
Home Office – Salutary Action on Combining Work and Family?



Kerstin F. Hansen¹

Heimarbeit erhält nicht nur von Unternehmen als Mittel zur Personalgewinnung und -bindung, sondern auch von Politikern als Massnahme zur verbesserten Vereinbarkeit von Berufs- und Privatleben immer mehr Aufmerksamkeit. Mit Daten des sozioökonomischen Panels (SOEP) untersucht diese Studie – mit Lebenszufriedenheit als Proxy-Maß für individuellen Nutzen – potenzielle Wohlfahrtseffekte von Heimarbeit im deutschen Kontext. Die Resultate zeigen, dass Menschen die von zu Hause arbeiten, im Durchschnitt zufriedener mit ihrem Leben sind als diejenigen, deren Beruf es generell erlaubt, die die Option jedoch nicht nutzen (dürfen). Dies gilt sowohl in einer für die deutsche Bevölkerung repräsentativen Stichprobe, als auch in einer für die Hauptzielgruppe repräsentativen Spezialstichprobe von Familien in Deutschland. Die ökonometrische Analyse zeigt jedoch dass die positive Assoziation zwischen Heimarbeit und Lebenszufriedenheit in beiden Stichproben durch sozio-demographische und berufliche Merkmale sowie individuelle Heterogenität erklärt werden kann. Die Erkenntnis dass die Nutzung von Heimarbeit nicht in Zusammenhang mit dem Familienstand oder einer Pflegeverpflichtung steht, sondern eher mit Autorität und Status am Arbeitsplatz, stellt den Wohlfahrtsnutzen einer potenziellen politischen Maßnahme zur Verbesserung der Work-Life-Balance daher in Frage.

Working from home does not only receive attention from companies as a non-pecuniary feature to entice and keep valuable employees, but also by politicians as a mean to enhance the compatibility of labor market and family obligations for working citizens. With representative panel data, I investigate potential welfare effects of working from home in the German context using life satisfaction as a proxy measure for individual utility. I find that, on average, people working from home are more satisfied with their lives. However, it shows that the positive association between working from home and satisfaction with life is entirely explained by socio-demographic and job characteristics as well as individual heterogeneity, both in a sample representative for the German population as well as in a sample representative for the intended target group of employees with family care obligations. Generally, working from home does not seem to be beneficial nor does it appear particularly harmful. However, I find that working from home is not related to care obligation or family status but rather to authority and status in the workplace, leaving the usefulness – at least as a policy measure to enhance work-life balance – of the feature in doubt.

Lebenszufriedenheit, Heimarbeit, Work-Life Balance, Flexibilität
life satisfaction, home office use, work-life balance, flexibility

¹ I am grateful to Bruno Frey, Reto Odermatt, Margit Osterloh, Nicolas Schreiner, and Alois Stutzer, as well as to the workshop participants of the 2nd Basel Workshop on Happiness and Economics and of the Research Workshop of the Centre for People and Organisational Change in Southampton for useful comments.

1. Introduction

Driven by changes on both the demand and the supply side of the labor market, working from home (WFH) has become more and more popular in recent years. On the labor demand side, vast progress in information and communication technology significantly reduced the costs of providing home-based arrangements for firms (e.g., Oettinger, 2011), so that employees can be more easily connected to or with their workplace without being physically present. At the same time, through a rise in the number of dual earner couples, suppliers of labor services increasingly request practices which enable particularly women, due to the traditional division of home production tasks, to simultaneously meet work and family demands (Bertrand, 2013). Along with simultaneous demand and supply side changes, a large debate has sparked on the potential advantages and disadvantages of WFH. For instance, large IT companies such as *Yahoo*, *HP* or recently *IBM* announced that they call their employees back to the offices, mainly with arguments concerning a more inspiring, innovative work environment (Kessler, 2017). At the same time, experts at the 2016 annual meeting of the *Association of German Jurists* argued for a right to WFH (*Deutscher Juristentag e.V.*, 2016) and the German labor minister strongly advertised the 2015 introduced law of The Netherlands, which enables every employee to work from home at least one day a week – as long as the job allows to do so (e.g., Bohsem, 2015).

The controversial debate raises the question about whether a development towards remote working is beneficial and about the welfare effects of potential introductions of such policies. Whereas the ongoing public debate initiated academic attention from various fields, an empirical investigation of the overall welfare effects of WFH is missing. Although productivity, job satisfaction and intentions to stay are mostly shown to be positively associated with WFH (e.g., Collins, 2005; Bloom *et al.*, 2015; Possenriede *et. al*, 2016), outcomes in private life are rather unclear. A puzzling result regarding ambiguous effects is the one found by Bloom *et al.*, (2015): At the end of a nine month randomized controlled trial, despite higher levels of job satisfaction among remote workers, 50 % of the employees who originally volunteered to work from home, returned to the office when given the choice by their employer. Whereas discretion over where to work may diminish stress for employees due to the ability to flexibly decide upon instantaneous needs and demands, it may also enhance work-family conflict through the draining of resources of one domain to meet the demands of another one (Allen *et al.*, 2013). Thus, the global impact of WFH on individuals' subjective well-being remains ambiguous.

This paper seeks to answer the question of the well-being effects of working from home by, first, providing a detailed overview of the discussion from an economic perspective and, second, by investigating the effects in an empirical analysis. Self-reported life satisfaction has, in economic research, increasingly been used as a proxy measure for individual's utility levels (Frey & Stutzer, 2002). Thus, employing large scale panel data from the *German Socio-Economic Panel (GSOEP)*, the impact of home office use is estimated for individuals' satisfaction with life for a sample representative of the German population and for a special sample of families in Germany, which represents a major target group of such policies. The central finding of the econometric analysis is that although people that work from home are *on average* significantly more satisfied with their lives, this is mainly explained by personal and job characteristics that correlate with home office use and life satisfaction. Controlling for individual fixed effects, the analysis reveals that WFH, in a small (and not statistically significant) magnitude, negatively relates to satisfaction with life. Fur-

thermore, testing for heterogeneity in this relationship, I find no positive effects for the potential beneficiaries of home office policies, i.e., women or families with young children.

The remainder of the paper is organized as follows: *Section 2* summarizes literature with related outcomes in the work and private domain and discusses the theoretical considerations for the relationship between WFH and life satisfaction in greater detail from an economic perspective. *Section 3* introduces the data that is used for the empirical analysis in *Section 4*. *Section 5* concludes and gives an outlook for further research needed in this area.

2. Existing Research and Theoretical Considerations

2.1. Working from Home and Work Outcomes

Existing research in the work domain mainly focused on job satisfaction and turnover, productivity and wage differentials as outcomes of WFH. In the well-known Hackman-Oldham-model, skill variety, task identity, task significance, feedback and autonomy are crucial factors that determine satisfaction with the job, out of which autonomy has been shown to play a particularly significant role (Hackman & Oldham, 1976). A substantial feature of WFH is the provision of spatial and often timely autonomy to employees, offering a theoretical framework of the relationship between WFH and job satisfaction. Autonomy in the sense of WFH may not only increase workers' utility through an improvement of outcomes, such as a reduction of the amount of stress related to balancing family and work demands or from commuting, but also as a mean to itself (Benz & Frey, 2008). Furthermore, the opportunity to work from home may express a signal that the employer cares about employees' needs to manage private responsibilities and hence cares about their well-being (Possenriede *et al.*, 2016).

Empirically, results concerning the relationship between home office use and job satisfaction are mixed: Whereas *Bailey and Kurland* (2002) do not find a clear positive relationship between WFH and job satisfaction in their meta-analysis, a more recent one by *Gajendran and Harrison* (2007) finds a slightly positive correlation. In a randomized controlled trial conducted in the call center of a Chinese travel agency, *Bloom *et al.** (2015) find substantially higher job satisfaction among home workers. In this case, agents were working from home for four days a week, returning to the office only once, which is essential to note, as *Virick *et al.** (2010) indicate that the relationship between home office frequency and job satisfaction may be curvilinear (inverted U).

2.1.1. Compensation

Important to consider when analyzing the relationship between work amenities and job satisfaction is whether and how employees are compensated for it: According to Rosen's hedonic pricing model, employees and firms agree on a wage for a multitude of positive and negative job characteristics (Rosen, 1974). These job characteristics are elements of both the demand and the supply function of a job, which result in market prices for these job characteristics. Hence, the wage that is agreed upon between an employee and an employer for a given job can be regarded as a vector of implicit prices at which each of these characteristics is bought and sold (Smith, 1979). In a perfectly competitive labor market, workers, who value flexibility the most, tend to accept jobs which offer most flexibility at lower level of wages, which is why the "equilibrium achieves a matching and sorting function of allocating and assigning specific workers to specific firms" (Rosen, 1986, p.642).

Consistent with the theoretical assumption, *Mas and Pallais* (forthcoming) find in an experiment that job applicants are willing to accept on average eight percent lower wages for the option to work from home. Moreover, they find large heterogeneity in the willingness to pay for the option; i.e., 25 % of the applicants are willing to give up 14 % of their wages for the ability to work from home, whereas approximately 20 % chose to work exclusively on site; which implies differential marginal valuation of the practice. Field data collected, however, suggests a different picture: Reviewing US data, *Oettinger* (2011) finds that wage penalties associated with WFH have declined from about 30 log points in 1980 to fundamentally zero in the year 2000. Going further, *Heywood et al.* (2007) observe that WFH is; in contrast to other family friendly benefits such as job sharing, parental leave and flexible hours; associated with significantly higher wages in the 1998 *Workplace Employment Relations Study*. Using the 2004 wave of the same data, *Winder* (2009) finds a positive correlation between WFH and wages too, but analyzes that this is largely explained by worker skills and firm characteristics. Similarly, *Glass and Noonan* (2016) find that those working from home earn more on a weekly basis, which is again largely explained by differential educational attainment and higher positions. Hence, empirical data from the Anglo-Saxon countries suggests that the selection into jobs with WFH-access is one that is based on high skills and thus associated with higher wages, rather than one based on compensating wage differentials.

2.1.2. Productivity

Instead of a cost-reducing strategy, firms may also regard WFH as a productivity-enhancing approach: First, although the danger of shirking exists, WFH may increase productivity through fewer disturbances from co-workers and a quieter surrounding. Second, with the implication that people who are allowed to work from home are more satisfied with their jobs, they have higher intrinsic motivation and thus are more productive (e.g., *Oswald et al.*, 2015, *Frey*, this issue). Third, related to social exchange theory, increased effort could stem from a sense of obligation, where employees exchange greater effort reciprocating the employer's 'gift' of providing them with increased flexibility (e.g., *Kelliher & Anderson*, 2010).

Increases in productivity could indeed empirically be confirmed: *Rupietta and Beckmann* (2016), for example, find, using self-reported overtime as a measure of work effort, that WFH has a positive impact on unpaid overtime and a negative association with paid overtime. Similarly, *Bloom et al.* (2015) find a 13 % increase in performance, which was largely explained by a 9 % increase in minutes worked per shift (attributable to a reduction in breaks and sick-days).

These results thus raise the question about an alternative hypothesis concerning the compensating channel for the amenity to work from home, where people are not compensated through lower wages *ex-ante*, but through working (unpaid) overtime, which in turn leads to higher output levels. According to neoclassical theory, work hours enter negatively whereas leisure hours enter positively into a worker's utility function (for a review on the relationship between working time and wellbeing see for example *Hetschko & Schöb*, this issue). Hence, this potential productivity-enhancing compensation channel; which, according to *Glass and Noonan* (2016), produces "new managerial pressure to extract additional productivity from workers without raising the wage bill" (p.239); is likely to lower worker utility levels to a similar extent as a reduction in wages. Reviewing the literature

on work-related outcomes hence leaves the question of potential net welfare implications of WFH unanswered.

2.2. Working from Home and Private Outcomes

Particularly driven by the increasing number of women in the workforce and the intention to further raise female participation in the labor market, policy agendas increasingly include better compatibility of work and private life as a goal. The European Commission, for example, introduced “Work Life Balance” as a main project to their European Pillar for Social Rights. Under this initiative, flexible work arrangements, such as WFH, are proposed as legislative measures that “facilitate more equal sharing of care responsibilities within couples and remove barriers to women's labour market participation and career advancement” (*European Commission, 2017*, p.5).

In general, results of empirical studies investigating WFH and work-life balance are, however, not as conclusive regarding their benefits, as the policy agendas that promote the strategy would suggest. *Schieman and Young (2010)* find that WFH is not only related to higher flexibility, but also associated with blurring boundaries between work and private life. Due to the lack of clear boundaries between private and professional life, detaching from work-related issues during non-work hours becomes more difficult, which is related to higher strain levels and lower individual well-being (*Sonnentag & Fritz, 2015*). *Peters et al. (2009)*, for example, find that WFH incorporates both conflict-reducing and conflict-enhancing mechanisms between work and home and thus concluded it to be a ‘double edged sword’ as it, on the one hand, provides the opportunity to synthesize work and private life, whereas it may generate overtime and a disordered work-life balance on the other. Similarly, *Allen et al. (2013)* summarized results of 25 studies on flexible workplaces in a meta-analysis and found no or even negative effects of WFH on work-family relationships arguing that “flexibility may not have the intended effect of reducing work-family conflict due to increased exposure to work-family blurring” (p.362). Hence, potential outcomes of WFH in the private domain remain inconclusive as well.

2.3. Working from Home and Life Satisfaction

Benz & Frey (2008) summarize advantages of using job satisfaction as a direct measure of utility over wage differentials when attempting to measure benefits or disutilities from work characteristics: First, non-monetary benefits are reflected in satisfaction scores even when labor markets are not perfectly competitive, as the review of the literature in *section 2.1.1* suggests. Second, with the post-trial results of *Bloom et al. (2015)* in mind, no strong assumptions with respect to the rationality of agents have to be made, which is particularly important due to findings on the deviations between ex-ante ‘decision utility’ and ‘experience utility’ (e.g., *Kahneman et al., 1997*). As the intention of WFH – at least from a policy perspective – is not only to improve work life but also to enhance its compatibility with private life; a broader measure, encompassing both domains, is needed for the evaluation of welfare effects of the strategy. To approximate welfare effects of policy measures, economic research has increasingly applied life satisfaction scores (for a review, see, for example, *Odermatt & Stutzer, forthcoming*). These life satisfaction evaluations normally encompass – next to an affective perspective – a cognitive component in which people comprise judgments of different life domains. Hence, work features *and* private life

conditions are taken into account (e.g., *Diener & Ryan*, 2009), which is why life satisfaction is a well-fitting instrument to measure the utility derived from a work characteristic that is also intended to make people better off in their private lives. Yet, little empirical evidence exists on the relationship between WFH and satisfaction with life.

Using an experience sampling method, *Bryson and MacKerron* (2017) find that the negative association between paid work and affective (momentary) happiness is reduced by 50 % when working from home. Looking at the cognitive component, *Blanchflower and Oswald* (2011) find the reverse: Using data from the American *General Social Survey*, they find a negative correlation between WFH and satisfaction with life, controlling for socio-demographic characteristics and income. In a small cross-country non-probability convenience sample, *Vittersø et al.* (2003) investigate the relationship between WFH and quality of life by the means of structural equation modeling and find no correlation with the workers' own life satisfaction but a slightly negative relationship for the workers' partners. *Brenke* (2016) published a report on the (low) use of home office in Germany, which shows that people working from home tend to have higher job, income and life satisfaction than people who are not allowed to work from home. The report, however, only compares mean satisfaction levels between individuals without controlling for any socio-demographic, work-related or personal characteristics. The present paper will therefore examine the relationship in greater depth empirically using this large scale panel data from Germany.

2.4. Expected Relationship between Working from Home and Subjective Well-Being

Overall, if WFH is a new policy option that allows a more efficient allocation of time and effort, life satisfaction is predicted to increase overall. Yet, according to standard economic theory, on a perfectly competitive labor market, positive job characteristics are normally compensated for. Thus, rational agents will choose the combination of positive amenities (here: the opportunity to WFH) and negative aspects that maximize their utility. From this perspective, positive net effects of WFH on an individual's life satisfaction are not expected to be found.

As increased flexibility and autonomy are, however, regarded to be positive characteristics of the job which are beneficial to the employee, a positive effect should be observable when potential compensating channels are held constant. As the literature review suggests that workers with the opportunity to work from home may not necessarily be punished through lower wages but through longer hours, I test the hypothesis that WFH is a job amenity that, conditional on wages and working hours, contributes to individual well-being positively.

Furthermore, the debate about WFH was mainly initiated through the increasing number of women in the workplace and their need for arrangements that enable a dual coordination of household responsibilities and market work. In line with that, prior research has shown strong gender heterogeneity in the monetary valuation of flexible work arrangements, in so far that women are willing to give up substantially more income for the flexibility to work from home than men (e.g., *Mas & Pallais*, forthcoming; *Winder*, 2009). I therefore hypothesize that women benefit more from WFH compared to men.

Relatedly, I furthermore test whether, compared to the general population, the benefits of WFH are greater for members of young families with care obligations, as these constitute the major target group of the practice from a policy perspective.

3. Data & Empirical Strategy

The empirical analysis is based on the *German Socio-Economic Panel Study* (GSOEP), a longitudinal survey of private households in the Federal Republic of Germany. The survey was started in 1984 and was extended to include residents of the German Democratic Republic from 1990 onwards (Wagner *et al.*, 2007). To study individual well-being, the GSOEP is a valuable data set due to the fact that, every year, respondents are asked to answer “*How satisfied are you with your life, all things considered?*” on an 11-point scale.

For this study an unbalanced panel; utilizing the waves 2009 and 2014; is used, as in these years, the questionnaires contained the question “*Do you ever carry out your work activity at home?*”.² From this, a binary variable, coded 0 if respondents answer *no* and 1 if their answer is *yes*, is constructed as the main independent variable for the analyses. Next to the life satisfaction and home office questions, GSOEP participants are asked a wide range of questions with regard to their demographic characteristics, economic situations and jobs.

To study the relationship between WFH and life satisfaction, the sample is restricted to employees that work either full- or part-time. Apprentices and self-employed are excluded from the sample. The earlier due to the fact that the opportunity to work from home is normally not given to trainees and the latter because self-employed seemingly control their work hours and location themselves. As the interest is in measuring the relationship between the work practice and life satisfaction, I exclude observations where respondents indicate that working from home is not possible in their job (e.g., construction workers) to make the groups as comparable as possible. This leaves a total of 5,970 observations from 4,908 individuals.

Table 1 displays the characteristics of respondents included in the study. Congruent with the result by Brenke (2016), people that use home office are considerably happier with their lives than people who do not do so. On a scale ranging from 0 to 10, respondents that use home office report an average life satisfaction score of 7.5, which is significantly higher than the 7.14 of non-users. Whether this difference in the mean life satisfaction scores is attributable to home office use or whether the values simply reflect characteristics that distinguish people who work from home and people who do not do so, is not revealed in this descriptive comparison. To test whether it is WFH that impacts satisfaction with life, I estimate pooled ordinary least-square regressions, using the following econometric specification:

$$LS_{it} = \alpha + \beta WFH_{it} + \gamma X_{it} + \omega_t + \psi_{it} + \varepsilon_{it}$$

where LS stands for satisfaction with life, measured by the aforementioned 11-point scale question. For this analysis, life satisfaction is treated as a cardinal measure (Ferrer-i-Carbonell & Frijters, 2004). WFH denotes the binary variable indicating use or no use of home office. X represents a vector of socio-demographic and job related control variables. As many of these variables were shown to be an important source of variation in life satisfaction scores (for a review see, for example, Frey & Stutzer, 2002), I control for age (and

2 The question was raised in the years 1997, 1999 and 2002 as well. As the institutional setting around WFH has changed substantially in the past years due to technological progress only the waves 2009 and 2014 are used in this study.

age squared), gender, education, migration background, family status and number of children. Furthermore, as people with and without care obligation are likely to differ in their preference to work from home, I include a control variable care obligation which codes 1 if respondents indicate that they have children or another person to care for living in the same household and 0 otherwise. Job characteristics that potentially confound the relationship between WFH and life satisfaction such as occupational position, contractual working time, a dummy variable for industry, employment status, company size and tenure are also included. Last, the change in the use of home office may covary with a job change overall. As job changes do not only influence job satisfaction but also directly influence satisfaction with life (Chadi & Hetschko, 2016, forthcoming), I also control for job changes since the last survey. Furthermore, time-fixed effects ω_t to adjust for potential time-varying factors affecting the relationship under investigation, and state-fixed effects ψ_{it} , to control for regional (labor market) characteristics that may be related to the outcome variable, are included. The error term ε_{it} is clustered on the individual level to avoid a potential understatement of errors through serial correlations (Bertrand *et al.*, 2004).

This analysis hence enables not only the quantification of the observed difference, but also the control for the possibility that it is the distinct socio-demographic circumstances or the work in systematically different jobs that make people working from home more satisfied with their lives. In the first specifications, the vector X does not include income or overtime, but only socio-demographic and job-related characteristics in order to study the net effects of WFH on life satisfaction without holding potential compensating channels constant. Income and overtime are included in a subsequent step. Income is logarithmically transformed to adjust for the high skew of the measure. Overtime is categorized according to the classification used in the *Arbeitszeitreport Deutschland 2016* by the German Federal Institute for Occupational Safety and Health: less than two hours per week, two to five hours per week, five to ten hours per week, and more than ten hours per week (Wöhrmann *et al.*, 2016).

Still, a concern about the estimates of these analyses is that people choose jobs which best meet their preferences. Therefore, heterogeneous tastes for WFH and sorting are likely to affect any observed partial correlation between WFH and life satisfaction. Furthermore, the theoretical possibility exists that employees, who chose to work from home, constitute a group of people that are naturally happier with their lives. Therefore, the first equation is extended to include individual fixed effects α_i to estimate a model controlling for idiosyncratic effects which are time-invariant:

$$LS_{it} = \alpha_i + \beta WFH_{it} + \gamma X_{it} + \omega_t + \psi_{it} + \varepsilon_{it}$$

The statistical relationship between WFH and life satisfaction is then identified by the variation in WFH within observations for the same person. However, this intra-individual variation is identified for only 134 individuals. Moreover, as the time span between the measurements of WFH is five years, this 'switch' has to be interpreted with caution.

Table 1: Sample Characteristics

n	No Home Office Use	Home Office Use¹	t-Statistics (p-values)
Life Satisfaction	4,042	1,928	-8.360 (0.000)
<i>Socio-Demographic Characteristics</i>			
Age	43.58 (10.67)	44.72 (10.32)	-3.894 (0.000)
Female	53.3%	41.9%	8.288 (0.000)
Education ²	4.11 (1.41)	5.06 (1.29)	-25.076 (0.000)
Migration Background	15.2 %	13.0%	2.284 (0.02)
Married	60.8%	67.0%	-4.604 (0.000)
Care Obligation ³	33.8%	38.3%	-3.451 (0.001)
<i>Work-Related Characteristics</i>			
Position ⁴	2.45 (1.12)	3.42 (1.14)	-31.011 (0.000)
Regular Part-Time Employment	24.1%	19.8%	3.652 (0.000)
Private Sector	67.8%	67.8%	-0.042 (0.967)
Company Size ⁵	3.65 (1.13)	3.75 (1.20)	-3.127 (0.002)
Tenure	12.88 (10.78)	12.88 (10.55)	-0.005 (0.996)
Weekly Overtime	2.02 (2.98)	3.69 (4.53)	-16.990 (0.000)
Overtime Not Compensated	13.8%	37.4%	-19.64 (0.000)
Income ⁶	2885.65 (1506.05)	4020.36 (2208.05)	-23.862 (0.000)

Notes:

Standard deviation in parentheses

1: Home-Office Use: binary variable that codes "1" if respondents indicate "yes" to the question "Do you ever carry out your work activity at home?" and "0" otherwise

2: Highest levels of education (ranging from 0=no school to 6=higher education)

3: Care Obligation: binary variable that codes "1" if respondents indicate that they have children or another person to care for living in the same household and "0" otherwise

4: Occupational Position (1=Worker, 2=Mid-Level Professional, 3=Foremen, 4=High-Level Professional, 5=Manager)

5: Size of the Company (ranging from 1=less than five employees to 5=over 2000 employees)

6: Monthly Income before Taxes in Euro

Data Source: SOEP

As the comparison of the two groups in *Table 1* shows, people who work from home do not only have higher satisfaction with life, but differ in almost every aspect from those whose occupation would allow for it, but who do not use home office: On average, they are older, better educated, less likely to have migration background, more likely to be married and more likely to have care obligations. Furthermore, significantly more men than women use home office. In terms of work-related characteristics, people who work from home occupy higher positions, work less often part-time, and work for larger companies. They do more overtime and are less likely to be paid for it, although they generally earn significantly more. Only tenure and the share of employees working in the private versus the public sector do not differ between people that use home office and those who do not. Results of the econometric analyses are provided and discussed in *Section 4*.

4. Results

4.1. Main Effects of Home Office Use on Life Satisfaction

Table 2 shows the results of the econometric analyses testing the net effects of WFH on satisfaction with life. *Specifications (I) – (III)* show the results of the pooled OLS models including different control variables. *Specification (IV)* estimates the relationship with individual fixed effects.

The raw correlation in *specification (I)* is significantly positive as indicated in the difference between satisfaction with life of people that work from home and those who do not

do so. The stark differences in circumstances evident from the descriptive statistics in *Table 1* point towards the importance of controlling for these factors when estimating the relationship between home office use and life satisfaction. *Specification (II)* therefore includes controls for socio-demographic and job characteristics. The reduction of the initial correlation by approximately 44%, from 0.356 to 0.201, indicates that the strong positive correlation is almost by half driven by selection effects, respectively the fact that people who use home office have different personal circumstances and work in distinct different jobs compared to those who do not do so. Yet, a significant positive relationship between WFH and life satisfaction remains: for those working from home average reported life satisfaction is about 0.2 points higher than for employees who do not work from home; an observation that is not in line with the standard economic hypothesis where – in a perfectly competitive labor market – people are compensated for the ability to work from home.

To test the notion that employees are “penalized” through lower wages ex-ante, or longer working times ex-post, in exchange for the benefit to WFH, I introduce income and overtime to the model in a subsequent step, where people that are working from home should be better off, *ceteris paribus*. Results of this test are provided in *column 3*. According to the reasoning in *section 2*, the coefficient is expected to be positive and larger than the coefficient in the baseline model (*Column 2*). Against this hypothesis, the coefficient of WFH is reduced to 0.180, rather than strengthened, when controlling for income and overtime in the model. Introducing the variables separately reveals that this reduction is purely driven by income. Including overtime into the model does not change the coefficient in a quantitatively meaningful way. Hence, income rather constitutes an explanatory channel in the positive relationship between WFH and life satisfaction than a compensating one. This is congruent with the results by *Winder (2009)* and *Heywood et al. (2007)*, who conclude that family friendly measures are endogenous in so far that “workers with higher earnings potential are indeed more likely to purchase family friendly practices” (p.16).

Table 2: Home Office Use and Life Satisfaction

	Life Satisfaction			
	(I)	(II)	(III)	(IV)
Home-Office Use¹	0.356*** (0.043)	0.201*** (0.047)	0.180*** (0.048)	-0.073 (0.105)
Socio-Demographic Controls ²	No	Yes	Yes	Yes
Job-Related Controls ³	No	Yes	Yes	Yes
Log Income ⁴	No	No	Yes	Yes
Overtime ⁵	No	No	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes
State Fixed Effects	No	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes
Observations	5,970	5,970	5,970	5,970
R-Squared	0.012	0.056	0.058	0.073

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1: Home-Office Use: binary variable that codes "1" if respondents indicate "yes" to the question "Do you ever carry out your work activity at home?" and "0" otherwise

2: Socio-Demographic Controls: Sex, Age, Age², Family Status, Education, Number of Children in Household, Migration Background, Care Obligation

3: Job-Related Controls: Occupational Position (Worker, Mid-Level Professional, Foremen, High-Level Professional, Manager), Industry (Agriculture, Mining, Manufacturing, Sanitary Services, Real Estate, Wholesale & Retail Trade, Services, ICT, Financial Services, Research & Development, Administration, Education, Health and Social Work, Non-Classifiable), Employment Status (Full-Time, Regular Part-Time) Company Size (<5; 5-20; 20-200; 200-2000; >2000 Employees), Tenure, Contractual Working Time, New Job since last survey

4: Natural Logarithm of Income before Taxes

5: Overtime per Week (according to categories in the *Arbeitszeitreport 2016*: 1= less than 2hrs/wk; 2= 2-5hrs/wk, 3= 5-10hrs/wk; 4= more than 10hrs/wk)

Data Source: SOEP

The estimates in *specifications (I)-(III)* do however not account for stable unobserved personal characteristics that may determine whether people use home office or not and how satisfied they are with it. *Column 4* thus displays the result of the individual fixed effects model, including all aforementioned control variables and holding both income and overtime constant. Whereas the results of the pooled OLS model show a positive correlation between WFH and life satisfaction, the coefficient in the individual fixed effects model is slightly – but not significant at conventional levels – negative, thus implying that the positive relationship between WFH and life satisfaction is explained by unobserved personal factors.

Taken together, the results of *Table 2* indicate that the positive correlation, originally shown by *Brenke (2016)*, is mainly explained by differences in characteristics of respondents who work from home compared to those who do not do so. Furthermore, the decrease instead of the expected increase in the coefficient when controlling for income suggests that WFH is strongly correlated with higher earnings, potentially revealing WFH to be an additional fringe benefit rather than a work-life balance feature in German offices. Subsequent analyses try to shed more light on differential effects of WFH.

Gender Heterogeneity

Prior research found large differences between men and women's valuation of WFH as a job amenity (e.g., *Mas & Pallais*, forthcoming). Given that women are often still responsible for the majority of family obligations (*Olivetti & Petrongolo*, 2017), it seems reasonable that the flexibility provided through such practice gives them higher utility than men.

Hence, the empirical analysis is repeated separately for men and women in order to test the hypothesis that women benefit from WFH more than men do. Accordingly, I expect that $\beta_{\text{women}} > \beta_{\text{men}}$.

Table 3: Home Office Use and Life Satisfaction by Gender

Life Satisfaction						
	Female			Male		
	(I)	(II)	(III)	(I)	(II)	(III)
Home-Office Use¹	0.227*** (0.076)	0.222*** (0.079)	-0.163 (0.183)	0.209*** (0.061)	0.172** (0.062)	-0.099 (0.121)
Socio-Demographic Controls ²	Yes	Yes	Yes	Yes	Yes	Yes
Job-Related Controls ³	Yes	Yes	Yes	Yes	Yes	Yes
Log Income ⁴	No	Yes	Yes	No	Yes	Yes
Overtime ⁵	No	Yes	Yes	No	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	No	No	Yes
Observations	2,963	2,963	2,963	3,007	3,007	3,007
R-Squared	0.057	0.059	0.102	0.088	0.088	0.193

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

a: The same control variables as in Table 2 are included

Data Source: SOEP

The results in Table 3 show that the positive correlation remains statistically significant for both men and women in the OLS *specifications (I)* and *(II)*. *Specification (I)* includes socio-demographic and job related controls, as discussed in Section 3 and applied in Column 2 of Table 2. The split reveals that the coefficient of home office use is indeed larger for women than for men. This discrepancy grows larger when controlling for potential compensating channels. To test the significance of the differential effects, I use interaction effects which shows that the differences between men and women are, however, not statistically significant (Table A1, Appendix).

What is interesting, though, are the differential reductions in the WFH-coefficients when controlling for income and overtime: Whereas the coefficient in the female subsample does not change substantially when holding income and overtime constant, the gender split analysis reveals that the reduction observed in Table 2 is mainly driven by the male respondents in the sample. Introducing the two variables separately reveals interesting gender differences regarding potential compensation mechanisms (Table A2, Appendix): Introducing overtime into the model drives up the coefficient for women but not for men, indicating that women are “paying” a compensation through longer hours for the ability to work from home, while the coefficient in the male subsample is slightly reduced. However, introducing income to the model reduces the coefficient in the male subsample twice as much as in the female subsample: For men it reduces the size of the coefficient by around 14 %, for women only by 8 %, hinting at a potential explanation that, for men, WFH states more of a fringe benefit or prestige symbol at work, which is expressed through higher income as well.

Frequency Heterogeneity

As prior research showed significant differences with regard to the intensity with which people work from home for various outcomes, I repeat the analyses with WFH-frequency as the explanatory variable instead of the binary variable used in the specifications before. Respondents of the GSOEP that indicate home office use are further asked to specify whether they work from home *daily*, *several times a week*, *once every 2 to 4 weeks* or *rarely, only when needed*. To identify potential heterogeneity in the relationship stemming from differential frequencies, a second independent variable is thus constructed, coding *no* as 0, whereas the *yes* answers are subdivided into the categories of frequency from 1 for *rarely, only if required* to 4 for *daily*. Existing evidence on the impact of differential frequencies is mixed: *Gajendran and Harrison* (2007) summarized results of 46 studies concluding that “(...) high-intensity telecommuters are likely to receive and perceive a greater sense of autonomy relative to those who telecommute less frequently.” (p.1529). *Virick et al.* (2010) find an inverted U-shaped relationship between the frequency of home office use and life satisfaction in a small sample.

Generally, a similar pattern as found by *Virick et al.* (2010) is observed in the GSOEP data (*Table 4*): The coefficients of both *seldom* and *daily* home office use are of smaller magnitude than the ones of WFH *every two to four weeks* up to *several times per week*. The *daily* coefficient loses its significance as soon as socio-demographic and job related controls are inserted into the model. Controlling for income and overtime reduces all coefficients slightly, which is – as with the binary variable – purely driven by income, not by overtime, as additional analyses (not shown) reveal. Consistent with the results in *Table 2*, none of the relations remain statistically significant once individual fixed effects are intro-

Table 4: Home Office Frequency and Life Satisfaction

	Life Satisfaction			
	(I)	(II)	(III)	(IV)
Seldom, only if required	0.254*** (0.055)	0.145** (0.059)	0.123** (0.059)	-0.080 (0.121)
Every 2-4 Weeks	0.452*** (0.079)	0.275*** (0.083)	0.256*** (0.084)	0.007 (0.137)
Several Times per Week	0.460*** (0.074)	0.282*** (0.077)	0.262*** (0.078)	-0.174 (0.155)
Daily	0.341*** (0.098)	0.139 (0.107)	0.117 (0.107)	0.036 (0.264)
Socio-Demographic Controls ^a	No	Yes	Yes	Yes
Job-Related Controls ^a	No	Yes	Yes	Yes
Log Income	No	No	Yes	Yes
Overtime	No	No	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes
State Fixed Effects	No	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes
Observations ¹	5,968	5,968	5,968	5,968
R-Squared	0.013	0.059	0.058	0.074

Notes:

Standard errors (clustered on individual level) in parentheses *** p<0.01, ** p<0.05, * p<0.1

a: The same control variables as in *Table 2* are included

Data Source: SOEP

duced in the analysis and changes the direction of the relation between working from home *seldomly* and *several times per week* and life satisfaction.

4.2. Effects of Home Office Use for Families in Germany

As spatial flexibility is, from a policy perspective, particularly aimed at improving the compatibility of private and labor market demands (e.g., *Bohsem*, 2015), we would expect the feature to greater benefit employees with private responsibilities such as children or elderly care. In 2010, the GSOEP was extended by a special sample of *Familien in Deutschland* (FiD, families in Germany) on behalf of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth and the Federal Ministry of Finance to enhance the evaluation of family policy measures in Germany. The FiD sample consists of four additional samples of families in critical income regions, with three or more children, with children born between 2007 and 2010, and single parents (*Schröder et al.*, 2013). Thus, the sample constitutes a major target group of work-life balance measures such as home office use. To test whether this target group benefits from working from home to a special degree, I repeat the aforementioned analysis with the FiD sample using the same specifications as in *Section 4.1*. Characteristics of this special sample are provided in *Table A3* in the *Appendix*. Compared to the general population sample, respondents are younger, more likely to be married and, compared to the general population sample in which 35 % of the respondents indicate a care obligation, in the FiD sample 96 % do so. Within the FiD sample, differences in personal and job related characteristics between people that work from home and those who do not do so, are comparable to the general population survey, apart from the fact that tenure is significantly shorter for those working from home and that they are less likely to work in the private sector, where no differences were detected in the general population sample. Furthermore, whereas the proportion of employees allowed to work from home in the general population sample is about 32 %, 46% of the FiD sample use home office. *Table 5* provides the results of the econometric analyses.

Compared to the general population sample (*Table 2*), the coefficients in *Table 5* are significantly smaller. The raw correlation is about three quarter of the one in the main sample. Given that the family sample is more homogeneous than the general population sample, this seems empirically reasonable as the homogeneity reduces selection effects and hence positive spurious correlations. Nevertheless, controlling for personal and job related characteristics (*column 2*) still reduces the coefficient in the FiD sample and therewith increases the difference between the samples. Whereas the correlation is still significantly positive in the main sample, the coefficient of the FiD sample reduces to about 0.06 and loses its statistical significance once those characteristics are held constant. Controlling for income and overtime (*specification (III)*) does not change the relationship between WFH and life satisfaction substantially.

Table 5: Home Office Use and Life Satisfaction – FiD Sample

	Life Satisfaction			
	(I)	(II)	(III)	(IV)
Home-Office Use	0.261*** (0.045)	0.060 (0.051)	0.053 (0.051)	0.010 (0.065)
Socio-Demographic Controls ^a	No	Yes	Yes	Yes
Job-Related Controls ^a	No	Yes	Yes	Yes
Log Income	No	No	Yes	Yes
Overtime	No	No	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes
State Fixed Effects	No	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes
Observations	6,841	6,841	6,841	6,841
R-Squared	0.008	0.070	0.088	0.061

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

a: The same control variables as in *Table 2* are included

Data Source: SOEP

Next to the opportunity of testing the relationship in a target group specific sample, the FiD sample presents a statistical advantage over the general population sample: whereas the latter is strongly unbalanced, the home office question is asked every year in the FiD sample, such that changes are identified more instantly.³ Hence, the coefficient in the individual fixed effects model represents the impact of a change into home office. However, as the results in *column 4* show, the effect is negligible, indicating that a switch to WFH has, on average, no economically sizeable effect on satisfaction with life within the FiD sample. With the same argumentation as brought up before, I again tested gender interaction effects for this sample. The results of the individual fixed effects model indicate that the impact of WFH on life satisfaction is slightly positive for men but not for women. However, the main as well as the interaction effects are not statistically significant (*Table A4, Appendix*).

Domain Satisfaction

The theoretical considerations and previous findings discussed in *section 2* suggest that WFH raises satisfaction with the job, whereas outcomes in the private domain are unclear, mainly due to a potential negatively affected blurring of boundaries (e.g., Peters *et al.*, 2009). Subjective evaluations of satisfaction with life comprise these domain specific feelings and are therefore a comprehensive measure. To investigate the outcomes of the work feature in greater detail, I use the same methodology as before to apply satisfaction with

3 The FiD sample was established in 2010. Data used in this analysis reaches until 2014. Hence, 6,841 observations from 3,198 respondents over the years 2010, 2011, 2012, 2013 and 2014 are included. A switch *into* home office can be observed for 252 individuals.

family life and satisfaction with work as dependent variables in the FiD sample⁴. The results are provided in *Table 6*.

The first and third columns show results of the pooled OLS models for satisfaction with family life respectively satisfaction with work as dependent variables; the second and fourth column show the equivalent individual fixed effects results. In line with the theoretical discussion in *section 2*, the home office coefficient is significantly positive for satisfaction with work (0.188), conditional on both income and overtime, and hence considerably stronger than the coefficient in the life satisfaction model (0.037 n.s. [*Table 5, Column 3*]). However, introducing individual fixed effects shows that, controlling for time-invariant personal characteristics, the effect is drastically reduced and the association is no longer statistically significant. It could be expected that, due to the composition of the sample, the influence on satisfaction with family life is of substantial magnitude in the FiD sample. However, no significant relationship between home office use and the private domain variable satisfaction with family life can be detected, neither in the pooled OLS nor in the individual fixed effects model.

Table 6: Home Office Use and Satisfaction with Job / Family Life – FiD Sample

	Satisfaction with Work		Satisfaction with Family Life	
	(I)	(II)	(III)	(IV)
Home-Office Use	0.188*** (0.065)	0.061 (0.095)	0.040 (0.057)	0.062 (0.072)
Socio-Demographic Controls ^a	Yes	Yes	Yes	Yes
Job-Related Controls ^a	Yes	Yes	Yes	Yes
Log Income	Yes	Yes	Yes	Yes
Overtime	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Federal State Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	Yes	No	Yes
Observations ¹	6,815	6,815	6,836	6,836
R-Squared	0.052	0.055	0.078	0.065

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1: Observations in the FiD Sample

a: The same control variables as in *Table 2* are included

Data Source: SOEP

5. Conclusion

In this paper, I used life satisfaction as a global measure of individual welfare to evaluate the consequences of WFH in Germany. Using large scale panel data, this paper provides an alternative and broad perspective on this work practice, going beyond existing studies relating WFH to job satisfaction or precise spillover measures such as work-home interference.

⁴ The outcomes of working from home for domain satisfactions were tested with the general population sample as well; qualitatively, results however did not differ from the FiD sample (available upon request).

Even though the raw correlation between WFH and life satisfaction is positive and strong; controlling for individual and job related characteristics in a pooled OLS model shows that, in the general population sample, more than 40 % of this positive correlation is explained by differing socio-demographic and job characteristics. Analyzing US data, *Noonan and Glass* (2012) found that the ability to WFH is not related to any scenarios such as having dependent children or other care obligations; but rather driven by supply side factors as the “ability to WFH appears to be systematically related to authority and status in the workplace” (p.44). A similar pattern is found in the data used here, providing an indication that, also in Germany, it is a job amenity mainly made use of by highly educated, well-paid individuals in high positions of large companies. The results thus suggest that it is not home office use *per se* but rather the occupational circumstances, which lead to home office use in the first place, that are responsible for higher satisfaction with life. This explanation is supported by the fact that, against the economic theory based hypotheses, a compensating effect of income cannot be found. Reversely, income mediates the positive association between WFH and life satisfaction, indicating that WFH potentially reflects a symbol of power and prestige in a company, where the higher satisfaction with life is at least partly explained by the associated higher wage. Surprisingly, even though people who use home office work significantly more overtime, for which they are less likely to be paid, the positive relationship does not become substantially stronger when holding overtime constant either. *Glass and Noonan* (2016) find that home office hours are rather substitutes than complements for office hours. Hence, a possible explanation for the missing statistical relationship is that employees who are allowed to work from home use it in order to keep up with a workload that is too high, where working this up from home is preferred to doing these additional hours in the office. Lastly, controlling for idiosyncratic effects, a positive relationship between WFH and life satisfaction is no longer observed. Rather, the model coefficients are slightly negative, even though not statistically significant.

Investigating the effects for potential beneficiaries of such policies, i.e., employees with family care obligations, by means of the special GSOEP sample *Families in Germany*, any promise of large welfare effects of WFH are further questioned: In this sample, the positive relationship between WFH and life satisfaction disappears as soon as socio-demographic and work-related factors are controlled for. As in the general population sample, non-significant coefficients in the individual fixed effects models indicate that the relationship between home office use and life satisfaction is largely determined by unobserved individual-specific effects. As the sample represents a major target group of work-life balance, I furthermore tested whether different domains are affected differently, hidden in the life satisfaction model. As expected, a positive statistical association is observed between WFH and job satisfaction, which is, however, not robust to including individual fixed effects. Against the assumption, a statistically significant positive relationship for satisfaction with family life cannot be detected in either specification.

Despite providing the advantage of studying the welfare consequences of WFH in a large representative sample and in a sample with emphasis on the – from a policy perspective – intended target group of such work practices, the data used has some shortcomings: First, it does not allow to distinguish between availability, i.e., the employer’s permission, and actual use of the feature. Both the signaling effect as well as the argumentation towards increased autonomy discussed in *section 2* may already be provided through the

mere availability of the feature and not necessarily through its usage (Allen *et al.*, 2013). Similarly, a distinction between mandatory and optional use cannot be made either.

As this paper investigates *average* effects, an investigation of how personality factors may alter the relationship should be subject to further research. Particularly the level of self-control that people possess may provide a perspective to study individual differences and the relationship between WFH and well-being in greater detail. Studies in the field of behavioral economics indicate that people often put more emphasis on the gratification of, potentially unfavorable, short-term desires rather than on long-term goals, i.e., due to self-control problems (Rabin, 2002). Though little empirical work exists on the relationship between self-control and work; Kaur *et al.* (2010) suggest that “by helping to mitigate self-control problems, firms can increase labor productivity and the welfare of their workers” (p.624) and find evidence for this in a field experiment in an Indian data entry firm (Kaur *et al.*, 2015). Flexibility provided by WFH might, however, rather increase self-control problems than mitigate them: First, external control is missing when working from home, requiring self-control in order to avoid shirking which would impede long-term career success. Second, the lack of clear boundaries between work and private life requires regulatory ability in order to allocate resources between both domains. Hence, self-control may be constructive to investigate as a moderator in the relationship between WFH and satisfaction with life, particularly when investigating long-term effects of the work practice.

Taken together, the results of the empirical analysis of the German panel data do not support WFH as a panacea to combine work and family obligations. On average, WFH does neither seem to be particularly beneficial, nor does it appear particularly harmful.

References

- Allen, T. D., Johnson, R. C., Kiburz, K. M., & Shockley, K. M. (2013). Work-Family Conflict and Flexible Work Arrangements: Deconstructing Flexibility. *Personnel Psychology*, 66(2), 345–376.
- Bailey, D. E., & Kurland, N. B. (2002). A review of telework research: findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior*, 23(4), 383–400.
- Benz, M., & Frey, B. S. (2008). Being Independent is a Great Thing: Subjective Evaluations of Self-Employment and Hierarchy. *Economica*, 75(298), 362–383.
- Bertrand, M. (2013). Career, Family, and the Well-Being of College-Educated Women. *American Economic Review*, 103(3), 244–250.
- Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics*, 119(1), 249–275.
- Blanchflower, D. G., & Oswald, A. J. (2011). International happiness: A new view on the measure of performance. *Academy of Management Perspectives*, 25(1), 6–22.
- Bloom, N., Liang, J., Roberts, J., & Ying, Z. J. (2015). Does Working from Home Work? Evidence from a Chinese Experiment. *The Quarterly Journal of Economics*, 130(1), 165–218.
- Bohsem, G. (2015, November 16). Nahles fordert mehr Möglichkeiten für Heimarbeit. *sueddeutsche.de*. Retrieved from <http://www.sueddeutsche.de/wirtschaft/digitalisierung-nahles-fordert-mehr-moeglichkeiten-fuer-heimarbeit-1.2738007>
- Brenke, K. (2016). Home Office: Möglichkeiten werden bei weitem nicht ausgeschöpft. *DIW-Wochenbericht*, 83(5), 95–105.

- Bryson, A., & MacKerron, G. (2017). Are You Happy While You Work? *Economic Journal*, 127(599), 106–125.
- Chadi, A., & Hetschko, C. (2016). How Job Changes Affect People's Lives – Evidence from Subjective Well-being Data, CESifo Working Paper, No. 5929 Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2799615
- Chadi, A., & Hetschko, C. (forthcoming). The magic of the new: How job changes affect job satisfaction. *Journal of Economics & Management Strategy*.
- Collins, M. (2005). The (not so simple) case for teleworking: a study at Lloyd's of London. *New Technology, Work and Employment*, 20(2), 115–132.
- Deutscher Juristentag e.V. (2016). Beschlüsse – 71. Deutscher Juristentag Essen 2016. Retrieved from http://www.djt.de/fileadmin/downloads/71/Beschluesse_gesamt.pdf
- Diener, E., & Ryan, K. (2009). Subjective Well-Being: A General Overview. *South African Journal of Psychology*, 39(4), 391–406.
- European Commission, Directorate-General for Employment, Social Affairs and Inclusion. (2017, April 26). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – An Initiative to Support Work-Life Balance for Working Parents and Carers. Retrieved from <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2017:252:FIN>
- Ferrer-i-Carbonell, A., & Frijters, P. (2004). How Important is Methodology for the estimates of the determinants of Happiness?. *Economic Journal*, 114(497), 641–659.
- Frey, B.S. (2017). Research on Well-Being: Determinants, Effects, and its Relevance for Management. *Die Unternehmung*, 71(4), 358–366.
- Frey, B. S., & Stutzer, A. (2002). What can economists learn from happiness research? *Journal of Economic Literature*, 40(2), 402–435.
- Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology*, 92(6), 1524–1541.
- Glass, J. L., & Noonan, M. C. (2016). Telecommuting and Earnings Trajectories Among American Women and Men 1989–2008. *Social Forces*, 95(1), 217–250.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250–279.
- Heywood, J. S., Siebert, W. S., & Wei, X. (2007). The implicit wage costs of family friendly work practices. *Oxford Economic Papers*, 59(2), 275–300.
- Hetschko, C. & Schöb, R. (2017). Modes of Employment and Identity. *Die Unternehmung*, 71(4), 367–384.
- Kahneman, D., Wakker, P. P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *Quarterly Journal of Economics*, 112(2), 375–406.
- Kaur, S., Kremer, M., & Mullainathan, S. (2010). Self-control and the development of work arrangements. *American Economic Review*, 100(2), 624–628.
- Kaur, S., Kremer, M., & Mullainathan, S. (2015). Self-control at work. *Journal of Political Economy*, 123(6), 1227–1277.
- Kelliher, C., & Anderson, D. (2010). Doing more with less? Flexible working practices and the intensification of work. *Human Relations*, 63(1), 83–106.

- Kessler, S. (2017, March 21). IBM, remote-work pioneer, is calling thousands of employees back to the office. Retrieved August 4, 2017, from <https://qz.com/924167/ibm-remote-work-pioneer-is-calling-thousands-of-employees-back-to-the-office/>
- Kossek, E. E., Lautsch, B. A., & Eaton, S. C. (2006). Telecommuting, control, and boundary management: Correlates of policy use and practice, job control, and work–family effectiveness. *Journal of Vocational Behavior*, 68(2), 347–367.
- Mas, A., & Pallais, A. (forthcoming). Valuing Alternative Work Arrangements. *American Economic Review*.
- Noonan, M. C., & Glass, J. L. (2012). The hard truth about telecommuting. *Monthly Lab. Rev.*, 135, 38–45.
- Odermatt, R. & Stutzer, A. (forthcoming). Subjective Well Being and Public Policy. In E. Diener, S. Oishi & L. Tay (Eds.) *e-Handbook of Subjective Well-Being*. Hauppauge, NY: Nova Science Publishers, Inc.
- Orttinger, G. S. (2011). The incidence and wage consequences of home-based work in the United States, 1980–2000. *Journal of Human Resources*, 46(2), 237–260.
- Olivetti, C., & Petrongolo, B. (2017). The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries. *Journal of Economic Perspectives*, 31(1), 205–230.
- Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. *Journal of Labor Economics*, 33(4), 789–822.
- Peters, P., den Dulk, L., & van der Lippe, T. (2009). The effects of time-spatial flexibility and new working conditions on employees? Work-life balance: The Dutch case. *Community, Work & Family*, 12(3), 279–297.
- Possenriede, D., Hassink, W. H. J., & Plantenga, J. (2016). Does temporal and locational flexibility of work increase the supply of working hours? Evidence from the Netherlands. *IZA Journal of Labor Policy*, 5(1), 1–34.
- Rabin, M. (2002). A perspective on psychology and economics. *European Economic Review*, 46(4–5), 657–685.
- Rosen, S. (1974). Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. *Journal of Political Economy*, 82(1), 34–55.
- Rosen, S. (1986). The theory of equalizing differences. In O.C. Ashenfelter & R. Layard (Eds.), *Handbook of Labor Economics* (Vol. 1, pp. 641–692). North Holland: Elsevier.
- Rupietta, K., & Beckmann, M. (2016). *Working from home: What is the effect on employees' effort?* WWZ Working Paper No. 2016/07. Retrieved from: <https://www.econstor.eu/handle/10419/162183>
- Schieman, S., & Young, M. (2010). Is There a Downside to Schedule Control for the Work-Family Interface? *Journal of Family Issues*, 31(10), 1391–1414.
- Schröder, M., Siegers, R., & Spieß, C. K. (2013). „Familien in Deutschland“ – FiD. *Schmollers Jahrbuch*, 133(4), 595–606.
- Smith, R. S. (1979). Compensating Wage Differentials and Public Policy: A Review. *Industrial and Labor Relations Review*, 32(3), 339–352.
- Sonnentag, S., & Fritz, C. (2015). Recovery from job stress: The stressor-detachment model as an integrative framework: the stressor-detachment model. *Journal of Organizational Behavior*, 36(1), 72–103.

- Virick, M., DaSilva, N., & Arrington, K. (2010). Moderators of the curvilinear relation between extent of telecommuting and job and life satisfaction: The role of performance outcome orientation and worker type. *Human Relations*, 63(1), 137–154.
- Vittersø, J., Akselsen, S., Evjemo, B., Julsrød, T. E., Yttri, B., & Bergvik, S. (2003). Impacts of home-based telework on quality of life for employees and their partners. Quantitative and qualitative results from a European survey. *Journal of Happiness Studies*, 4(2), 201–233.
- Wagner, G. G., Frick, J. R., & Schupp, J. (2007). The German Socio-Economic Panel study (SOEP)- evolution, scope and enhancements. SOEPpaper No.1. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1028709
- Winder, K. L. (2009). Flexible scheduling and the gender wage gap. *The BE Journal of Economic Analysis & Policy*, 9(1), 1-25.
- Wöhrmann, A. M., Gerstenberg, S., Hünefeld, L., Pund, F., Reeske-Behrens, A., Brenscheidt, F., & Beermann, B. (2016). *Arbeitszeitreport Deutschland 2016*. Bönen, Germany: Verlag Kettler GmbH.

Appendix

Table A1: Home Office Use & Satisfaction with Life – Gender Interaction – General Population Sample

Life Satisfaction			
	(I)	(II)	(III)
Home-Office Use	0.213*** (0.059)	0.193*** (0.060)	-0.057 (0.122)
Female	0.003 (0.060)	0.043 (0.060)	
Home Office Use & Female	-0.027 (0.087)	0.043 (0.06)	-0.037 (0.215)
Socio-Demographic Controls ^a	Yes	Yes	Yes
Job-Related Controls ^a	Yes	Yes	Yes
Log Income	No	Yes	Yes
Overtime	No	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes
Observations ¹	5,970	5,970	5,970
R-Squared	0.055	0.058	0.073

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1: Observations in the general population sample

a: The same control variables as in *Table 2* are included

Data Source: SOEP

Table A2: Home Office Use and Satisfaction with Life by Gender – General Population Sample

Life Satisfaction				
	Female	Male		
	(IIa)	(IIb)		
Home-Office Use	0.240*** (0.079)	0.208*** (0.076)	0.197*** (0.062)	0.179*** (0.061)
Socio-Demographic Controls ^a	Yes	Yes	Yes	Yes
Job-Related Controls ^a	Yes	Yes	Yes	Yes
Log Income	No	Yes	No	Yes
Overtime	Yes	No	Yes	No
Year Fixed Effects	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	No
Observations ¹	2,963	2,963	3,007	3,007
R-Squared	0.058	0.058	0.087	0.084

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1: Observations in the general population sample

a: The same control variables as in *Table 2* are included

Data Source: SOEP

Table A3: Sample Characteristics – Families in Germany

n	No Home Office Use	Home Office Use¹	t-Statistics (p-values)
<i>Life Satisfaction</i>	3,686	3,155	-7.41 (0.000)
<i>Socio-Demographics</i>			
Age	40.75 (6.9)	41.45 (6.16)	-4.391 (0.000)
Female	53.9%	46%	6.551 (0.000)
Education ²	4.08 (1.40)	5.09 (1.29)	-30.869 (0.000)
Migration Background	19.1 %	17.0%	2.266 (0.024)
Married	71.8%	80.1%	-8.875 (0.000)
Care Obligation ³	94.5%	96.7%	-4.314 (0.000)
<i>Work-Related Characteristics</i>			
Position ⁴	2.40 (1.12)	3.43 (1.16)	-37.519 (0.000)
Regular Part-Time Employment	38.5%	32.8%	4.873 (0.000)
Private Sector	74.4%	66.1%	7.516 (0.000)
Company Size ⁵	3.56 (1.20)	3.71 (1.23)	-5.101 (0.000)
Tenure	10.1 (8.65)	9.4 (7.48)	3.598 (0.001)
Weekly Overtime	2.04 (2.94)	3.60 (4.54)	-17.093 (0.000)
Overtime Not Compensated	14.1%	38.1%	-20.978 (0.000)
Income ⁶	2674.04 (1660.46)	3810.67 (2695.17)	-21.311 (0.000)

Notes:

Standard deviation in parentheses

For description of variables, please refer to Table 1

Table A4: Home Office Use & Satisfaction with Life – Gender Interaction – FiD Sample

	Life Satisfaction		
	(I)	(II)	(III)
Home-Office Use	0.019 (0.064)	0.004 (0.064)	0.023 (0.079)
Female	-0.089 (0.081)	-0.045 (0.081)	
Home Office Use & Female	0.097 (0.088)	0.099 (0.087)	-0.027 (0.130)
Socio-Demographic Controls ^a	Yes	Yes	Yes
Job-Related Controls ^a	Yes	Yes	Yes
Log Income	No	Yes	Yes
Overtime	No	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes
Observations ¹	6,841	6,841	6,841
R-Squared	0.070	0.080	0.061

Notes:

Standard errors (clustered on individual level) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1: Observations in the FiD sample

a: The same control variables as in Table 2 are included

Data Source: SOEP

Kerstin Frederike Hansen ist Doktorandin und Assistentin am *Center for Research in Economics and Well-Being* an der wirtschaftswissenschaftlichen Fakultät der Universität Basel.

Anschrift: Universität Basel, Wirtschaftswissenschaftliche Fakultät, Peter Merian-Weg 6, CH-4002 Basel, Schweiz, Tel: +41-(0)61 207 33 63, E-Mail: kerstin.hansen@unibas.ch