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Abstract

This article analyses the effects of access to flexible work arrangements, namely flexi-time, telehomework and part-time work, on employees' satisfaction with the fit between paid work and private life and their overall job satisfaction. Having access to flexible work arrangements gives employees more control over their working life and thereby improves on the match between paid work and private life. Based on unique cross-sectional survey data collected among more than 20.000 Dutch public sector employees the results show that access to flexible work arrangements, especially flexi-time, is associated with sizeable increases in satisfaction with working-time fit and overall job satisfaction. Somewhat surprisingly, the effects hardly differ between male and female employees and between employees with and without children. Flexible work arrangements apparently appeal not only to employees with family responsibilities but more general to all employees.

Keywords: flexi-time; flexible work arrangements; job satisfaction; part-time work; telehomework; working-time fit

JEL classification: J22; J28; M52; M54

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Introduction

All over Europe, there is a shift from jobs organised on a relative permanent and fulltime basis towards less standard, flexible and part-time employment. Apart from giving employers the opportunity to adjust to market fluctuations and business cycles, this trend towards flexible work arrangements (FWA) is the result of an individualizing work force and the need of employees to combine paid work with other (unpaid) activities. This leads to a growing demand for employee-centred working time arrangements. Employers on the other hand increasingly provide these arrangements to their employees not only in order to increase their competitiveness but also to attract and retain qualified personnel. This all happens against the backdrop of an ageing society, the resulting policy initiatives to increase (female) labour supply and the increasing proliferation of new information technology (Plantenga, 2003).

If these FWA indeed improve the fit between paid work and other activities, this should be reflected in employees' job satisfaction. This article assesses whether this is the case by analysing the effects of access to flexible working hours, telehomework and part-time work on self-reported satisfaction with working-time fit and overall job satisfaction among Dutch public sector employees.

The article makes the following contributions to the existing literature. First it considers three FWA at the same time, i.e. flexibility in scheduling (flexi-time), location (telehomework) and length of work (part-time). These arrangements often come in bundles and can be substituted and combined (Chung, 2009; Kalleberg et al., 2003). It is therefore important to examine them jointly since analysing these arrangements in isolation may lead to serious biases. In addition our approach facilitates the comparison of relative effects of the arrangements. Second, the impact of *access* to these working time arrangements on job satisfaction is analysed as opposed to the *usage* thereof. Having access to FWA increases the set of resources and therefore the (time) autonomy of employees even though some employees choose to not use FWA on a regular basis. Access therefore seems to be a more useful measure to analyse the impact of FWA on job satisfaction. Finally, the analysis is based on a large, unique dataset that makes it possible to analyse the relation between different FWA and satisfaction while controlling for various confounding factors.

Identifying job arrangements and characteristics that affect job satisfaction is relevant for various labour market domains. Job satisfaction has thus been on the agenda of economics and sociology since the 1970s (Borjas, 1979; Freeman, 1978; Hamermesh, 1977; Kalleberg, 1977). Despite its subjectivity it has increasingly been viewed as a comprehensive measure of employees' utility from the job (Clark and Oswald, 1996; Clark, 1996). Job satisfaction is a predictor for

quits, layoffs and job transitions (Akerlof et al., 1988; Clark, 2001; Freeman, 1978), as well as health and absenteeism (Faragher et al., 2005; Fischer and Sousa-Poza, 2009; Roelen et al., 2008). It is also positively associated with productivity (Argyle, 1989; Judge et al., 2001) and organisational performance (Ostroff, 1992). Due to its reciprocal impact on overall well-being (Judge and Watanabe, 1993), job satisfaction is also increasingly perceived as an end in itself (A. L. Saltzstein et al., 2001).

The results show that access to FWA is associated with higher job satisfaction scores on average, with access to flexi-time having the largest impact. Access to combined FWA does not seem to yield additional job satisfaction since no significant interaction effects between FWA were found. Interestingly, there are also no major gender differences in the appreciation of FWA in general and only for access to flexi-time there seems to be a moderating effect of the presence of children on the relationship between FWA and job satisfaction. Flexible work arrangements apparently appeal not only to employees with family responsibilities but more general to all employees.

Theory and previous research

FWA vary the duration, scheduling and place of work (Rau, 2003). In comparison to the 40 hour workweeks and 8 hour workdays that constitute the de-facto standard in most industrialized countries today (Bosch, 1999; Parent-Thirion et al., 2007), part-time work varies the duration, flexi-time the scheduling and telehomework the place of work. These variations in the organizational aspects of paid work provide (time) autonomy and flexibility to workers and can improve the fit between paid work and other activities (Fagan, 2004; Hill et al., 2008). FWA are usually not used in isolation but in various combinations. They may complement and substitute each other and should therefore be examined jointly (Chung, 2009; Kalleberg et al., 2003).

Both the relationships between FWA and satisfaction with working-time fit and between FWA and overall job satisfaction are investigated. The impact of FWA on satisfaction with working-time fit indicates whether FWA are effective tools to combine work and private life and improve perceived work-life fit. The relation between FWA and overall job satisfaction shows whether FWA have a substantive influence among the whole bundle of factors affecting utility from work. In other words, do FWA play a significant role for overall job satisfaction?

In order to analyse the effect of FWA on an employee's utility from working, a simple bottom-up model (Diener, 1984)[1] was used, which has been implemented before in many other studies on

[1] The corresponding top-down theories assume that an individual's "global features of personality are thought to influence the way a person reacts to events" (Diener, 1984). According to this view "subjective

the determinants of job satisfaction (A. Sousa-Poza and Sousa-Poza, 2000a). The bottom-up approach used here basically assumes that individual job satisfaction is the net sum of work-role inputs (such as education, working time and effort) and work-role outputs (such as wages, fringe benefits, status, (positive) working conditions and intrinsic aspects) (Hulin et al., 1985; Judge and Watanabe, 1993). Each work-role input (output) is associated with a negative (positive) utility and depending on whether the resulting net sum is positive or negative, overall job satisfaction (or facets thereof) will be positive or negative. Formally, an individual's utility from work can then be written as:

$$U_w = \sum \left(W_{output} - W_{input} \right)$$

Access to FWA is expected to have a positive impact on utility from work in general. Having access to FWA provides employees with more control and autonomy over their (working) life, and therefore improves on the match between paid work and private life (Hill et al., 2008, 2001). FWA also allow employees to work during times more suited to their personal needs and biological clock and may decrease the amount of work- and commuting-related stress experienced by the employees, thereby optimizing their efforts (Baltes et al., 1999; Scandura and Lankau, 1997). In addition, access to FWA may signal to employees that their employer cares about their well-being and their responsibilities outside work (Casper and Harris, 2008; Grover and Crooker, 1995). Finally, access to FWA may be subject to social comparison. Employees with access to FWA may compare their situation with their peers who do not have access, regard it as a status symbol and derive utility from it (Scandura and Lankau, 1997). In summary, FWA are expected to provide positive utility from work and should therefore be considered work-role outputs.

Previous empirical research on flexi-time in particular finds a positive impact on job satisfaction and satisfaction with working schedule (Baltes et al., 1999) as well as organisational commitment and satisfaction with the employer (Grover and Crooker, 1995; Kelliher and Anderson, 2010; Scandura and Lankau, 1997). For telehomework the evidence is more ambiguous. In their meta-analyses, Bailey and Kurland (2002) find little evidence that telehomework increases job satisfaction, whereas Gajendran and Harrison (2007) do find positive impacts on job satisfaction, mostly because it improves perceived autonomy. The latter argue that "telecommuting indirectly influences job satisfaction, […] by raising perceptions of control over the location, timing, and means of completing one's work" (Gajendran and Harrison, 2007). These mixed findings hint at a complex, possibly hump-shaped relation between the extent of telehomework usage

domain satisfactions derive from, rather than cause, overall subjective well-being" (ibid.). Since our aim is to analyze determinants of job satisfaction, a top-down approach is not applicable.

and job satisfaction found elsewhere (T. D. Golden and Veiga, 2005; Virick et al., 2010). Telehomework potentially leads to blurring boundaries between work and private life (Kossek et al., 2006), therefore exerting a negative effect on satisfaction with fit between working time and private life and possibly job satisfaction in general (Peters and Van der Lippe, 2007; Peters et al., 2009; A. L. Saltzstein et al., 2001). Usage of telehomework also reduces direct interaction with colleagues and supervisors and may therefore lead to increased team conflict (Hinds and Bailey, 2003), as well as less organisational commitment and satisfaction with the employer (Ten Brummelhuis et al., 2010). These drawbacks most likely increase in the extent of telehomework usage (T. D. Golden, 2006). *Access* to telehomework nevertheless is expected to raise job satisfaction due to its positive impact on perceived autonomy, but less so than flexi-time, because of the drawbacks of increased telehomework usage.

Part-time work is generally associated with low occupational status and lower hourly wages (Manning and Petrongolo, 2008), as well as less opportunities for training and career advancement (Sandor, 2011). Since it mainly occurs in marginalised and menial jobs, it further leads to occupational downgrading (Connolly and Gregory, 2008). Part-time work is therefore intrinsically unsatisfying and should be associated with lower levels of job satisfaction (Booth and Van Ours, 2008, 2010). Yet, these effects apply to actual part-time work and across different jobs and not necessarily to access to part-time work within the same job. Furthermore these effects may be less relevant in the Netherlands than elsewhere, since the majority of part-time work is done voluntary and has been promoted by public policy (Cousins and Tang, 2004; Plantenga, 2002; Portegijs et al., 2008).[2] Since access to part-time work increases the leverage to adjust the length of work if necessary, it should have a positive effect on utility from work. In the Dutch case, the impact of access to part-time work on job satisfaction is expected to be small though, because virtually all employees have a legal right to part-time work in the Netherlands.[3]

[2] In the Netherlands, being the "only part-time economy in the world" (Freeman, 1998), part-time employment is not limited to marginal jobs, but rather a widespread feature of mainstream employment (Portegijs and Keuzenkamp, 2008). Dutch labour market research has nevertheless shown that part-time employment leads to foregone promotions and lower future wage growth (Román, 2006; Russo and Hassink, 2008).

[3] Every employee who has worked for a company for at least one year has the right to increase or decrease the number of working hours (as long as working hours do not exceed the legal maximum). For companies with more than ten employees this right is regulated in the Working Hours Adjustment Act (*Wet Aanpassing Arbeidsduur*) that came into force on 1 July 2000. An employer may only dismiss a request if it is a severe impediment to business interest and the organisation would suffer major problems by allowing it. In addition, the Equal Treatment Working Hours Act (*Wet Verbod op Onderscheid naar Arbeidsduur*), effective since 1 November 1996, decrees part-time work to be equivalent to full-time work and stipulates equal treatment of part-time and full-time employees in employment conditions, such as wages, bonuses, training, etc, unless there is an objective justification for a different treatment.

The effect of FWA on satisfaction with working-time fit is likely to be stronger than that on overall job satisfaction, since the latter is influenced by many more factors.[4] The effects on overall job satisfaction may in fact be composite: On the one hand FWA may increase satisfaction with the job and the employer through increased autonomy, work-life balance and self-determination. On the other hand they may decrease satisfaction through negative effects on the career and a feeling of being a 'lonesome worker' (less team spirit, organisational commitment, etc.).

The considerations above translate into the following hypotheses:

Hypothesis 1a: *Having access to a flexible work arrangement (flexi-time, telehomework, or part-time work) will be positively associated with satisfaction with working-time fit and overall job satisfaction.*

Hypothesis 1b: *The size of the association will be strongest for access to flexi-time and weakest for access to part-time work, with telehomework in between.*

Hypothesis 1c: *The association will be stronger for satisfaction with working-time fit than for overall job satisfaction.*

While the arrangements were considered separately above, the effects are expected to be stronger when FWA are combined, since this would mean more discretion about when, where and how much to work. Employees that can work at home may benefit more from flexi-time for example. Previous research accordingly found flexi-time to positively moderate the impact of telehomework on work-to-family conflict (T. D. Golden et al., 2006).

Hypothesis 2: *Having access to combinations of flexible work arrangements increases the probability of reporting higher levels of satisfaction with working-time fit as well as overall job satisfaction more than having access to them separately.*

FWA are likely to impact job satisfaction differently for different groups. Previous research on job satisfaction for example found a gender gap, i.e. women report on average higher levels of job satisfaction than men (Clark, 1997; Dalton and Marcis, 1987; A. Sousa-Poza and Sousa-Poza, 2000b). Since females are on average worse-off in the labour market in terms of pay, career opportunities and working conditions, this gender gap seems quite paradoxical. Some authors therefore hypothesized that the gender gap in job satisfaction may be caused by self-selection of women into certain jobs (Asadullah and Fernández, 2008; Bender et al., 2005). In order to com-

[4] Sloane and Williams (2000) for example find that the nature of work itself accounts for most of the overall job satisfaction.

bine paid work with family responsibilities, women predominantly prefer jobs that offer FWA and other work-life balance policies (WLB) and therefore sort themselves into jobs that offer these. The previous empirical evidence is not fully conclusive though. While not explicitly addressing the gender gap, Scandura and Lankau (1997) observe that flexible work hours lead to higher job satisfaction and organizational commitment for female employees and for employees with family responsibilities. Bender et al. (2005) show that scheduling flexibility and the perception of not having to choose between job and family/personal life is valued more by female employees and eliminates the gender gap in job satisfaction. Asadullah and Fernández (2008) on the other hand do not find significant gender differences in the effect of WLB on job satisfaction in general. Nevertheless these previous findings should prompt us to examine the differences in the effects of FWA for employees with and without family responsibilities.

Hypothesis 3: *Access to FWA increases the probability of reporting higher levels of satisfaction with working-time fit and with overall job satisfaction more for employees with family-responsibilities than for those without.*

Methodology

For the analysis a Dutch survey of public sector employees was used, namely the "Personeelsonderzoek Overheidspersoneel 2004" (PO 2004; Public Sector Employee Survey 2004) by the Dutch Ministry of the Interior and Kingdom Relations (MinBZK, 2005). This survey is conducted bi-annually to study the satisfaction, motivation, profile and labour market behaviour of the public sector employees in the Netherlands. The PO 2004 edition is unique in that it includes data on the preference for and the availability of several FWA and other working conditions. It contains data on 24,414 public servants from all public sectors, like state government, municipalities, police, defence, schools, universities and academic hospitals and provides detailed information on work organisation, fringe benefits, working conditions, satisfaction with work-related factors as well as socio-economic and household aspects of the surveyed employees. All respondents were employed by the same employer for the whole year 2003 (MinBZK, 2005: 63).[5] Table 1 presents an overview and descriptive statistics of the variables used in the analysis.

[Table 1 here]

Self-reported measures of job satisfaction are used as a proxy for the individual utility derived from working. These measures are widely used indicators of well-being and have been shown to

[5] This includes employees who changed jobs or had multiple contracts with the same employer, who stopped working for not more than 3 months and resumed afterwards, or whose number of working hours changed. It does not include employees who entered and left the public sector or changed employers within the public sector (e.g. from one police corps to another) in 2003 (MinBZK, 2005: 69). For a description of the sample design see MinBZK (2005: 64 et sqq.).

be closely related to a range of other – potentially more objective – measures of happiness (Frey and Stutzer, 2002). The participants in the PO 2004 were asked to indicate their satisfaction with working-time fit as well as their overall job satisfaction. Both scores are measured on a five point Likert scale.

The main independent variables are employees' reported access to flexi-time, telehomework and part-time work, which are all coded as dummy variables (0 = no/don't know; 1 = yes).[6] Previous research has shown that there are considerable differences between employers' and employees' reports on accessibility of FWA (Budd and Mumford, 2006). Utilizing employees' reported access is arguably the most reliable measure to investigate the relation between access of FWA and job satisfaction, since an effect on satisfaction is only possible if employees are aware that they have access to FWA.

A large set of control variables was used which is outlined in Table 1. The controls follow the social sciences literature on job satisfaction and measure observable personal and household as well as job and employer characteristics. Most control variables are measured as dummy or categorical variables.

Due to the ordinal nature of the dependent variables, ordered logit models were estimated for the empirical analysis (Long and Freese, 2005; Long, 1997). All individuals working in the defence sector as well as all individuals with missing information on one of the variables used were excluded.

Results

Table 2 shows the odds ratios of access to FWA on the two satisfaction scores obtained from an ordered logit regression without any interactions. Pooled as well as separate regressions for males and females were estimated. The pooled regression is based on the assumption that males and females evaluate job characteristics similarly and the gender dummy would simply shift the common utility function upwards. This assumption may be too restrictive since men and women often evaluate job and workplace characteristics differently (Bender et al., 2005; Sloane and Williams, 2000). By estimating separate regressions this restriction is relaxed, allowing for different utility functions for males and females regarding their job characteristics.

[Table 2 here]

[6] The 'no' (FWA not available) and the 'don't know' categories are treated the same. For our analysis it is very unlikely that unknown policies affect individual satisfaction. Therefore it does not matter much whether the employee does not know whether a FWA is available or not (i.e. the 'don't know' category) or whether he knows for sure that it is not available (i.e. the 'no' category). Empirical tests also showed no significant difference between the 'no' and 'don't know' categories.

The coefficients of the pooled regressions (full sample) show a strong association between access to flexi-time and both satisfaction scores, as expected. The odds of being more satisfied with working-time fit are more than doubled for employees with access to flexi-time. The odds of being more satisfied with one's job overall are roughly 36% higher for employees with access to flexi-time. For employees with access to telehomework the odds of being satisfied with their working-time fit are only 18% higher than for those without, so telehomework scores considerably lower than flexi-time in this respect. The association with overall job satisfaction is very similar, however. For employees with access to part-time the odds of being more satisfied with working-time fit are around 40% higher than for those without. The strength of the association with overall job satisfaction is only slightly weaker than that of flexi-time and telework (the odds of being more satisfied are roughly 31% higher for employees with access to part-time than for those without).

The estimates of the pooled regression models also show a gender gap in job satisfaction. Females have almost 40% higher odds of reporting a higher job satisfaction score than males for example. In order to test whether access to FWA can account for this gender difference, separate regression models for males and females are estimated and the estimation results are combined by seemingly unrelated estimation (StataCorp, 2009; Weesie, 1999).[7] Wald tests for differences in the coefficients are performed then. The null hypothesis of equal coefficients for male and female employees for each FWA can only be rejected in one case. The coefficient of access to flexi-time on overall job satisfaction is significantly larger for male employees than for female employees. Access to flexi-time therefore seems to be associated with a stronger increase in overall job satisfaction for male employees than for female employees. For telehomework and part-time work there is no difference in the odds between male and female employees with respect to both working-time fit and overall job satisfaction. The same is true for flexi-time with respect to satisfaction with working-time fit. Apparently the gender gap in job satisfaction is not caused by self-selection of female employees into more flexible and family-friendly jobs.[8]

These results mostly confirm the first hypothesis. Access to flexi-time has the strongest effect on both satisfaction scores, but access to part-time work is more strongly associated with satisfaction with working-time fit than access to telehomework. With respect to overall job satisfaction, all three FWA score roughly the same. For access to flexi-time and to part-time, respectively, the increase in the odds is larger for satisfaction with working-time fit than for overall job satisfaction, but for telehomework it is the other way around. Apparently telehomework has a stronger

[7] Seemingly unrelated estimation combines the parameter estimates and associated variance-covariance matrices of two or more regression models in order to test cross-model hypotheses.

[8] Note further that the odds of reporting higher levels of satisfaction remain significantly higher for female employees in all of our specifications.

influence on other aspects related to job satisfaction than on those related to working-time fit. On average, access to FWA seems to improve on the match between paid work and other activities and to increase subjective job satisfaction, but male and female employees do not seem to evaluate FWA very differently in these respects.

As a next step, interactions between the three different FWA are added to our model in order to test whether combined access to FWA yields additional job satisfaction (hypothesis 2). Table 3 shows the resulting estimates. All interaction terms are not significantly different from one in terms of odds ratios – neither jointly nor individually – i.e. there is not a statistical difference in the odds according to our model. This result implies that the effect of access to flexi-time for example is the same whether or not an employee has access to telehomework or part-time work or both. Even though FWA may be used in combination or substitute each other when they are not all available, they are independent from each other in terms of the utility drawn from them. In conclusion, their sum is not more than the parts and hypothesis 2 has to be rejected.

[Table 3 here]

In order to test whether access to FWA increases the probability of reporting higher levels of satisfaction more strongly for employees with family responsibilities (hypothesis 3), a model with interactions between FWA and the presence of children in the household is estimated. The results are shown in Table 4. The odds ratios of most interaction effects are not significantly different from one, so there is no difference in the odds. Only access to flexi-time increases the odds of reporting higher satisfaction with working-time fit for employees with young children between zero and five years of age. This effect seems to be mostly driven by female employees, even though the difference between male and female employees is not statistically significant. Access to flexi-time also increases working-time fit for female (but not male) employees with older children at home significantly more than for those without children. In some cases, access to telehomework and to part-time work lead to significantly smaller increases of satisfaction with working-time fit and overall job satisfaction for employees with children compared to those without children. So with the exception of flexitime in relation to satisfaction with working-time fit, access to FWA does not increase the probability of reporting higher levels of job satisfaction and satisfaction with working-time fit for employees with family responsibilities compared to those without. Hypothesis 3 is therefore partly rejected.

[Table 4 here]

Limitations and sensitivity analyses

In general cross-sectional data like the one used for this analysis does not imply statistical causality, even though reverse causality does not seem very plausible here (Jonge et al., 2001). Furthermore there may be potential biases due to unobservable characteristics at the employee, job, or firm level. Employees may for example self-select or be occupationally segregated into working time arrangements on the basis of unobservable characteristics (L. Golden, 2008) which in turn may influence, at least in part, their reported satisfaction levels.[9] Artz (2010) however shows that this type of endogeneity does not play a role in the relationship between fringe benefits (e.g. flexi-time) and job satisfaction. A similar bias may arise due to the fact that respondents' report on the dependent variables may not be independent from their report on the independent variables (Bauer, 2004).

One might also argue that important control variables are left out of the equation. Overtime, preference for working more or less hours, perceived workload and perceived job autonomy are not controlled for in the models above even though this data would have been available. It could be argued that these factors are all correlated with FWA and job satisfaction and should thus be controlled for. By adding these factors to the models, however, one would ignore important paths of indirect effects and therefore be over-controlling. FWA are likely to influence the factors above (and possibly vice-versa) and these in turn affect job satisfaction. If these factors are included in the model, the effect of FWA on job satisfaction would be measured net of these factors, but our interest lies in the effects on job satisfaction more broadly defined. Nevertheless, when these variables are added to the model, the size of the coefficients only change a little (not shown) and our main conclusions remain intact.

Finally the regression model used may be criticized. An important assumption of ordered logit models, the parallel regression assumption, basically implies that the regression coefficient of an independent variable is the same across all outcome categories of the dependent variable. This assumption is frequently violated but commonly ignored in practice (Long and Freese, 2005: 197). In our case this means that the association between flexi-time and job satisfaction, for example, is the same for dissatisfied and fairly satisfied employees alike (Chongvilaivan and Powdthavee, 2011). Generalized ordered logit or partial proportional odds models relax the parallel lines assumption and allow for different coefficients for each category change in the dependent variable. Since the parallel regression assumption is violated for some of the FWA variables in the ordered logit specifications, generalized ordered logit models were estimated as

[9] At least in the US, access to FWA seems to be distributed more according to employers' profit considerations, such as cost savings and retention of workers, and is only somewhat related to employees' needs and demand (L. Golden, 2008).

well (R. Williams, 2006). The results reported above are mainly confirmed and further extended by this alternative specification. The association between FWA and satisfaction with working-time fit is stronger at the lower end of the satisfaction distribution than at the upper end. This implies that FWA reduce dissatisfaction with working-time fit more than they increase already fair satisfaction. Regarding overall job satisfaction, access to flexi-time and telehomework are associated with similar increases in job satisfaction across the different job satisfaction categories. Access to telehomework, however, increases the odds of reporting higher job satisfaction levels mainly for relatively satisfied employees and only a little for unsatisfied employees. See the appendix for more detailed results.

Conclusion

Flexible work arrangements are an important element in current policy debates in Europe. FWA are not only viewed as a means to improve the competitiveness of enterprises, but can also provide employees with more flexibility to reconcile their professional, private and family lives. Furthermore they are discussed as a way to increase female labour participation and reduce shortages of qualified personnel in the future.

This article analyses whether access to FWA, namely flexible working hours, telehomework and part-time work, improves employees' satisfaction with the fit between paid work and private life and raises overall job satisfaction. The main premise is that FWA provide employees with more control over their working life, lead to a better match between paid work and other activities, decrease the amount of stress experienced by employees and signal to employees that their employer cares about their well-being and their responsibilities outside work. A simple bottom-up model is used under the assumption that utility from work is the sum of work-role inputs and outputs. Two self-reported items to measure utility from work are employed, namely satisfaction with working-time fit and overall job satisfaction.

The results show that access to FWA is associated with higher job satisfaction scores. All three FWA increase the odds of reporting higher overall job satisfaction to a similar degree, namely by about 30% to 35% compared to employees without access to a particular FWA. Combinations of FWA apparently do not yield additional job satisfaction or satisfaction with working-time fit since no significant interaction effects between different FWA were found. This indicates that on average FWA are not complementary but rather independent from each other with respect to the utility drawn from them. While the association between all three FWA and overall job satisfaction is similar, flexi-time seems to be the most beneficial FWA regarding the fit between working times and private life. Access to flexi-time doubles the odds of reporting higher levels of satisfaction with working-time fit on average, while part-time work and telehomework increase

the odds by roughly 40% and 20%, respectively. In addition, only flexi-time increases the odds of reporting better working-time fit for employees with children above those of employees without children. Apart from that, no major gender differences in the relationship between FWA and job satisfaction were found. Even though our data is limited to public sector employees, it is likely that the results are generally applicable to the private sector as well, since the sectors and jobs covered in the dataset are rather broad and diverse. Nevertheless this remains a direction of future research.

In summary, these findings suggest that flexible work arrangements not only appeal to employees with family responsibilities but that all employees would benefit from increased access to them. Since previous research has shown that higher job satisfaction translates into fewer job quits, a lower rate of absenteeism and increased general well-being, this would be beneficial to both employers and employees.

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Tables

Table 1: Variable Definitions and Descriptive Statistics[10]

Variable		Definition	Mean	Std. Dev.	Min	Max
WT fit		My working times fit well with my private life				
	1	Completely disagree	0.023	0.150	0	1
	2	Disagree	0.072	0.258	0	1
	3	Neutral	0.114	0.318	0	1
	4	Agree	0.434	0.496	0	1
	5	Completely agree	0.358	0.479	0	1
Job		How satisfied are you, all things considered, with your job?				
	1	Very unsatisfied	0.023	0.151	0	1
	2	Fairly unsatisfied	0.095	0.293	0	1
	3	Neutral	0.109	0.312	0	1
	4	Fairly satisfied	0.575	0.494	0	1
	5	Very satisfied	0.198	0.398	0	1
Flexi-time		Access to flexible working times	0.569	0.495	0	1
Telehomework		Access to work at home every now an then	0.516	0.500	0	1
Part-time		Access to work part-time	0.895	0.307	0	1
Female		Female employee	0.455	0.498	0	1
Child 0-5		Child(ren) 0-5 years living at home	0.173	0.378	0	1
Child 6+		Child(ren) 6+ years living at home	0.478	0.500	0	1
Work hours		Number of contractual working hours				
	1	1-11 hours per week	0.024	0.152	0	1
	2	12-19 hours per week	0.081	0.274	0	1
	3	20-35 hours per week	0.315	0.465	0	1
	4	36+ hours per week	0.580	0.494	0	1
Age		Age categories				
	1	15-24 years	0.028	0.165	0	1
	2	25-34 years	0.175	0.380	0	1
	3	35-44 years	0.274	0.446	0	1
	4	45-54 years	0.371	0.483	0	1
	5	55+ years	0.153	0.360	0	1
Family status		Family status				
	1	Single (incl. single parent)	0.024	0.154	0	1
	2	Cohabiting or married	0.966	0.181	0	1
	3	Living at parent's home	0.005	0.071	0	1
	4	Other	0.005	0.068	0	1
Partner job		does partner have a job?				
	1	No	0.200	0.400	0	1
	2	Yes, <= 20 hours per week	0.189	0.391	0	1
	3	Yes, >= 21 hours per week	0.611	0.487	0	1
Education		highest educational degree				
1		Primary school	0.004	0.066	0	1
2		Lower vocational training (e.g. *lbo*)	0.037	0.190	0	1

[10] The descriptive statistics are based on the same sample as the Working-time fit - Full sample models below (N = 16,159).

3	Lower secondary education (e.g. *mavo*)	0.075	0.264	0	1
4	Higher secondary education (e.g. *vwo*)	0.060	0.237	0	1
5	Medium vocational training (e.g. *mbo*)	0.155	0.362	0	1
6	Higher vocational training (e.g. *hbo*)	0.448	0.497	0	1
7	Academic (e.g. bachelor *kandidaatsexamen*)	0.035	0.185	0	1
8	Academic (e.g. master)	0.185	0.388	0	1
Wage	Gross wage category				
1	<= 1.250 EUR	0.088	0.283	0	1
2	1.251 - 1.500 EUR	0.074	0.262	0	1
3	1.501 - 1.750 EUR	0.068	0.252	0	1
4	1.751 - 2.000 EUR	0.083	0.276	0	1
5	2.001 - 2.500 EUR	0.172	0.377	0	1
6	2.501 - 3.000 EUR	0.134	0.340	0	1
7	3.001 - 3.500 EUR	0.145	0.352	0	1
8	3.501 - 4.000 EUR	0.101	0.301	0	1
9	4.001 - 4.500 EUR	0.063	0.243	0	1
10	4.501 - 5.000 EUR	0.036	0.185	0	1
11	> 5.000 EUR	0.037	0.189	0	1
Experience	How many years did you perform paid work?	22.54	10.40	0	55
Executive position	Are you supervising colleagues?	0.282	0.450	0	1
Multiple jobs	Employee holding 2+ jobs	0.057	0.232	0	1
Contract type	Type of contract				
1	Permanent contract	0.950	0.218	0	1
2	Temporary contract with prospects of a permanent contract	0.024	0.152	0	1
3	Temporary contract without prospects of a permanent contract	0.018	0.131	0	1
4	Contract based on special (legal) arrangement	0.005	0.067	0	1
5	Other	0.005	0.067	0	1
Sector	Sector				
1	State government	0.177	0.381	0	1
2	Municipalities	0.078	0.268	0	1
3	Primary school	0.176	0.381	0	1
4	Secondary school	0.171	0.377	0	1
5	Vocational training and further education	0.135	0.342	0	1
6	Judiciary	0.013	0.111	0	1
7	Police	0.086	0.280	0	1
8	Research institutes	0.014	0.116	0	1
9	Higher vocational training	0.029	0.167	0	1
10	Universities	0.037	0.188	0	1
11	Conservancies	0.019	0.136	0	1
12	Provinces	0.026	0.158	0	1
13	Academic hospitals	0.041	0.199	0	1
Firm size	number of employees				
1	0-10 employees	0.008	0.087	0	1
2	11-20 employees	0.022	0.148	0	1
3	21-50 employees	0.060	0.237	0	1
4	51-100 employees	0.073	0.259	0	1
5	101-500 employees	0.314	0.464	0	1
6	501-1000 employees	0.130	0.336	0	1
7	1001-5000 employees	0.249	0.433	0	1
8	5000+ employees	0.145	0.352	0	1

Table 2: Odds ratios of access to FWA on satisfaction with working-time fit and overall job satisfaction[11]

Variables	Working-time fit			Overall job satisfaction		
	Full sample	Male only	Female only	Full sample	Male only	Female only
Flexi-time access	2.141***	2.202***	2.064***	1.362***	1.532***	1.189**
	(0.0799)	(0.111)	(0.116)	(0.0499)	(0.0761)	(0.0660)
Telehomework access	1.183***	1.218***	1.162**	1.361***	1.446***	1.295***
	(0.0405)	(0.0578)	(0.0581)	(0.0474)	(0.0691)	(0.0670)
Part-time access	1.405***	1.400***	1.390*	1.316***	1.295***	1.345**
	(0.0766)	(0.0838)	(0.181)	(0.0684)	(0.0763)	(0.153)
Female	1.225***			1.399***		
	(0.0529)			(0.0615)		
Children 0-5 years living at home	0.782***	0.838**	0.738***	1,018	1,016	1,059
	(0.0353)	(0.0542)	(0.0485)	(0.0463)	(0.0670)	(0.0696)
Children 6+ years living at home	0.914*	0.919	0.899	0.962	0.947	0.993
	(0.0320)	(0.0419)	(0.0513)	(0.0340)	(0.0435)	(0.0572)
Small part-time job (1-11h)	1.478**	1,374	1.630**	1.272*	1.493*	1,160
	(0.188)	(0.326)	(0.258)	(0.146)	(0.304)	(0.172)
Medium part-time job (12-19h)	1.255**	1,111	1.362**	0.906	0.968	0.889
	(0.0939)	(0.168)	(0.133)	(0.0677)	(0.152)	(0.0874)
Large part-time job (20-35h)	1.088*	1,088	1,112	0.959	0.926	0.975
	(0.0464)	(0.0675)	(0.0701)	(0.0423)	(0.0585)	(0.0651)
cut1	-3,764	-3,150	-4,450	-3,721	-4,571	-3,121
	(0.365)	(0.549)	(0.511)	(0.423)	(0.647)	(0.495)
cut2	-2,239	-1,693	-2,799	-1,990	-2,683	-1,599
	(0.362)	(0.546)	(0.504)	(0.419)	(0.643)	(0.488)
cut3	-1,268	-0.691	-1,868	-1,180	-1,832	-0.843
	(0.361)	(0.545)	(0.502)	(0.419)	(0.642)	(0.487)
cut4	0.804	1,311	0.311	1,540	0.826	1,979
	(0.360)	(0.545)	(0.502)	(0.419)	(0.641)	(0.488)
Observations	16159	8803	7356	16266	8881	7385

[11] Reference categories are no access to flexi-time, telehomework and part-time work, male employees, employees without children and employees with full-time (36+ hours). Control variables are respondents' age, family status, whether respondents' partner hold a job, respondents' education, work experience, wage, executive position, multiple jobholdings, contract type, sector and firm size in all models.

Table 3: Odds ratios of access to FWA on satisfaction with working-time fit and overall job satisfaction: Multiple FWA[11]

Variables	Working-time fit	Overall job satisfaction
Flexi-time access	2.048***	1.498**
	(0.290)	(0.185)
Telehomework access	0.911	1.627**
	(0.140)	(0.247)
Part-time access	1.236*	1.496***
	(0.115)	(0.129)
Flexi-time*Telehomework	1,058	0.911
	(0.220)	(0.180)
Flexi-time*Part-time	1,036	0.851
	(0.154)	(0.113)
Telehomework*Part-time	1,308	0.775
	(0.210)	(0.124)
Flexi-time*Telehomework*Part-time	0.976	1,233
	(0.212)	(0.258)
Female	1.227***	1.395***
	(0.0530)	(0.0614)
Children 0-5 years living at home	0.780***	1,020
	(0.0353)	(0.0464)
Children 6+ years living at home	0.914*	0.961
	(0.0320)	(0.0340)
Small part-time job (1-11h)	1.475**	1.273*
	(0.188)	(0.146)
Medium part-time job (12-19h)	1.259**	0.905
	(0.0943)	(0.0677)
Large part-time job (20-35h)	1.088*	0.959
	(0.0464)	(0.0423)
cut1	-3,858	-3,640
	(0.369)	(0.430)
cut2	-2,334	-1,908
	(0.366)	(0.426)
cut3	-1,362	-1,098
	(0.365)	(0.426)
cut4	0.710	1,623
	(0.364)	(0.426)
Observations	16159	16266

Odds ratios from ordered logit regression. Robust standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.

Table 4: Odds ratios of access to FWA on satisfaction with working-time fit and overall job satisfaction: interaction with presence of children[11]

Variables	Working-time fit			Overall job satisfaction		
	Full sample	Male only	Female only	Full sample	Male only	Female only
Flexi-time access	1.955***	2.182***	1.718***	1.354***	1.489***	1.213*
	(0.102)	(0.158)	(0.133)	(0.0699)	(0.106)	(0.0926)
Telehomework access	1.249***	1.301***	1.219**	1.457***	1.538***	1.403***
	(0.0623)	(0.0890)	(0.0901)	(0.0730)	(0.107)	(0.104)
Part-time access	1.585***	1.562***	1.514*	1.427***	1.441***	1.350*
	(0.119)	(0.133)	(0.245)	(0.101)	(0.123)	(0.178)
Children 0-5 living at home	0.754	0.840	0.429	0.949	1,050	0.538
	(0.134)	(0.163)	(0.209)	(0.150)	(0.188)	(0.191)
Children 6+ living at home	1,135	1,191	1,207	1,222	1,162	1,362
	(0.122)	(0.144)	(0.335)	(0.126)	(0.135)	(0.355)
Flexi-time*Children 0-5	1.372***	1,221	1.547***	0.961	0.934	1,030
	(0.115)	(0.149)	(0.182)	(0.0791)	(0.112)	(0.120)
Flexi-time*Children 6+	1,076	0.959	1.238*	1,024	1,072	0.941
	(0.0684)	(0.0839)	(0.119)	(0.0658)	(0.0933)	(0.0924)
Telehomework*Children 0-5	1,144	1,146	1,146	0.914	0.897	0.958
	(0.0940)	(0.137)	(0.134)	(0.0749)	(0.106)	(0.112)
Telehomework*Children 6+	0.857*	0.847	0.855	0.893	0.911	0.848
	(0.0541)	(0.0726)	(0.0811)	(0.0572)	(0.0791)	(0.0825)
Part-time*Children 0-5	0.791	0.797	1,266	1,158	1,080	2.001*
	(0.138)	(0.149)	(0.617)	(0.179)	(0.187)	(0.704)
Part-time*Children 6+	0.819	0.846	0.710	0.806*	0.794*	0.814
	(0.0852)	(0.0974)	(0.195)	(0.0803)	(0.0898)	(0.208)
Female	1.215***			1.397***		
	(0.0526)			(0.0615)		
Small part-time job (1-11h)	1.477**	1,356	1.638**	1.264*	1,480	1,154
	(0.188)	(0.321)	(0.260)	(0.145)	(0.301)	(0.171)
Medium part-time job (12-19h)	1.260**	1,108	1.367**	0.904	0.954	0.885
	(0.0944)	(0.169)	(0.133)	(0.0675)	(0.150)	(0.0870)
Large part-time job (20-35h)	1.091*	1,087	1,113	0.958	0.925	0.974
	(0.0465)	(0.0676)	(0.0702)	(0.0422)	(0.0584)	(0.0651)
cut1	-3,667	-3,023	-4,405	-3,604	-4,489	-3,019
	(0.369)	(0.552)	(0.521)	(0.426)	(0.649)	(0.506)
cut2	-2,142	-1,564	-2,751	-1,872	-2,600	-1,497
	(0.366)	(0.548)	(0.513)	(0.422)	(0.644)	(0.499)
cut3	-1,169	-0.562	-1,817	-1,062	-1,749	-0.740
	(0.365)	(0.548)	(0.511)	(0.422)	(0.644)	(0.498)
cut4	0.906	1,443	0.369	1,659	0.910	2,084
	(0.365)	(0.547)	(0.511)	(0.422)	(0.643)	(0.499)
Observations	16159	8803	7356	16266	8881	7385

Appendix

Results from generalized ordered logit model

Table 5 presents the results from our baseline model, only this time estimated by generalized ordered logit (R. Williams, 2006). More specifically we estimated a partial proportional odds model, where the parallel regression assumption is maintained for most control variables, but relaxed for all variables in the table (viz. flexi-time, telehomework, part-time work, gender, presence of children, number of contractual hours). The estimation results in each column should be read like results from binary logit regression with the outcome category of the dependent variable in the column header (e.g. strongly disagree) as the base category. Access to flexi-time for example increases the odds of being more satisfied with the job by a factor of 1.4 compared to employees who do not have access and who are currently fairly dissatisfied.

In general the odds ratios of the FWA decrease over the outcome categories of working-time fit. Wald tests indicate that the differences between the coefficients are statistically significant at the 5%-level for flexi-time, and at the 1%-level for telehomework and part-time work. This implies that FWA reduce dissatisfaction with working time fit more than they increase already fair satisfaction. With respect to overall job satisfaction the differences between the odds are only statistically significant for telehomework (at the 0.1%-level). According to our estimates, telehomework increases the odds of being satisfied with the job primarily for those employees who are already neutral or fairly satisfied (by a factor of roughly 1.4), and not so much (i.e. by roughly 1.15) for employees who are very or fairly dissatisfied.[12] Access to flexi-time and to part-time work is associated with a similar increase in job satisfaction over the whole job satisfaction distribution.

[12] The coefficients for the neutral and fairly satisfied as well as the very and fairly unsatisfied, respectively, are not significantly different from each other.

Table 5: Odds ratios of access to FWA on satisfaction with working time fit and overall job satisfaction (partial proportional odds model)[13]

Variables	Working-time fit				Overall job satisfaction			
	strongly disagree	mostly disagree	neither agree nor disagree	mostly agree	very dissatisfied	fairly dissatisfied	neutral	fairly satisfied
Flexi-time access	2.811***	2.369***	2.281***	2.032***	1.243*	1.408***	1.380***	1.324***
	-0.348	-0.147	-0.107	-0.0844	-0.136	-0.0772	-0.0598	-0.0614
Telehomework access	1.818***	1.485***	1.336***	1.07	1.138	1.187**	1.421***	1.349***
	-0.211	-0.0876	-0.0591	-0.0412	-0.124	-0.0653	-0.0598	-0.0595
Part-time access	1.740***	1.636***	1.596***	1.233***	1.409*	1.365***	1.306***	1.302***
	-0.247	-0.13	-0.0986	-0.0753	-0.229	-0.102	-0.0788	-0.0945
Female	1.627***	1.266**	1.354***	1.145**	1.061	1.347***	1.529***	1.285***
	-0.223	-0.0916	-0.0733	-0.0545	-0.139	-0.0881	-0.0801	-0.0691
Children 0-5 years living at home	0.628***	0.724***	0.819***	0.778***	1.041	1.074	1.133*	0.928
	-0.0821	-0.0523	-0.0463	-0.0401	-0.152	-0.079	-0.066	-0.0533
Children 6+ years living at home	0.827	0.875*	1.006	0.876***	1.147	0.957	0.992	0.928
	-0.0875	-0.0509	-0.0446	-0.0341	-0.122	-0.0506	-0.0421	-0.0409
Small part-time job (1-11h)	0.933	0.849	1.142	1.675***	1.094	1.265	1.455*	1.211
	-0.345	-0.157	-0.173	-0.209	-0.42	-0.238	-0.226	-0.17
Medium part-time job (12-19h)	0.98	1.161	1.211*	1.307***	0.701	0.937	0.914	0.914
	-0.237	-0.149	-0.117	-0.104	-0.143	-0.103	-0.0811	-0.085
Large part-time job (20-35h)	1.043	1.11	1.117*	1.077	0.848	1.008	0.982	0.945
	-0.149	-0.0824	-0.0611	-0.0519	-0.114	-0.0673	-0.0524	-0.0525
Observations	16048				16154			

[13] Reference categories are no access to flexi-time, telehomework, and part-time work, male employees, employees without children, and employees with full-time (36+ hours). We control for respondents' age, family status, whether respondents' partner hold a job, respondents' education, work experience, wage, executive position, multiple jobholdings, contract type, sector and firm size in all models.