Petrongolo 2008), I present six specifications adding individual and firm characteristics step by step. The estimated coefficients of the respective working-hours variables in equation A, B and C are transformed into percentage wage cuts for reduced working hours relative to full-time employment, the so-called part-time penalties. The reported t-values refer to the corresponding coefficients. Negative statistical significant wage gaps are shaded grey.

The wage gap in the first specification represents the raw (or observed) part-time wage differential, as the part-time dummy is the only explanatory variable. For West German men, the wage cut amounts to 41 percent and is higher than for any other group. East German employees with reduced working hours exhibit lower wage cuts on average, but again, the part-time penalty for men is twice as high as for women. In the next step, I add four indicator variables on qualification levels, actual work experience (in years) and its square and firm tenure (in years) to account for differences in

³ The estimated coefficients of all other explanatory variables are omitted for reasons of clarity. The estimation results of all specifications are available on demand.

human capital endowment between full-time and part-time employees. The wage cuts shrink by 4-6 percentage points, but are still significant for all groups.

Instead of actual experience, Specification 3 uses separate variables for experience (in years) in full-time and part-time employment as well as unemployment and its squares. Unobserved individual characteristics which correlate with the current labour market status may partly be captured by these work history variables, such that the potential bias in the wage effect of working hours should be reduced. In fact, the resulting wage gap for West-German men shrinks again by 6.6 percentage points and also the wage cut among the other groups diminish by 3 to 5 percentage points. Wages rates of East German part-time women do no more differ significantly from full-time wages. The regional and gender differences of the part-time penalty remain the same, though. It is interesting to note, that the number of years in part-time work have no significant positive effect on the future wage profile for neither group.⁴ This result is consistent with the findings of Beblo und Wolf (2002) who estimate a positive rate of depreciation of human capital during part-time employment of West German women and Fernandez-Kranz et al. (2012) who use a trivariate random effects model to identify lower returns to experience in part-time employment hinting at substantial negative long-term wage effects of female part-time employment in Spain.

Even though, past part-time spells cause additional wage cuts due to missing full-time experience. Hirsch (2005) even conclude that prior part-time status has a far larger impact than does current status on the observed current wage. In my specification, the effect of past part-time work strongly depends on the duration of past-time employment. Five years of part-time employment (instead of full-time employment) generate an extra wage loss of 19 percentage points for West German men. The other groups are somewhat less affected by past part-time spells. The additional wage cut ranges between 7 and 12 percentage points.

Specification 4 adds several firm characteristics to the wage equation, which are 10 indicator variables for industry sectors, one for the public sector and three firm size dummies. The inclusion of these variables has rather small effects on the estimated wage gaps compared to the former steps. This indicates that the selection of part-time employees into low paying sectors (especially the service sector) and smaller firms – often characterized by a lower degree of specialization and work sharing increasing the frictional costs of part-time work – does not “explain” much of the wage differentials between part-time and full-time employees. Provided that West German part-time women worked in the same distribution of firms as full-time employed women, the part-time wage

⁴ The number of years in unemployment exhibits the expected negative effect on future wage rates for all groups.

gap would shrink by three percentage points, which is the largest effect among the four groups of individuals. The wage gap for part-time working men resulting from this specification is hence still larger than for women.

Specification 5 further controls for seven occupational groups and fixed-term contracts. Changes in the resulting part-time wage gap can be interpreted as an effect of occupational segregation in part-time employment. The wage cut for West-German part-time working men shrinks by 6.4 percentage points and now amounts to almost 21 percent, followed by East German men with a corresponding wage cut of almost 15 percent. West German women are subject to 4.4 percent wage reduction for part-time employment. Only the wage rates of East-German women do not seem to be affected by individual job characteristics. Note, however, that adding occupations and the type of contract to the list of explanatory variables presumes that these characteristics are randomly distributed and likewise available for all part-time and full-time employees. While this assumption may hold for a bunch of occupations, it is a stylized fact that some jobs are reserved to full-time employees. Whether specification 5 or 4 is more appropriate to measure the wage cut people have to expect when working reduced hours is not straightforward. The truth may be somewhere in between.

The inclusion of family related and individual characteristics – specification 6 adds the age of the youngest child in the household and two binary variables for Germans and being married – has no effect for men, but increases the estimated part-time gap among West German women. This implies that part-time wage cuts cannot be ascribed to the reduced productivity and flexibility of stressed women caring for a small child.

Summing up, I conclude that differences in human capital (qualification levels) have the most impact on the part-time pay penalty in East Germany. While the inclusion of these indicator variables also reduce the estimated wage gap by several percentage points in West Germany⁵, the largest contribution to understand the wage structure provides the detailed work history, i.e. employment breaks and unemployment spells. Part-time spells do not only have negative short-term effects, but depreciate future wage rates due to missing full-time experience. This is especially true for men. Almost equally important is the unequal distribution of occupations and permanent jobs among part- and full-time employees. Segregation among West German men yields pay penalty for part-timers of more than 6 percentage points, the corresponding figure for West German women and East German men amounts to about 5 percentage points.

⁵ The smallest effect of adding human capital variables on the part-time pay penalty is observed for West German women. This indicates that the diffusion of part-time work in all qualification levels is most advanced in this group, but these still exist differences in the part-time share among low and high skilled women.

Table 2: Wage level estimates of the part-time wage gaps in 2010 (in percent)

	West Germany				East Germany			
	Men		Women		Men		Women	
	gap	t-val.	gap	t-val.	gap	t-val.	gap	t-val.
A Self-reported part-time employment								
1. No control variables	-41,2	-14,9	-21,1	-13,5	-29,9	-4,9	-15,0	-4,7
2. ... plus human capital variables	-36,0	-14,9	-17,5	-12,2	-24,5	-4,6	-8,9	-3,2
3. ... plus detailed work history	-29,4	-10,6	-12,3	-6,7	-21,3	-3,5	-4,7	-1,4
4. ... plus firm characteristics	-27,2	-9,9	-9,2	-5,1	-19,7	-3,4	-5,1	-1,6
5. ... plus job characteristics (occupation, fixed term-contract)	-20,8	-7,6	-4,4	-2,5	-14,9	-2,6	-2,4	-0,8
6. ... plus personal characteristics	-20,8	-7,6	-6,2	-3,4	-14,8	-2,6	-3,6	-1,2
B Self-reported part-time and marginal employment								
Specification 1 (no control variables)								
<i>Marginal employment</i>	-53,0	-14,4	-45,4	-22,8	-47,3	-5,3	-53,0	-9,8
<i>Part-time employment</i>	-29,7	-7,6	-11,9	-7,1	-19,1	-2,4	-7,7	-2,3
Specification 3								
<i>Marginal employment</i>	-38,1	-10,6	-33,8	-15,5	-25,4	-2,7	-35,2	-6,2
<i>Part-time employment</i>	-21,1	-5,7	-4,5	-2,3	-19,2	-2,7	0,1	0,0
Specification 4								
<i>Marginal employment</i>	-36,0	-10,2	-28,3	-12,7	-22,2	-2,5	-31,9	-5,8
<i>Part-time employment</i>	-18,8	-5,1	-2,9	-1,6	-18,4	-2,7	-1,1	-0,3
Specification 6 (full controls)								
<i>Marginal employment</i>	-26,6	-7,2	-22,7	-9,9	-17,6	-2,0	-24,6	-4,5
<i>Part-time employment</i>	-16,0	-4,5	-1,4	-0,8	-13,5	-2,0	-0,5	-0,2
C Working hours categories								
Specification 1 (no control variables)								
< 15 hours	-48,1	-10,9	-36,1	-17,6	-41,0	-4,2	-44,9	-7,2
15 – less than 25 hours	-39,8	-9,1	-16,1	-7,9	-7,0	-0,6	-1,7	-0,3
25 – less than 35 hours	-0,5	-0,1	-9,6	-4,2	-3,7	-0,4	-12,9	-3,5
45 – 60 hours	-16,1	-5,5	-26,0	-4,1	-6,8	-1,0	2,5	0,2
Specification 3								
< 15 hours	-31,9	-7,6	-22,1	-9,8	-18,0	-1,8	-19,0	-2,8
15 – less than 25 hours	-28,7	-7,1	-6,9	-3,1	-0,1	0,0	6,7	1,3
25 – less than 35 hours	0,0	0,0	-3,3	-1,4	7,5	0,9	-1,6	-0,4
45 – 60 hours	-17,1	-7,3	-28,7	-5,3	-8,5	-1,6	-1,6	-0,2
Specification 4								
< 15 hours	-28,4	-6,8	-16,2	-7,1	-12,1	-1,2	-15,7	-2,4
15 – less than 25 hours	-26,6	-6,7	-4,9	-2,2	-0,6	-0,1	5,1	1,0
25 – less than 35 hours	2,7	0,7	-2,0	-0,9	5,8	0,7	-2,1	-0,6
45 – 60 hours	-14,4	-6,2	-26,8	-5,0	-6,5	-1,3	-8,1	-0,9
Specification 6 (full controls)								
< 15 hours	-17,4	-4,0	-10,8	-4,6	-8,4	-0,9	-7,3	-1,1
15 – less than 25 hours	-21,3	-5,4	-2,3	-1,1	2,0	0,2	6,0	1,3
25 – less than 35 hours	2,4	0,6	-0,7	-0,3	8,0	1,0	-1,6	-0,5
45 – 60 hours	-12,9	-5,8	-26,6	-5,3	-9,3	-1,9	-12,3	-1,4
No. of observations: total (part-time)								
	2781		2875		826		868	

Note: Specification 2 adds four qualification level indicator variables, actual work experience (in years) and its square and firm tenure (in years). Instead of actual experience, Specification 3 uses separate variables for experience (in years) in full-time and part-time employment as well as unemployment and its squares. Specification 4 adds 10 indicator variables for industry sectors, one for the public sector and three firm size dummies. Specification 5 further controls for seven occupational groups and fixed-term contracts and Specification 6 adds the age of the youngest child in the household and two binary variables for Germans and being married.

Source: GSOEP 2010.

Since the groups of self-reported part-time employees also include marginal employees, one may suppose that these findings are driven by the specifics of marginal employment.⁶ I therefore distinguish between regular part-time and marginal employment in the next step. Panel B in Table 2 illustrates the estimation results of selected specifications.

As expected, the raw wage gap differs tremendously between marginal and standard part-time employment. Interestingly, the raw wage cut compared to full-time employees is very similar for all four groups and amounts to between 45 and 53 per cent (see specification 1). Standard part-timers also earn significantly lower wages than full-time employees, nonetheless the gap is much smaller. The stepwise inclusion of additional worker and employer attributes reduced the wage cut for marginal employees by at least 50 per cent. But still, all marginal employment dummies are significant in the specification with all control variables. In contrast, the part-time wage gap in specification 6 is only significant for men. As expected, it is smaller than in Model A and amounts to 16 per cent in West Germany and 13.5 per cent in East Germany. Women's wage cut for part-time work turn insignificant once the work history (East Germany) or the firm characteristics are taken into account. Again, the estimated wage cut for West German part-time employees in Model A is strongly driven by the marginal employees.

The last panel of Table 2 present the estimation results of working hour categories according to equation C. All employees working less than 15 hours per week face significant wage cuts in specification 1. Note, however, that the wage cut is at least 5 percentage points smaller than those for marginal employees, suggesting that lower wages is rather a matter of employment status than fewer working hours. Working between 15 and 25 hours per week are tied to lower wage rates only in West Germany and female employees working between 25 and 35 hours also exhibit a lower remuneration. Once all available information on human capital, work history and other individual and firm characteristics are taken into account, West German workers in the lowest hour category still face significant wage penalties. Compared to the wage cut of marginal employees in panel B, they are at least much smaller. East German employees with reduced working hours do not exhibit any significant drawbacks in specification 6. Somewhat surprising is that employees with long working hours (45 to 60 hours) earn significantly lower hourly wage rates in many specifications. Given that the reported weekly working hours and the corresponding earnings may not perfectly fit together in some cases, I try to capture this measurement error by adding an indicator variable for

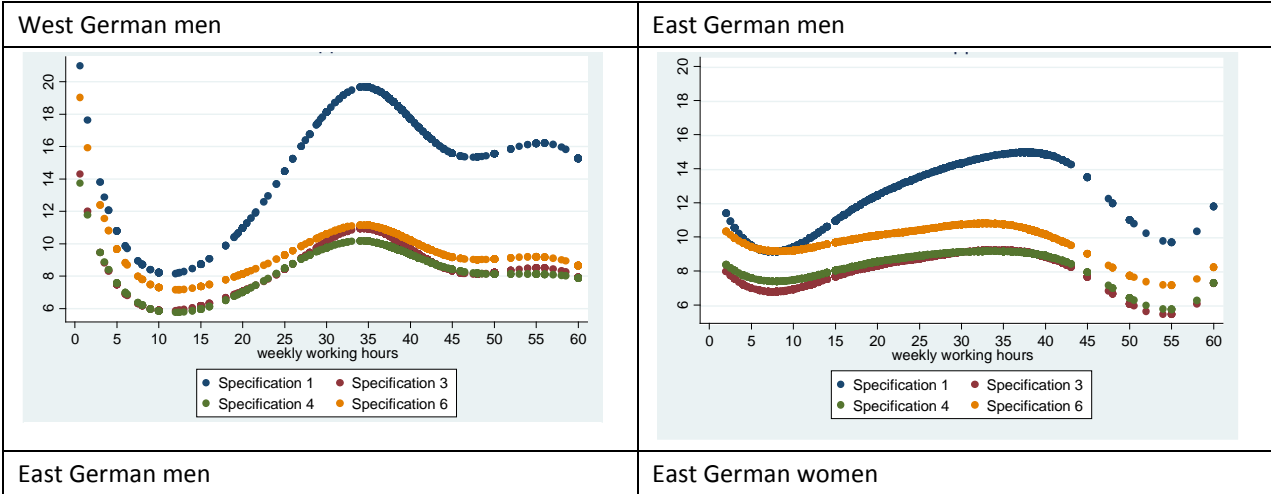
⁶ Firms employing marginal employees pay lump sum taxes and social security contributions. As a result, employers tend to pay lower gross wages.

these observations. The results are presented in section 6. Since I focus on part-time wages in this study, I do not think that this is a big issue.

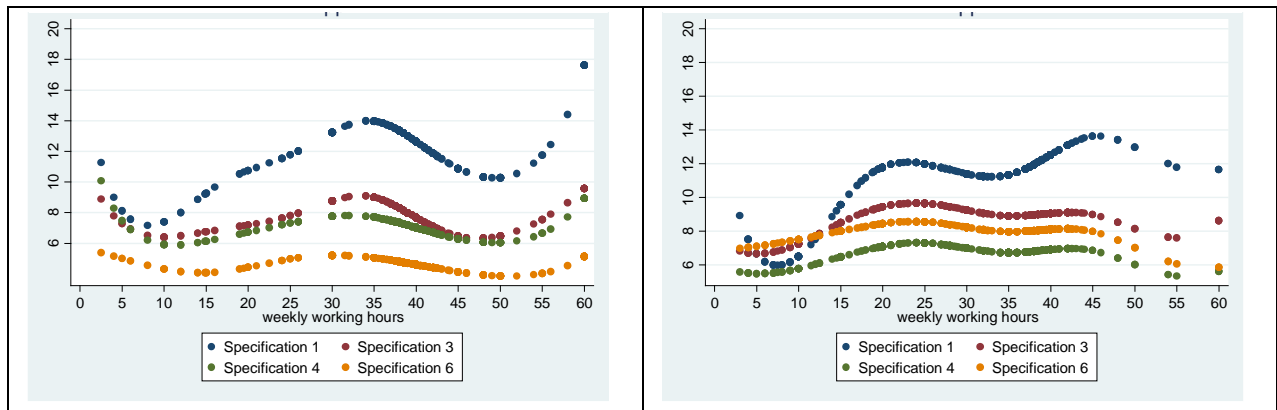
Figure 2 illustrates the wage-hours profiles resulting from the spline function of weekly working hours in equation C. All profiles are calculated for the corresponding reference group. Even though, the reference group is not the same across specifications because the set of explanatory variables is extended step by step. As a result, the level of the wage curves varies, but should not be interpreted at this point.

As expected, the wage-hours profile for West-German men has the highest peak, respectively the lowest minimum. The lowest wages are earned in jobs between 10 and 15 hours per week, the highest in jobs with about 35 working hours. Given that most full-time workers reported a 40-hours week (see Figure 1) and that mean agreed working hours amount to 37,7 hours (BDA 2013) , this result hint at some specifics of selected collective agreements⁷. Somewhat surprising are the high wage rates for men with very few hours, which may be partly due to measurement errors in the hourly wage variable. Comparing the different specifications reveals that the inclusion of comprehensive human capital variables has the largest effect on the slope of the wage profile.

Figure 2: Wage-hours profiles based on spline functions in 2010



⁷ In the year 2008, West-German employees covered by the collective agreement of ver.di or the IG-Metall and working, for instance, for the Deutsche Telekom AG, the printing industry, lumber and plastics industry, metalworking industry KFZ-Gewerbe, Papierverarbeitende Industrie or the steel and iron industry regularly work between 34 und 36 hours per week (Bispink 2008). The impact of these collective agreements is analysed in more detail in section ??.



Source: The wage hours profiles are drawn based on the estimation results of equation (3). All profiles are calculated for the reference group (which varies by specification).

5.2 Panel estimates

Even if the vast information on labour market history and individual characteristics relevant on the labour market seem to limit the overestimation of the part-time wage gap, exploiting the panel structure is the mandatory next step. Fixed effect estimates ensure that time-constant worker attributes do not bias the coefficient of the part-time indicator variables. Table 3 show the fixed effects estimates of equation A, B and C (see Section 4). Again, the figures represent the percentage wage cut of employees with reduced working hours compared to standard full-time workers.

A first look at the first panel of Table 3 reveals that the wage reductions for reduced working hours are lower compared to the cross-section estimates. This implies that unobserved worker attributes affecting the earnings potential are not entirely captured by accounting for the employment history and other individual and job characteristics. Nonetheless, men still suffer from severe wage cuts if they reduce their working hours. The average wage cut amounts to almost 19 percent in West Germany and 14 percent in East Germany. The inclusion of additional explanatory variables reduces the resulting part-time wage cut step by step. The richest model (specification 6) yields a wage differential of about 10 percent in both regions. In contrast to the cross-section estimates, accounting of differences in human capital imposes the largest drop in the estimated wage gap.

Women's wage rates rely less on the number of working hours. Once all explanatory variables are taken into account, no negative effect of working part-time can be detected. This result is in line with the finding of Paul (2012). In East Germany, part-time women even earn slightly higher wages than full-time working colleagues.

Table 3: Fixed effect estimates of the part-time wage gaps (1984-2010)

	West Germany				East Germany			
	Men		Women		Men		Women	
	gap	t-val.	gap	t-val.	gap	t-val.	gap	t-val.
A Self-reported part-time employment								
1. No control variables	-18,8	-33,3	-1,2	-3,2	-14,1	-10,8	-0,4	-0,7
2. ... plus human capital variables	-16,2	-28,5	-0,9	-2,4	-11,2	-8,5	0,8	1,2
3. ... plus detailed work history	-15,0	-26,1	-0,3	-0,8	-11,3	-8,5	0,8	1,2
4. ... plus firm characteristics	-12,4	-20,3	0,2	0,4	-10,5	-7,5	1,1	1,8
5. ... plus job characteristics (occupation, fixed term-contract)	-10,7	-17,3	0,8	2,0	-9,5	-6,6	1,6	2,4
6. ... plus personal characteristics	-10,6	-17,1	0,6	1,4	-9,5	-6,6	1,6	2,4
B Self-reported part-time and marginal employment								
Specification 1 (no control variables)								
<i>Marginal employment</i>	-28,7	-36,3	-11,6	-20,3	-24,0	-12,3	-19,0	-14,4
<i>Part-time employment</i>	-13,0	-19,2	0,8	1,9	-8,7	-5,5	1,8	2,8
Specification 3								
<i>Marginal employment</i>	-24,1	-29,6	-10,5	-17,8	-19,0	-9,4	-14,5	-10,7
<i>Part-time employment</i>	-10,1	-14,8	1,5	3,6	-6,9	-4,3	2,8	4,2
Specification 4								
<i>Marginal employment</i>	-20,5	-22,7	-9,9	-15,8	-17,7	-7,8	-13,0	-8,8
<i>Part-time employment</i>	-8,4	-11,8	1,7	4,0	-7,4	-4,6	2,6	3,9
Specification 6 (full controls)								
<i>Marginal employment</i>	-18,7	-20,4	-9,2	-14,4	-17,0	-7,3	-13,0	-8,7
<i>Part-time employment</i>	-6,7	-9,3	2,0	4,7	-6,3	-3,8	3,0	4,5
Specification 1 (no control variables)								
< 15 hours	-16,6	-17,5	9,2	15,3	-3,9	-1,6	0,0	0,0
15 – less than 25 hours	-12,4	-16,0	3,2	7,0	-9,7	-4,5	9,8	9,7
25 – less than 35 hours	2,2	3,1	1,4	3,0	2,3	1,4	4,1	6,0
45 – 60 hours	-14,4	-40,3	-19,6	-21,7	-12,1	-14,8	-15,0	-10,5
Specification 3								
< 15 hours	-10,2	-10,4	11,4	18,3	3,4	1,3	5,6	3,6
15 – less than 25 hours	-8,4	-10,8	4,7	9,9	-5,0	-2,3	12,1	12,1
25 – less than 35 hours	3,5	4,8	2,4	4,9	6,1	3,5	5,2	7,5
45 – 60 hours	-14,3	-41,0	-19,6	-21,8	-11,9	-14,8	-15,6	-11,1
Specification 4								
< 15 hours	-5,0	-4,6	12,4	18,7	9,9	3,5	6,0	3,6
15 – less than 25 hours	-4,3	-5,2	5,5	11,0	-1,7	-0,8	13,4	12,8
25 – less than 35 hours	4,3	5,8	3,0	6,0	5,9	3,3	5,1	7,3
45 – 60 hours	-13,7	-38,7	-19,3	-21,1	-11,9	-14,7	-15,8	-11,1
Specification 6 (full controls)								
< 15 hours	-2,6	-2,4	13,9	20,5	12,4	4,3	7,3	4,3
15 – less than 25 hours	-2,3	-2,7	6,4	12,6	-0,9	-0,4	13,8	13,2
25 – less than 35 hours	4,9	6,7	3,4	6,9	7,0	3,9	5,5	7,8
45 – 60 hours	-13,6	-38,3	-19,5	-21,3	-12,1	-15,1	-15,7	-11,2
No. of observations: total (part-time)								

Note: see Table 2.

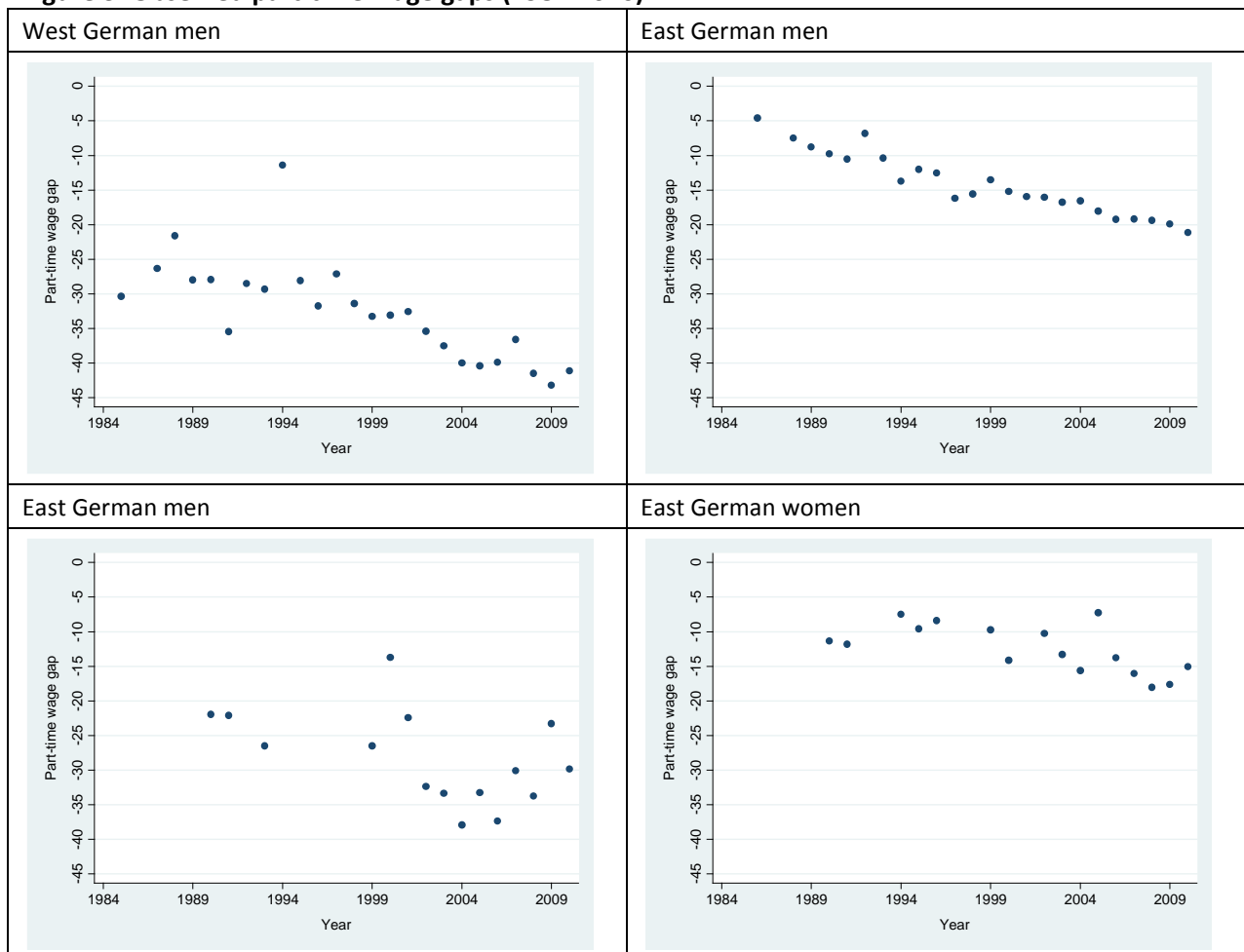
Also the results of Panel B show that eliminating time-constant but unobserved effects reduce the size of the estimated wage gaps, but do not change the main conclusion. Marginal jobs are paid significantly worse than full-time jobs and standard part-time jobs, irrespective from regional and gender differences. Again, the information on past work history provides an important contribution to disentangle the causal wage effects of current part-time employment.

The description of the results in Panel C has to be completed.

5.3 Time trend

Contrary to the supposition derived in Section 2, a first look on the yearly part-time wage gaps reveals that the penalty for working reduced hours seems to increase over time. Figure 3 shows the observed wage cuts of self-reported part-timers (specification 1 without any control variables) exploiting all available cross sections in East and West Germany. While there appears a clear negative time trend in West Germany, the yearly wage gaps are much more dispersed for East German men – presumably caused by the small number of observations) and rather stable for East German women.

Figure 3: Observed part-time wage gaps (1984-2010)



Note: Part-time wage gap based on the self-reported part-time status (part-time definition A, specification 1). Figures include only statistical significant results (5%-level).

In a next step, I go through several specifications to test whether also unexplained wage gaps deepened over time and whether the adoption of the extended rights for part-timers in 2001 affected their relative remuneration.

First, I pool the observations of all cross sections and add year-dummies as well as their interactions with the indicator variable for self-reported part-time status to the list of explanatory variables. These interactions capture the time-varying wage cut for part-time employees. The other explanatory variables are selected according to specification 4 discussed earlier, that is, differences in human capital, detailed work history as well as firm characteristics are taken into account. The estimation results of standard OLS regressions indicate that the wage gap between part-time and full-time men and women widened in West-Germany, while no clear trend can be detected in East Germany.⁸

Second, I generate another dummy variable which equals one if the corresponding individual worked part-time in the year 2001 or in later years. Adding this indicator variable as well as year dummies and all explanatory variables according to specification 4 to the pooled cross section model described above captures the change in the part-time wage gap since the law on part-time employment and fixed-term contracts came into force. Table 4 presents the estimated wage gaps before and after 2001. Except East German women, all part-time employees suffer from significant wage cuts in the years before 2001. Once the law aiming at strengthening the rights of employees with non-standard contracts was implemented, the wage cut even increased. The additional drawback is significant for all groups. This finding also surprises in light of the supposition that the wage penalty tends to be lower in times when part-time shares are higher and employers get accustomed to alternative working time schemes.

Table 4: Wage level estimates based on pooled cross sections

	West Germany				East Germany			
	Men		Women		Men		Women	
	gap	t-val.	gap	t-val.	gap	t-val.	gap	t-val.
Baseline wage gap	-.252	-24.6	-.042	-8.5	-.156	-5.8	.005	0.5
Additional wage gap from the year 2001 onwards	-.091	-7.3	-.053	-8.7	-.150	-4.9	-.028	-2.5
Number of observations	80234		63437		19584		19521	

Note: The numbers represent estimated coefficients.

6 Sensitivity Analysis

- to be completed

⁸ Estimation results are presented in the final version of the paper.

7 Conclusions

Despite the increasing occurrence of part-time employment in Germany, the effects on wage rates are studied rarely. Especially, a comprehensive study analysing the long-term and short-term effects of reduced working hours of both, women and men in East and West Germany is missing. I therefore use GSOEP panel data and apply different econometric approaches and definitions of part-time work to measure the so-called part-time wage gap. Another novel of my study is the look at changes of time. While there are good reasons to believe that the part-time wage gap shrinks over time, the empirical evidence reveals the opposite. This finding surprises in light of the supposition that the wage penalty tends to be lower in times when part-time shares are higher and employers get accustomed to alternative working time schemes. Furthermore, the Part-Time Work and Fixed-Term Employment Contracts Law which came into force in 2001, seems to fail one of its major goals. Alternative explanations helping to understand this time trend are analysed in more detail in the final version of the paper.

The increasing part-time wage gap is very cumbersome for the intra-family division of labour. Couples trying to share labour as well as the caring responsibly for their children are worse off compared to traditional (male) breadwinner households. Given the actual debate about skill shortage and male dominated management boards, the significant and increasing wage gaps for part-time employees is bad news and should be considered by political decision makers.

Appendix

Table 5: Means of all explanatory variables by working time regime (2010)

Variable	West Germany				East Germany			
	Men		Women		Men		Women	
	FT ¹	PT ¹	FT ¹	PT ¹	FT ¹	PT ¹	FT ¹	PT ¹
no vocational training	0,10	0,16	0,11	0,14	0,05	0,07	0,02	0,03
vocational training	0,54	0,32	0,57	0,62	0,63	0,51	0,52	0,67
master craftsman	0,08	0,04	0,05	0,04	0,09	0,06	0,06	0,04
vocational training for civil servants	0,03	0,00	0,02	0,01	0,02	0,00	0,01	0,01
university degree	0,24	0,48	0,26	0,19	0,21	0,35	0,39	0,26
FT-experience (in years)	19,30	9,53	14,36	7,65	19,15	8,94	16,83	13,27
PT-experience (in years)	0,54	4,65	2,52	9,22	0,34	4,11	1,80	7,63
unemployment (in years)	0,47	1,44	0,49	0,79	0,83	2,29	1,10	1,63
tenure	12,97	6,36	10,62	8,75	10,74	5,31	10,72	10,99
public sector	0,22	0,29	0,32	0,29	0,24	0,32	0,34	0,27
mining	0,02	0,01	0,01	0,00	0,04	0,05	0,01	0,00
engineering, electronic and metalworking industry	0,18	0,05	0,07	0,02	0,19	0,12	0,08	0,00
chemical industry	0,07	0,03	0,07	0,03	0,04	0,10	0,02	0,01
construction	0,08	0,02	0,02	0,01	0,12	0,02	0,02	0,01
iron, steel and heavy industry	0,07	0,04	0,03	0,01	0,08	0,00	0,01	0,01
textile and food industry	0,03	0,03	0,03	0,03	0,02	0,00	0,02	0,02
Whole sale and retail	0,09	0,08	0,14	0,22	0,07	0,22	0,09	0,24
Rail, mail and transportation	0,07	0,10	0,03	0,02	0,07	0,01	0,05	0,05
Public services	0,22	0,41	0,41	0,46	0,21	0,32	0,53	0,51
Private services	0,13	0,21	0,17	0,18	0,11	0,17	0,16	0,13
others	0,04	0,02	0,02	0,01	0,04	0,00	0,01	0,01
< 20 employees	0,15	0,37	0,23	0,36	0,21	0,30	0,25	0,32
≥ 20 and < 200 employees	0,29	0,30	0,28	0,28	0,39	0,22	0,32	0,28
≥ 200 and < 2000 employees	0,25	0,18	0,24	0,19	0,21	0,35	0,26	0,16
≥ 2000 employees	0,30	0,15	0,26	0,17	0,19	0,13	0,17	0,24
manager	0,06	0,01	0,04	0,01	0,03	0,01	0,04	0,00
scientist	0,19	0,19	0,19	0,11	0,12	0,17	0,17	0,14
engineer and equivalent	0,21	0,10	0,34	0,26	0,19	0,06	0,42	0,38
nontechnical occupations	0,09	0,06	0,19	0,16	0,06	0,06	0,13	0,13
commercial clerk	0,06	0,28	0,14	0,24	0,09	0,25	0,11	0,23
skilled worker	0,21	0,13	0,03	0,03	0,28	0,04	0,04	0,02
machine operator	0,14	0,10	0,04	0,02	0,15	0,12	0,04	0,03
unskilled worker	0,06	0,13	0,03	0,16	0,07	0,29	0,04	0,06
temporary job	0,06	0,21	0,09	0,14	0,08	0,34	0,15	0,13
german nationality = 1	0,91	0,91	0,93	0,88	1,00	0,98	1,00	1,00
married	0,58	0,36	0,32	0,70	0,53	0,24	0,42	0,69
age of the youngest child	2,69	1,61	1,27	4,25	2,21	1,36	1,79	3,54
No. of observations	2332	144	1200	1387	717	46	499	305

Note: The number of observations of the weighted figures is smaller than the number of observation in the cross section estimates, because the hrf of the GSOEP excludes first interviews (QUELLE?). 1 FT: Full-time employees, PT: Part-time employees according to the self-assessment of the respondent (including marginal employment).

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