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Christoph Wunder and Guido Heineck

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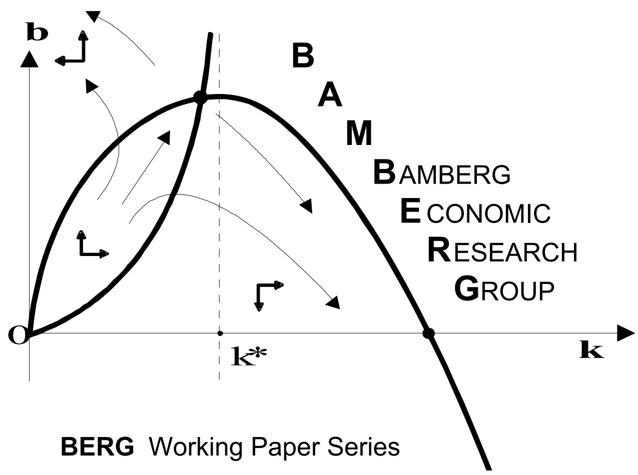

Bamberg Economic Research Group
Bamberg University
Feldkirchenstraße 21
D-96052 Bamberg
Telefax: (0951) 863 5547
Telephone: (0951) 863 2687
felix.stuebben@uni-bamberg.de
http://www.uni-bamberg.de/vwl/forschung/berg/

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Redaktion:
Dr. Felix Stübben*

* felix.stuebben@uni-bamberg.de

Working time preferences, hours mismatch and well-being of couples: Are there spillovers?

Christoph Wunder[a,*], Guido Heineck[b]

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Abstract

We analyze how well-being is related to working time preferences and hours mismatch. Self-reported measures of life satisfaction are used as an empirical approximation of true well-being. Our results indicate that well-being is generally lower among workers with working time mismatch. Particularly underemployment is detrimental for well-being. We further provide first evidence on spillovers from the partner's working time mismatch. However, the spillover becomes insignificant once we control for the partner's well-being. This suggests that well-being is contagious, and the spillover is due to interdependent utilities. Females experience the highest well-being when their partner is working full-time hours. Male well-being is unaffected over a wide interval of the partner's working hours.

Keywords: subjective well-being, life satisfaction, working time preferences, working time mismatch, spillovers, utility interdependence

JEL Classification: I31, J21, J22

[a] University of Erlangen-Nuremberg
[b] University of Bamberg, IZA Bonn
[*] Corresponding author: Christoph Wunder, University of Erlangen-Nuremberg, Department of Economics, Lange Gasse 20, 90403 Nuremberg, Germany. Tel.: +49 911 5302 260; Fax: +49 911 5302 178. Email: christoph.wunder@wiso.uni-erlangen.de

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1 Introduction

Standard models of labor supply typically assume that workers freely choose their hours of work. However, empirical evidence shows that many workers want to adjust their hours of work but are not able to do so, pointing to mismatches between actual and preferred working time.[1] Mismatched workers experience a loss in well-being compared to workers who are able to realize their working time preference (Wooden et al. 2009). Moreover, the literature on family well-being gives evidence of cross-partner effects of working time (Booth and Van Ours 2008, 2009) and interdependence of well-being among family members (e.g., Winkelmann 2005, Powdthavee 2009, Schwarze and Winkelmann 2011). Thus, a working time mismatch may not only affect the worker him- or herself but also other persons close to him or her, particularly the partner.

The objective of this study is to analyze the relationship between well-being and working time arrangements of couples. We seek to address three questions: first, we ask how well-being is related to working time preferences. Second, we investigate the consequences of mismatches between actual and preferred hours of work for well-being. Third, we study the spillover of one partner's working time and working time mismatch onto the other partner's well-being.

We use measures of life satisfaction to approximate true well-being (or utility). This approach is by now well established in the economic literature (for overviews, see, e.g., Frey and Stutzer 2002, Layard 2005, Bruni and Porta 2005, Van Praag and Ferrer-i-Carbonell 2008). Although subjective measures of well-being were extensively used to analyze various labor market issues—such as unemployment (Winkelmann and Winkelmann 1998, Kassenboehmer and Haisken-DeNew 2009), unemployment duration (Clark 2006), income compar-

[1] A large body of empirical research reports working time mismatches (e.g., Altonji and Paxson 1988, Dickens and Lundberg 1993, Stewart and Swaffield 1997, Euwals and Van Soest 1999, Bell and Freeman 2001). According to a recent study on Germany, more than 60% of full time employed workers prefer to work fewer hours, taking into account the consequences for earnings, than they actually do (Heineck and Möller 2012). In Britain, approximately 40% of full-time employees want to reduce their labor supply (Böheim and Taylor 2004). Otterbach (2010) provides an international overview of mismatches between actual and preferred working time.

isons (Clark and Senik 2010), or co-worker wages (Clark et al. 2009)—, researchers so far have paid only little attention to an empirical investigation of the well-being of mismatched individuals. A notable exception is the study by Wooden et al. (2009).

Our study makes several contributions to the literature. We provide, to the best of our knowledge, first evidence on whether and to what extent well-being is related to the *partner's* working time mismatch. In this way, we combine research on working time mismatch and family well-being to enhance the understanding of the work-life balance. Prior research has not investigated spillovers of a mismatch within couples so far.[2]

Our second contribution is that we attempt to disentangle the transmission channels through which one partner's working time arrangement impinges on the other partner's well-being. Here, we distinguish between two transmission channels: (i) if working time arrangements determine contextual factors of the household, such as the time available for household production, then a spillover may appear through the shared household environment. (ii) If one partner's well-being is affected by a mismatch and if the partners are empathetic towards one another, then a spillover may occur due to utility interdependence within the couple.

Third, our study uses a simple theoretical labor supply model to derive an estimation equation that permits a concise interpretation of the parameters. In this way, we are able to describe the relationship between well-being and working time preferences in new detail. Finally, we provide new results on how well-being is related to working time mismatches, using data on couples from the German Socio-Economic Panel (SOEP) Study, which allows for comparison with prior findings for Australia (Wooden et al. 2009) and Great Britain (Booth and Van Ours 2008, 2009).

[2] On the one hand, existing research on working time mismatch did not consider the role of the partner's mismatch (e.g., Wooden et al. 2009). On the other hand, research on family well-being has paid only little attention to the partner's employment situation. Notable exceptions are Winkelmann and Winkelmann (1995), Clark (2003), and Booth and Van Ours (2008, 2009). However, this research has focused on the partner's unemployment and actual hours of work while a working time mismatch of the partner was not taken into account.

Empirical knowledge about how well-being of couples responds to joint labor supply may have pervasive consequences for the design of working time arrangements. If labor supply driven spillovers of well-being within couples are relevant, re-arranging working time in a way that meets preferences can potentially improve family well-being.

Our results indicate that working time mismatch is negatively correlated with well-being. Underemployment provokes a stronger response in well-being than overemployment, particular among males. One of the notable findings to emerge from this study is the existence of a significant spillover from the partner's working time mismatch: both males and females suffer from their partners' underemployment; males also experience significantly lower well-being when the female partner is overemployed. We suppose that the spillover occurs through utility interdependence within couples. The findings further suggest that female well-being is highest when their partner is working near full-time hours. Male well-being is unaffected over a wide interval of the partner's working hours but declines when the partner works more than 45 weekly hours.

2 Conceptual framework and previous findings

In this Section, we begin with a short discussion of labor supply when the worker receives job offers consisting of fixed wage-hours combinations (Section 2.1). Our interest here is in the role played by working time preferences and working time mismatches for well-being. After that, we consider spillovers of the partner's working time and working time mismatch onto the other partner's well-being (Section 2.2). We distinguish between two transmission channels: spillovers may occur through (i) shared contextual factors and/or (ii) utility interdependence. The relevant literature is addressed in each section.

2.1 Well-being and working time mismatch

The conceptual framework builds on a simple labor supply model, as used, for example, by Altonji and Paxson (1988). Workers receive job offers consisting of fixed wage-hours combinations and hence are not able to freely choose their working hours given the wage offer. They adjust their working time by selecting wage-hours combinations across employers offering different job packages (e.g., Blundell and Macurdy 1999). The wage-hours combinations vary between employers because of firm-specific requirements, production technology, recruiting costs, legal regulations, or collective bargaining agreements, for instance.

In such a scenario, workers are not always able to realize their preferred working hours. Figure 1 illustrates. The labor supply curve, S, shows the preferred working hours level at different wage rates. At wage w^*, the worker maximizes his or her utility, U, at the preferred working hours level $S(w^*)$. However, we assume that the job package $(w^*, S(w^*))$ is not in the worker's choice set but that a firm offers the alternative hours-wage combination (w', H') that requires longer hours and provides compensation in the form of higher wages ($w' > w^*$). The worker may be indifferent between these combinations (i.e., $U_0(w^*, S(w^*)) = U'(w', H')$). Yet, the utility level U' is lower compared to the utility in a situation in which the worker is able to realize preferred working hours given the wage rate w'. The mismatched worker, who in this case is overemployed, deviates from his or her utility maximizing labor supply, i.e. $U'(w', H') < U_1(w', S(w'))$. A similar reasoning holds for a mismatched worker who accepts a job package with short working hours H'' though he or she prefers the higher level of working hours $S(w')$ given the wage rate w'. In the latter case, the worker is underemployed.

Working time mismatches may be persistent over time when the worker has, for example, imperfect information about job opportunities and changing jobs is costly. In such a situation, the worker will only change the job if the utility gain exceeds search and mobility costs (Weiss 1984). As a consequence, we may observe persistent mismatches in the labor market unless utility gains are sufficiently large.

Next, we formulate hypothesis about the role played by (1) working time preferences and (2) hours mismatch for well-being (or utility). First, we expect a gender-specific asymmetry in the relationship between working time preferences and well-being because labor market institutions in the western part of Germany, which we focus on, encourage a gendered division of labor (e.g., Rosenfeld et al. 2004).[3] In particular, tax policy and the limited provision of

[3] We exclude East Germany from the analysis because of the differences in the performance of the labor market and the provision of public child care.

public child care provide incentives for female part-time work and a male-breadwinner family model. For males, preferences for longer working hours appear to be compatible with the institutional setting and the gender roles. Therefore, we hypothesize a positive association between preferred working hours and well-being because men obtain utility from a high social status and social recognition. In contrast, we assume that women, and particularly women with children, experience difficulties in reconciling a career with a family life and have fewer job opportunities than males (for further discussion, see, Lazear and Rosen 1990, Booth et al. 2003). This leads us to our first hypothesis:

Hypothesis 1 *Preferences for longer working hours are connected to higher (lower) well-being among men (women) because of the gendered division of labor. Since women with young children face particular difficulties in working above part-time hours, they are expected to experience the highest loss in well-being.*

Second, we expect a loss in utility when the worker chooses a wage-hours combination that is off the labor supply curve: (i) if the worker is overemployed, factors that may contribute to the loss are physiological and psychological fatigue. The literature in epidemiology and organizational psychology, for example, finds deteriorating health effects of long working hours (Sparks et al. 1997, Van der Hulst 2003). (ii) Underemployment may be driven by demand-side constraints or other restrictions, such as a lack of childcare facilities that may force parents to work part-time although they want to work full-time. The loss in well-being may, in this case, result from both monetary and non-monetary job aspects. We summarize this in our second hypothesis:

Hypothesis 2 *Both overemployment and underemployment are related to lower well-being (or utility) compared to a situation in which the worker is able to realize preferred hours of work given the wage rate.*

Our empirical analysis aims at describing the relationship between well-being and preferences (Hypothesis 1) and identifying the loss in well-being resulting from a mismatch (Hypothesis 2). For that purpose, we compare the utility from the job package (w', H') and the utility from the job package $(w', S(w'))$. For overemployment, the loss from the mismatch is:

$$\text{Loss} = U_1(w', S(w')) - U'(w', H') \tag{1}$$

Rearranging yields:

$$U'(w', H') = U_1(w', S(w')) - \text{Loss} \tag{2}$$

Applying the same reasoning to underemployment, we empirically translate equation 2 into the following regression model:

$$\text{Model 1:} \qquad SWB_{it} = \beta_1 w_{it} + \beta_2 S_{it} + \beta_3 \Delta H_{it}^{\text{Over}} + \beta_4 \Delta H_{it}^{\text{Under}} + \boldsymbol{\beta}_5' \mathbf{x}_{it} + \alpha_i + \varepsilon_{it}, \tag{3}$$

where the left-hand side variable is an individual's current subjective well-being that is used as a direct measure of the utility achieved given the chosen job package. Well-being depends on the (logarithm of the) wage rate w and a vector $\mathbf{x}$ of individual characteristics that includes the following variables: variables identifying the occupational group and the sector of industry, age, education, citizenship, health, and the number of children in the household; a constant is also included. β_1 and $\boldsymbol{\beta}_5$ denote coefficients describing the relationship between response and these regressors. The error consists of two components: α_i denotes an individual-specific random component, ε_{it} is the idiosyncratic component.

The regression equation takes account of different working time preferences and their role for well-being by including the variable S that represents the preferred working hours. Labor supply curves to, for example, the right of the labor supply curve in Figure 1 represent preferences for longer working hours (conditional on the wage rate). The coefficient β_2 therefore informs us about the utility that is associated with alternative working time preferences (i.e., different labor supply curves).

Including variables for the number of hours of underemployment, ΔH^{Under}, and the number of hours of overemployment, ΔH^{Over}, the coefficients β_3 and β_4 separately capture the effects of both types of mismatches on well-being. Assuming $\beta_3 = \beta_4 = 0$, the model allows to calculate the counterfactual well-being that a mismatched worker would have achieved had he or she not been underemployed or overemployed.

So far, only few studies have empirically examined the relationship between well-being and working time mismatch, and none has explicitly connected the empirical model to a theoretical labor supply model. Using cross-sectional Australian data from the 2001 Household, Income and Labour Dynamics in Australia (HILDA) survey, Wilkins (2007) examines the outcomes of underemployment only, finding a negative association with well-being and other outcomes. Grözinger et al. (2008) also use cross-sectional data from the 2004 wave of the German Socio-Economic Panel (SOEP) Study and report a significant reduction in health, job, and life satisfaction when actual hours of work differ from the preferred working time. In related research on health outcomes, the economics literature shows that working time mismatch has adverse health effects (Bell et al. 2011).

We are aware of only two prior studies that employ panel data: First, Friedland and Price (2003) use two waves from the Americans' Changing Life (ACL) study and assess the effects of underemployment on health and well-being. The panel structure, however, is only exploited by including lagged indicators of health and well-being to account for reverse causation. Their results suggest that underemployment is not related to any of their physical health indicators but negatively associated to what they call positive self-concept and, surprisingly, positively with job satisfaction. The authors do, however, not have a convincing explanation for this unexpected finding.

Wooden et al. (2009) use panel data from the HILDA survey from 2001 to 2005. They apply pooled and fixed effects estimators to examine the association between working time mismatch and subjective well-being. Their results suggest that a mismatch between actual and desired working hours matters for both life satisfaction and job satisfaction among both males and females, with the effects being larger for overemployment than for underemployment. We differ from most of this prior research by using longitudinal data, but also because we base our analyses on observed deviations from desired hours rather than desired deviations from observed hours. However, our specification ensures a tight connection between the estimation equation and theoretical labor supply considerations. This allows a concise interpretation of the estimated parameters.

2.2 Spillovers within couples

We now look at the spillover of working time and working time mismatch within couples. So far, little attention has been paid to this issue. In particular, no research has been found that analyzed the spillover of the partner's mismatch. We aim to close this research gap and hypothesize that the partner's working hours and his or her working time mismatch may spill over through two transmission channels:

Hypothesis 3 *One partner's working time arrangements may spill over onto the other partner's well-being through (i) contextual factors of the household and/or (ii) interdependent utilities.*

(i) Interdependence between partners may arise through the joint production and consumption of household goods that require factor inputs (Becker 1965). Since the partner's working time determines the time input available for the production of household goods, his or her working time may spill over onto the other partner's utility through the process of household production. Therefore, we include the partner's working time, H_j, and working time mismatches, ΔH_j^{Over} and $\Delta H_j^{\text{Under}}$, as additionally explanatory variables in model 2.

$$\text{Model 2:} \qquad SWB_{it} = +\beta_1 w_{it} + \beta_2 S_{it} + \beta_3 \Delta H_{it}^{\text{Over}} + \beta_4 \Delta H_{it}^{\text{Under}} + \beta_5' \mathbf{x}_{it}$$
$$+\gamma_1 H_{jt} + \gamma_2 \Delta H_{jt}^{\text{Over}} + \gamma_3 \Delta H_{jt}^{\text{Under}} + \alpha_i + \varepsilon_{it} \qquad (4)$$

Recent research has provided evidence that an individual's well-being is correlated with his or her partner's hours of work. Based on data from the British Household Panel Survey (BHPS), Booth and Van Ours (2008) report that satisfaction with hours of work as well as job satisfaction is highest in couples where the male is full-time working and the female is part-time working. This finding was reinforced using 2001-2004 data from the HILDA Survey (Booth and Van Ours 2009). The latter study furthermore showed that female life satisfaction increases when the male partner is working full-time while male life satisfaction is unaffected by their partner's market hours. Following the studies by Booth and Van Ours, Rudolf and Cho (2011) provide similar evidence on cross-partner effects of working time for families in South Korea.

Several further studies provide evidence that well-being of family members is interrelated through contextual factors. Bolger et al. (1989) examine the connection between work and home domains in married couples. Their findings suggest that stress experienced by the husband at work leads to stress for the wife at home as she tends to adjust her housework efforts to compensate for the work stresses of her spouse. Evidence for occupational stress transmission from men to women is also reported by Jones and Fletcher (1993). Westman and Vinokur (1998) regard shared life events as an important mediating process of distress levels within couples. Clark (2003) finds that particularly women suffer from their male partner's unemployment. Shields and Price (2005) show that unobserved intrahousehold characteristics help to explain well-being. Using data on married couples, Schimmack and Lucas (2010) identify environmental factors, including both shared components such as household income or housing and less similar domains such as recreation or health, as an important determinant of life satisfaction and domain satisfactions of both partners. Using German SOEP data, Kind and Haisken-DeNew (2012) investigate spillover effects from parental unemployment onto the child's life satisfaction. Their findings indicate that sons' well-being is lower when the father and/or the mother becomes unemployed, while daughters' well-being is not affected by parental unemployment.

(ii) Utility interdependence represents a second channel through which spillovers may occur. Our third regression model takes utility interdependence into account by modeling the well-being of the individual, SWB_i, as a function of the well-being of the partner, SWB_j.

$$\text{Model 3:} \qquad SWB_{it} = + \beta_1 w_{it} + \beta_2 S_{it} + \beta_3 \Delta H_{it}^{\text{Over}} + \beta_4 \Delta H_{it}^{\text{Under}} + \boldsymbol{\beta}_5' \mathbf{x}_{it}$$

$$+ \gamma_1 H_{jt} + \gamma_2 \Delta H_{jt}^{\text{Over}} + \gamma_3 \Delta H_{jt}^{\text{Under}} + \gamma_4 SWB_{jt} + \alpha_i + \varepsilon_{it}, \qquad (5)$$

where the parameter γ_4 is a measure of utility interdependence. The assumption of altruistic (or caring) preferences is common in the context of family members (see, e.g., Becker 1974, 1981, Tomes 1986). Thus, in the presence of direct utility interdependence, we hypothesize a spillover onto one's own well-being if the partner's well-being is negatively affected by a working time mismatch.

Our analysis builds on the following line of reasoning to give a sketch of the underlying transmission channels. The following four cases may occur:

1. If neither contextual factors nor utility interdependence play a role, then no correlation between well-being and the partner's variables will be observed (i.e., $\gamma_k = 0$, $k = 1,2,3,4$).

2. If partners are related only through the joint production and consumption of household goods, then we expect a correlation between well-being and the partner's labor supply (i.e., $\gamma_k \neq 0$, $k = 1,2,3$) because these variables approximate factor inputs of household production. However, we may also observe a (spurious) correlation in well-being in this case (i.e., $\gamma_4 \neq 0$), for example, when household production leads to a Pareto-improvement of both partners.

3. If partners are connected through contextual factors *and* utility interdependence, we expect a significant correlation between well-being and the partner's covariates as well as his/her well-being (i.e., $\gamma_k \neq 0$, $k = 1,2,3,4$).

4. If transmission is due to utility interdependence only, then the partner's working time and working time mismatch are not relevant for well-being (i.e., $\gamma_1 = \gamma_2 = \gamma_3 = 0$). Utility interdependence will be indicated by $\gamma_4 \neq 0$.

An ambiguity is that the hypotheses about the parameters are indistinguishable in cases 2 and 3. However, the hypotheses of cases 1 and 4 are unambiguous.

Previous empirical studies have mainly looked at utility interdependence between generations, i.e. between parents and children, and have consistently reported positive correlations of the well-being of family members (e.g., Winkelmann 2005, Powdthavee and Vignoles

2008, Bruhin and Winkelmann 2009, Schwarze and Winkelmann 2011). Powdthavee (2009) applies GMM-system estimators in order to take into account correlated effects of partner's life satisfaction and measurement error bias. He finds a statistically significant spillover effect of life satisfaction within couples. Except for the individual's own employment status, he, however, does not take working time arrangements into account.

3 Data

The analysis is based on data from the German Socio-Economic Panel (SOEP) Study (Wagner et al. 2007). Since our interest lies in the spillover of the partner's working time arrangements, we select a sample of couples where both partners are employed and of main working age (between 20 and 60). We exclude those individuals where at least one partner is in training, non-working, unemployed, or on maternity leave. As the conditions on the labor markets and the supply of child care facilities are quite different between East and West Germany within our time-window of observation, we restrict the analysis to West Germany. Our focus is on families with children because their working time constraints are presumably more severe as the children's needs have to be taken into account on top. Additional evidence for couples without children is presented mainly for comparison purposes. The descriptive statistics are in Tables A1 to A4 in the Appendix.

Employed respondents were surveyed about their working time preferences for the first time in 1997. With an open hours per week response option, the item reads:

> *If you could choose your own number of working hours, taking into account that your income would change according to the number of hours: How many hours would you want to work?*

Table 1 provides a description of the joint distribution of actual and preferred hours of work. The observed pattern shows a clear difference in labor supply between females and males. While female labor supply lies predominantly in the intervals between 12 and 28 actual working hours, male labor supply is clustered in the upper categories of actual working hours ($\geqslant$36 weekly hours). Thus, labor supply follows a gender-specific pattern in which females are part-time employed and males are full-time employed.

The main diagonal is dominant in Table 1, indicating a strong positive correlation between actual and preferred hours of work. Nevertheless, we also observe substantial differences between actual and preferred working hours. For example, the majority of men with more than 44 actual hours wants to reduce labor supply. In total, 2/3 of women and 3/4 of men report preferences for working hours other than their actual working time. 62% of men and 38% of women are overemployed while 10% of men and 28% of women are underemployed.

We use self-reported measures of life satisfaction as an empirical approximation of true well-being (or utility). Life satisfaction is surveyed by the following question: *How satisfied are you with your life, all things considered?*. Responses are collected on an 11-point scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied).

A first impression of the spillover of one partner's working time mismatch on the other partner's well-being can be obtained from Table 2 that shows average life satisfaction by mismatch type of the couple. In general, life satisfaction is lower when the partner is either underemployed or overemployed compared to a state in which both partners realize their working time preference. Life satisfaction among males is lowest when both partner's are underemployed. In contrast, life satisfaction is lowest among females when they are underemployed and their partner is overemployed.

4 Results

This section presents estimation results for the models introduced in Section 2. The discussion begins with model 1 that takes account solely of the worker's own characteristics (Subsection 4.1). Subsection 4.2 turns to models 2 and 3 that include partner variables.

4.1 Working time preferences, hours mismatch, and well-being

This subsection looks first at the role played by working time preferences for well-being. After that, the focus turns to working time mismatches. The estimation results for model 1 are shown in Table 3. We pay particular attention to families with children because working time constraints that may arise from family caring responsibilities are more severe if children are in the family (panel A). Additional evidence for couples without children is presented for comparison purposes (panel B).

The results provide clear evidence for a gender-specific relationship between well-being and working time preferences. Women with children experience lower well-being when they have a preference for long working hours (Table 3, Column 1). For women in partnerships without children, the correlation is estimated to be near zero and not statistically significant (Table 3, Column 4). In contrast, men with a preference for long working hours have, irrespective of parenthood status, higher life satisfaction (Table 3, Columns 3 and 5).

To further explore the role of children, we estimated a model extension that includes an interaction term between the preferred working time and an indicator variable for children under the age of 6. The additional results are in Column 2. The coefficient of the interaction term clearly points to a negative relationship between working time preferences for women with young children while the main coefficient for the preferred working time moves towards zero and becomes statistically insignificant. This reaffirms that children play a crucial role for the relationship between well-being and working time preferences. Women with young children who have a preference for longer working hours experience a loss in well-being. We do not detect significant losses for women with children older than 6 and for women without children.

An explanation for the gender-specific asymmetry is that women with children experience difficulties in reconciling work and family life. Their labor supply choice is particularly constraint because they often do most of the housework and child rearing (Anxo et al. 2011). As a consequence, they have high mobility costs and are not able to spend long time in commuting to the workplace, for example. Typically, women reduce working hours and shift towards part-time employment at the time of first birth (Paull 2008). At this life stage, it is hardly possible to increase working time even if there exists a preference for longer working hours. A perceived lack of the chance to progress in the career may reduce well-being of women who strive to reconcile work and family goals.

In contrast, preferences for long working hours appear to be compatible with men's lives. This follows from the coefficients of the preferred working time in Table 3, Columns 3 and 5, that are statistically significantly positive. Since men have an established, traditional role model as main breadwinner, they can expect social recognition and a high social status if they have a strong work orientation.

The results for working time mismatch indicate that well-being is considerably lower among workers who are not able to realize their working time preference, as supposed in our first hypothesis. In general, the (negative) correlation between well-being and underemployment is stronger than that between well-being and overemployment. The hypothesis that the coefficients of overemployment and underemployment are equal can, however, not be rejected for females. The highly statistically significant coefficients of the underemployment variables shows a reduction in well-being by approximately 0.03 per hour mismatch among men, for instance. On average, underemployed men want to work 6.0 additional hours per week. Thus, the corresponding reduction in well-being is 0.18 points. This loss from underemployment is equivalent to a decrease in wages of more than 50 percent. In contrast, the loss in well-being from overemployment is equivalent only to a decrease in wages of less than 8 percent for males.

Underemployment appears to be a more serious problem for well-being than overeployment. This finding may reflect the development on the German labor market in recent decades. Policies aiming at reconciling family and work life have become more important. Measures to achieve this goal focus mostly on a reduction of working time (EIRO 2006). The increased availability of part-time work, job-sharing schemes, etc. made it easier in the first place to reduce working time. Also, unions promoted a reduction in working hours, especially in the 1980s and 1990s. The collectively agreed normal weekly working hours in Germany are relatively low in European comparison (EIRO 2008). As a consequence of these developments, it may be relatively easy to reduce working time while a worker who wants to increase hours of work is more likely to encounter institutional obstacles.

The small size of the coefficient of overemployment helps to explain the relatively high proportion of overemployed workers, especially among men. The finding that overemployment is associated with only small losses in well-being implies that the potential utility gain from a reduction of overemployment is also small. The worker will reduce his working time only if the utility gain from the adjustment is greater than the associated costs. Such costs may be of a considerable magnitude because adjustment is often achieved through changing jobs (e.g., Altonji and Paxson 1992). As a consequence, an overemployed worker's push for shorter hours is expected to be rather weak.

4.2 Spillovers

In this subsection, we discuss the role played by the partner's working time arrangements for the other partner's well-being. First, we strive to see: what, in terms of well-being of the individual i, is the preferred working time of the partner j? To answer this question, we take our empirical analysis one step further and employ a semi-parametric regression approach using penalized splines that allows flexible estimation of the relationship between well-being and the partner's working hours. The semiparametric results will guide us later in specifying the categories for the partner's working time variable in the parametric model. We use the following semiparametric model:

$$SWB_{it} = \beta_1 w_{it} + \beta_2 S_{it} + \beta_3 \Delta H_{it}^{\text{Over}} + \beta_4 \Delta H_{it}^{\text{Under}} + \beta_5' \mathbf{x}_{it} + \eta(H_{jt}) + \alpha_i + \varepsilon_{it}, \qquad (6)$$

where the variables and parameters are defined as before (see model 1 above). The newly added nonparametric component $\eta(H)$ models the relationship between the response variable and the partner's working hours (given the covariates), which is allowed to be nonlinear with no particular functional form assumptions. We use a mixed model representation of penalized splines to estimate the semiparametric models (see, e.g., Ruppert et al. 2003).

Note that we do not control for further variables of the partner in the semi-parametric regressions. The reason for this strategy is that if we, for example, control for the partner's mismatch, the estimated relationship will tell us about the remaining effect of working hours of the partner. The aim of this part of the analysis is, however, to capture the overall perception of the partner's working time.

The results are summarized in Figure 2. For females, we observe at first a steep increase in well-being up to a weekly working time of 25-30 hours. Well-being then reaches a plateau in the wide interval of near full-time and full-time work between 30 and 50 hours per week. Here, female well-being is highest, suggesting that women benefit from male full-time employment. Beyond that, female well-being declines, suggesting that they may suffer from excessive hours of work of the partner.

For males, the smooth curves show that well-being hardly changes over almost the entire range of female working hours. Thus, males appear to be rather indifferent about their partner's amount of working time in the range of part-time and full-time employment. However, a decrease is observed when the partner has long working hours (>45 per week).

Overall, these results are consistent with the findings of Booth and Van Ours (2008, 2009) for the UK and Australia, who also show that women's well-being is larger when the partner is full-time working while men's well-being is unaffected by the female partner's working hours.

Turning to the parametric estimation results of model 2 shown in Table 4, we use a set of dummy variables on the partner's hours of work to model the nonlinearity of the relationships detected above. Overall, the evidence is consistent with the finding from the semi-parametric exercise. The inverted U-shaped relationship between the partners working time and well-being among females is clearly confirmed. Women experience considerable higher well-being when their partner works between 30 and 35 hours. Male well-being hardly responds to changes in female working hours when the partner's working time is less than 40 hours per week. A decline in male well-being is observed when the female partner is in the highest working hours category. However, the coefficients are estimated to be small and not statistically significant.

As expected from the reasoning in Section 2.2, the partner's mismatch is negatively associated to well-being. First, for the case of underemployment, there is a loss in females' well-being of about 0.01 life satisfaction points for each weekly hour their partner wants to work longer but is not able to do so. In contrast, overemployment of the male partner plays only a minor role; the estimate is smaller than that of underemployment and the relatively large standard error renders the coefficient statistically insignificant. Among males, a negative correlation with both the partner's overemployment and underemployment is observed (Table 4, Column 2). Hence, male life satisfaction is generally lower in the case of hours mismatch of the partner.

One important finding emerging from this analysis is that a situation in which both partners experience a working time mismatch goes along with a severe loss in well-being. For example, the loss from a double mismatch, in which both partners are underemployed, is equivalent to approximately half the loss from disability.[4]

Finally, we discuss the results for model 3 that provide deeper insights into the transmission channels that connect the partner's working time arrangements and the other partner's well-being. The transmission may take place through contextual factors and/or interdependent utilities.

Estimation results of model 3 under alternative statistical assumptions are given in Tables 5 to 6 for females and males, respectively. The results from regressions with individual random and fixed effects (Columns 1 and 2) show large, statistically significant coefficients on the partner's well-being, amounting to approximately 0.3-0.4 for both men and women. At the same time, the absolute value of the coefficient of the partner's working time mismatch variables are considerably smaller than in the regressions omitting the partner's well-being. For females, the coefficient on the partner's underemployment decreases by ca. 50% of its initial value and is no longer statistically significant. Also, the parameter of the partner's overemployment moves towards zero. Similarly for males, the coefficients of their partner's working time mismatch variables also decrease to less than half of their initial values and become insignificant at the 5% level.

The evidence suggests that adding the partner's well-being eliminates the correlation previously captured by the partner's working time mismatch. Hence, the partner's mismatch may not directly impinge on well-being. Instead other mechanisms, such as interdependent

[4] The calculation used these values: underemployed women (men) want to work, on average, additionally 8.2 (6.0) hours per week. Using the regression results in Table 4, Column 1 (2), the total loss is calculated to be 0.18 (0.25) points on the 11-point well-being scale. These losses are approximately half the size of the coefficient of disability, which is 0.4 (0.5) for females (males).

utilities, are relevant and we may conclude that contextual factors are relatively unimportant for well-being.[5]

In a further analysis step, we apply an instrumental variables approach as a robustness check to take into account that the positive coefficient on the partner's well-being could be driven by factors affecting both partners' well-being simultaneously (for a discussion, e.g., Powdthavee 2009, Schwarze and Winkelmann 2011). We address the endogeneity issue using two types of instruments: our first set of instruments consists of characteristics of the partner j: variables identifying the occupational group and the industry sector as well as socioeconomic controls for age, education, citizenship, and health.[6] The second set of instruments comprises of various variables describing the interview context of the partner, particularly indicator variables for the day of the interview and the interview mode.[7] We argue that the interview variables are suitable instruments: first, the literature on survey methodology provides evidence that the interview context is relevant for self-reported well-being. For example, Akay and Martinsson (2009) and Helliwell and Wang (2011) report day-of-the-week effects on subjective well-being. Weather conditions can also affect subjective well-being (e.g., Kämpfer and Mutz n.d.). Conti and Pudney (2008) find more positive well-being reports in oral interviews done by an interviewer. Thus, the interview context may induce exogenous variation in the partner's well-being. Second, it is plausible to assume that the context of the partner's interview is uncorrelated with unobserved factors affecting the partner's well-being.

The results from panel IV estimations of model 3 are presented in Columns 3 and 4 in Tables 5 and 6 for females and males, respectively. Again, the analysis points to a statistically

[5] Under certain restrictive assumptions, the coefficient on the partner's well-being, γ, can be interpreted as the causal effect of the partner's well-being. For example, we have to assume that no omitted variables simultaneously affect both partners' well-being. Unobserved factors that are correlated with the well-being of both partners but are not represented by the specification, would induce correlation between the partner's well-being and the error term. In this case, the estimator is not a measure of interdependent utilities. Such a result could nevertheless provide valuable information because it indicates that the mismatch has no direct impact on well-being and that other transmission channels exist.

[6] A similar approach has been previously applied by Schwarze and Winkelmann (2011).

[7] The following interview modes are used: oral, written questionnaire with interviewer assistance, self-completion no interviewer, written and oral, written by mail, CAPI. Also, variables describing the interview context of individual i are included in the covariate vector $\mathbf{x}_{it}$ (see equation 5). Variation in the interview context within couples exists for almost 20% of our sample. In these cases, the partners were interviewed with different interview modi and/or on different week days.

significant link between the partner's well-being and the respondent's own well-being while controlling for unobserved individual-specific effects and a large number of context variables. Therefore, the interdependence of well-being within couples cannot be attributed to the large number of observed and unobserved factors controlled for in the regressions.

Interestingly, the coefficients of the partner's mismatch status further move towards zero and are not different from zero in these estimations. Hence, the partner's working time mismatch is irrelevant for one's own well-being once the partner's well-being is taken into account. This evidence is consistent with the hypothesis that persons in partnerships are empathetic towards one another. Well-being appears to be contagious so that individuals are less satisfied with their lives when their partner is dissatisfied with his or her life. The IV estimations reinforce the hypothesis that the partner's hours mismatch produce a considerable spillover within couples because of the interdependence in utilities.

The results for model 3 still point to a higher well-being of females with children if their male partners work in the interval between 30 to 35 weekly hours. This finding supports the hypothesis that the male partner's actual working time can be regarded as an inputs in the production of household goods. Males who work slightly reduced hours are able to provide support in housework and child rearing.

5 Conclusion

Our study analyzed how well-being is related to working time preferences and hours mismatch within couples. First, we asked how well-being is related to working time preferences. Second, we looked at the situation of a mismatch between actual and preferred working time. Third, we merged research on working time mismatch and research on family well-being to examine spillovers within couples. In this context, we also empirically determined the preferred working time of the partner using semi-parametric regressions. We used self-reported answers to survey questions about life satisfaction as an empirical approximation of true well-being (or utility).

Using longitudinal German SOEP data, our evidence contributes and adds to the so far small literature on working time mismatch, which is mainly based on cross-sectional data.

First, our results point to a gender-specific role of working time preferences for well-being. While preferences for longer working hours are associated with higher well-being among males, we detect a negative correlation among females. We suppose that the gendered division of labor is an important factor to explain the gender-specific asymmetry.

Second, the findings furthermore show a clear negative correlation between working time mismatch and well-being, suggesting that both females and males experience significant losses in well-being if they are constrained in their hours of work choices. In general, losses from underemployment are larger than losses from overemployment. We regard underemployed as a severe problem because two sources of forgone welfare arise: (1) the work force potential of the economy is underused (e.g., Eichhorst et al. 2011) and (2) individuals are deprived from utility gains resulting from monetary and non-monetary job aspects, such as the potential of developing skills and the social interaction with, for example, colleagues or customers.

Third, semi-parametric regressions revealed that females are most satisfied when their partner is working full-time. We observe lower well-being among those females with partners in the lower and upper working hours categories, respectively. For males, well-being is unaffected over a wide interval of the partner's working hours, though excessive working hours of the partner may be associated with a decrease in male well-being.

Fourth, considering spillovers within couples, the results show a significant relationship between one's own well-being and the partner's working time mismatch: females suffer from the male partner's underemployment, whereas males experience lower well-being when the female partner has a hours mismatch in general. Overall, our analysis gives rise to the conjecture that the spillover occurs through utility interdependence within couples. The linked well-being of partners represent an important transmission channel through which one partner's working time mismatch is connected with the other partner's well-being.

An important implication of our findings is that employees' working time preferences should be taken into account more seriously when working time arrangements are designed. Evidently, job packages offer too little flexibility in the choice of working hours. 2/3 of women and 3/4 of men report preferences for working hours other than their actual working time. Since a mismatch is connected with significant losses in well-being, employees and their partners have to bear extra costs resulting from inflexible working time arrangements. Not least because of the serious spillovers from partner mismatches, we believe that introducing greater flexibility in working hours creates an enormous potential to increase well-being. High flexibility in working time could, furthermore, be a persuasive argument for employers in the competition for skilled employees.

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Figures and Tables

Figure 1
Labor supply and fixed wage-hours combinations

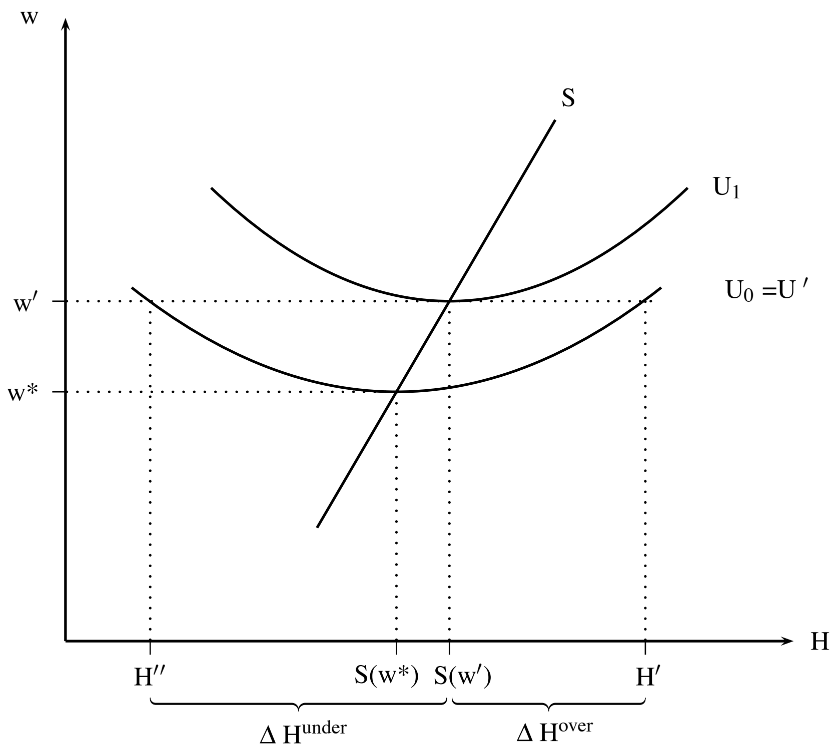
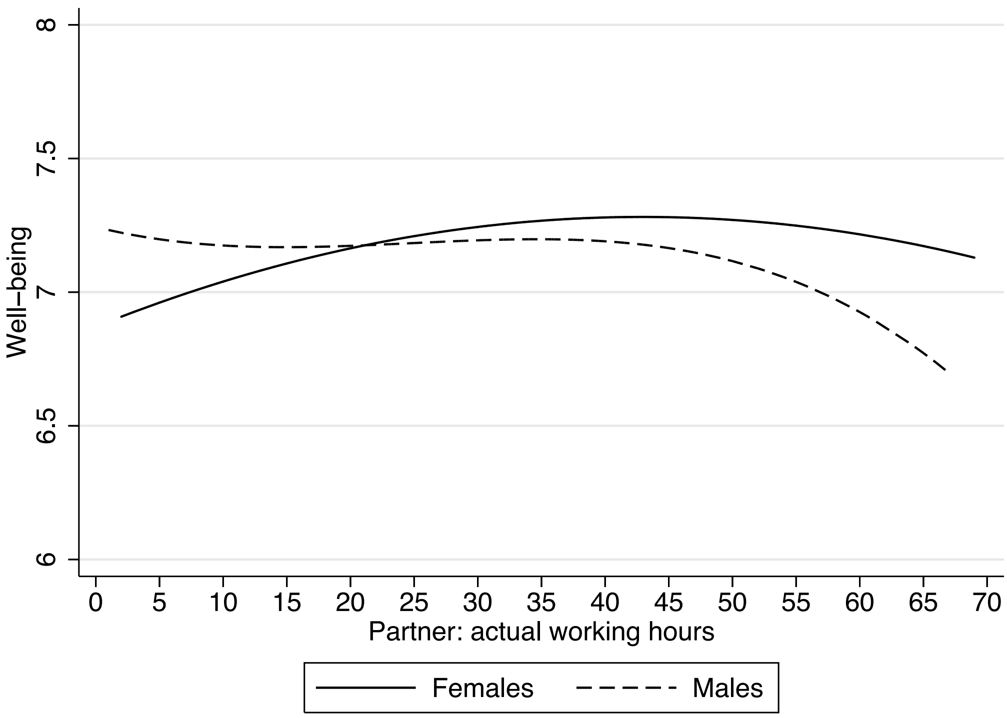


Figure 2
Well-being and the partner's hours of work (couples with children)



Source: SOEP 1997-2009.

Table 1
Actual and preferred hours of work (couples with children)

Actual hours	Preferred hours								
	>0 ... <4	⩾4 ... <12	⩾12 ... <20	⩾20 ... <28	⩾28 ... <36	⩾36 ... <44	⩾44 ... <52	⩾52	Total
Females									
>0 ... <4	7	22	14	13	0	1	0	0	57
⩾4 ... <12	7	679	270	381	44	26	4	0	1,411
⩾12 ... <20	5	109	1,134	619	104	52	1	0	2,024
⩾20 ... <28	5	70	411	1,957	348	103	2	0	2,896
⩾28 ... <36	0	14	39	433	771	100	1	2	1,360
⩾36 ... <44	0	7	13	160	486	645	9	2	1,322
⩾44 ... <52	0	1	2	31	153	141	40	2	370
⩾52	0	1	3	10	28	63	29	37	171
Total	24	903	1,886	3,604	1,934	1,131	86	43	9,611
Males									
>0 ... <4	0	0	0	1	0	0	1	0	2
⩾4 ... <12	0	7	1	2	8	11	1	2	32
⩾12 ... <20	0	3	8	3	5	7	4	0	30
⩾20 ... <28	0	2	5	37	17	24	2	0	87
⩾28 ... <36	0	1	1	17	276	123	6	1	425
⩾36 ... <44	1	9	1	60	1,046	3,462	227	10	4,816
⩾44 ... <52	0	7	3	21	410	1,699	593	36	2,769
⩾52	0	5	3	9	65	650	426	292	1,450
Total	1	34	22	150	1,827	5,976	1,260	341	9,611

Note: Table shows number of observations in each category.
Source: SOEP 1997-2009.

Table 2
Average life satisfaction of females by own and partner's mismatch status

Individual i	Partner j Matched	Underemployed	Overemployed	Total
Females				
Matched	7.52	7.31	7.47	7.47
Underemployed	7.14	7.13	7.01	7.06
Overemployed	7.41	7.25	7.23	7.27
Total	7.38	7.22	7.25	7.28
Males				
Matched	7.40	7.24	7.37	7.34
Underemployed	7.05	6.89	7.20	7.04
Overemployed	7.32	7.03	7.13	7.17
Total	7.32	7.07	7.19	7.20

Source: SOEP 1997-2009.

Table 3
Estimation results of model 1

	Panel A: with children			Panel B: no child	
	Women		Men	Women	Men
Variable	(1)	(2)	(3)	(4)	(5)
Preferred working time	-0.004**	-0.003	0.006**	-0.001	0.005**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Preferred working time × Children LT 6	—	-0.008**	—	—	—
		(0.004)			
Underemployment (in hours)	-0.015***	-0.015***	-0.029***	-0.011***	-0.021***
	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)
Overemployment (in hours)	-0.011***	-0.011***	-0.005**	-0.007***	-0.004*
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Log of hourly wage	0.090**	0.087**	0.416***	0.199***	0.421***
	(0.035)	(0.035)	(0.050)	(0.046)	(0.045)
Log of non-labor income	0.006	0.007	0.001	0.006	0.004
	(0.009)	(0.009)	(0.008)	(0.008)	(0.007)
Age	-0.022	-0.003	-0.026	-0.022	-0.062***
	(0.030)	(0.029)	(0.029)	(0.016)	(0.017)
Age (squared)/100	0.017	-0.006	0.017	0.018	0.058***
	(0.038)	(0.037)	(0.034)	(0.020)	(0.019)
Number of children in HH	0.037	—	-0.010	—	—
	(0.027)		(0.026)		
Children LT6	—	0.238***	—	—	—
		(0.087)			
Education in years	0.055***	0.054***	0.013	0.011	0.015
	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)
Vocational degree: none	-0.117*	-0.117*	-0.090	-0.183***	-0.138**
	(0.066)	(0.066)	(0.070)	(0.063)	(0.063)
Vocational degree: university	0.014	0.016	0.144	0.092	-0.016
	(0.104)	(0.104)	(0.094)	(0.099)	(0.090)
Citizenship: German	-0.104	-0.099	-0.033	0.042	-0.005
	(0.079)	(0.079)	(0.078)	(0.089)	(0.083)
Disabled	-0.402***	-0.407***	-0.466***	-0.528***	-0.320***
	(0.118)	(0.118)	(0.087)	(0.085)	(0.066)
Self employed	0.003	0.010	-0.013	0.202**	-0.056
	(0.076)	(0.076)	(0.069)	(0.092)	(0.073)

Note: Random effects models. All estimations include a constant and control for the survey year, occupation and branch of industry. Standard errors in parentheses. Sample sizes: Couples with children: $n = 2448$. $nT = 9611$. Couples no child: $n = 2601$. $nT = 9537$. Significance level: *<0.1, **<0.05, ***<0.01.
Source: SOEP 1997-2009.

Table 4
Estimation results of model 2

	Panel A: with children		Panel B: no child	
	Women	Men	Women	Men
Variable	(1)	(2)	(3)	(4)
Preferred working time	-0.004**	0.006**	-0.002	0.005**
	(0.002)	(0.003)	(0.002)	(0.003)
Underemployment (in hours)	-0.015***	-0.028***	-0.010***	-0.021***
	(0.003)	(0.005)	(0.004)	(0.004)
Overemployment (in hours)	-0.010***	-0.005*	-0.007***	-0.004*
	(0.003)	(0.002)	(0.003)	(0.002)
Partner: Hours: GE 1 LE 15	—	-0.000	—	0.000
		(0.041)		(0.066)
Partner: Hours: GT 30 LE 40	—	0.033	—	-0.044
		(0.047)		(0.045)
Partner: Hours: GT 40	—	-0.046	—	-0.016
		(0.071)		(0.055)
Partner: Hours: GE 1 LE 30	-0.120	—	-0.056	—
	(0.115)		(0.104)	
Partner: Hours: GT 30 LE 35	0.215***	—	-0.046	—
	(0.079)		(0.077)	
Partner: Hours: GT 40 LE 50	0.009	—	0.013	—
	(0.036)		(0.036)	
Partner: Hours: GT 50 LE 60	0.054	—	0.106*	—
	(0.062)		(0.062)	
Partner: Hours: GT 60	-0.096	—	0.122	—
	(0.092)		(0.101)	
Partner: Underemployment (in hours)	-0.011**	-0.010***	-0.007	-0.010***
	(0.006)	(0.003)	(0.005)	(0.004)
Partner: Overemployment (in hours)	-0.004	-0.008***	-0.005*	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)
Log of hourly wage	0.090**	0.411***	0.203***	0.419***
	(0.035)	(0.051)	(0.046)	(0.045)
Log of non-labor income	0.005	0.001	0.006	0.004
	(0.009)	(0.008)	(0.008)	(0.007)
Age	-0.022	-0.028	-0.023	-0.061***
	(0.030)	(0.029)	(0.016)	(0.017)
Age (squared)/100	0.017	0.020	0.019	0.057***
	(0.038)	(0.033)	(0.020)	(0.019)
Number of children in HH	0.035	-0.010		
	(0.027)	(0.026)		
Education in years	0.055***	0.013	0.012	0.015
	(0.016)	(0.015)	(0.015)	(0.014)
Vocational degree: none	-0.119*	-0.091	-0.177***	-0.137**
	(0.066)	(0.070)	(0.063)	(0.063)
Vocational degree: university	0.011	0.148	0.092	-0.014
	(0.104)	(0.094)	(0.099)	(0.090)
Citizenship: German	-0.108	-0.032	0.047	-0.002

Variable	Panel A: with children Women (1)	 Men (2)	Panel B: no child Women (3)	 Men (4)
	(0.079)	(0.078)	(0.089)	(0.083)
Disabled	-0.394***	-0.469***	-0.525***	-0.317***
	(0.118)	(0.087)	(0.085)	(0.066)
Self employed	0.024	-0.004	0.200**	-0.059
	(0.077)	(0.069)	(0.092)	(0.073)

Note: Random effects models. All estimations include a constant and control for the survey year, occupation and branch of industry. Standard errors in parentheses. Sample sizes: Couples with children: $n = 2448$. $nT = 9611$. Couples no child: $n = 2601$. $nT = 9537$. Significance level: *<0.1, **<0.05, ***<0.01.
Source: SOEP 1997-2009.

Table 5
Estimation results of model 3: females

	Panel A: with children				Panel B: no children			
Variable	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Partner: Life satisfaction	0.380***	0.282***	0.557***	0.395***	0.384***	0.296***	0.602***	0.202
	(0.010)	(0.011)	(0.053)	(0.112)	(0.010)	(0.012)	(0.056)	(0.141)
Preferred working time	-0.003*	-0.002	-0.004**	-0.001	-0.001	0.002	-0.001	0.002
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Underemployment (in hours)	-0.013***	-0.007*	-0.011***	-0.006	-0.007*	-0.007	-0.005	-0.007
	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Overemployment (in hours)	-0.007***	-0.006*	-0.005**	-0.003	-0.007***	-0.000	-0.006**	0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Partner: Hours: GE 1 LE 30	0.032	-0.083	0.125	-0.052	-0.050	0.032	-0.034	0.023
	(0.107)	(0.126)	(0.111)	(0.131)	(0.096)	(0.127)	(0.099)	(0.128)
Partner: Hours: GT 30 LE 35	0.182**	0.220***	0.165**	0.208**	-0.054	-0.005	-0.068	0.003
	(0.073)	(0.085)	(0.075)	(0.085)	(0.073)	(0.084)	(0.075)	(0.084)
Partner: Hours: GT 40 LE 50	0.018	0.028	0.031	0.038	0.022	0.051	0.033	0.049
	(0.033)	(0.039)	(0.034)	(0.040)	(0.033)	(0.039)	(0.035)	(0.039)
Partner: Hours: GT 50 LE 60	0.059	0.071	0.065	0.083	0.116**	0.120*	0.124**	0.123*
	(0.057)	(0.068)	(0.058)	(0.068)	(0.058)	(0.069)	(0.060)	(0.070)
Partner: Hours: GT 60	-0.066	-0.072	-0.047	-0.061	0.109	0.113	0.090	0.129
	(0.085)	(0.104)	(0.088)	(0.105)	(0.094)	(0.116)	(0.097)	(0.117)
Partner: Underemployment (in hours)	-0.006	-0.005	-0.003	-0.003	-0.000	-0.003	0.005	-0.004
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
Partner: Overemployment (in hours)	-0.001	0.001	0.000	0.001	-0.001	0.000	0.002	0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Sargan-Hansen test (p-value)	—	—	0.07	0.18	—	—	0.21	0.67
Instruments	no	no	yes	yes	no	no	yes	yes
Individual effects	random	fixed	random	fixed	random	fixed	random	fixed

Note: All estimations include controls for socioeconomic background characteristics of the individual. All estimations control for occupation and branch of industry. Random effects estimations additionally control for the survey year. Standard errors in parentheses. Instruments are variables of the interview context and characteristics of the partner. First stage results are available upon request. The Sargan-Hansen test reports the p-value of a test of the null hypothesis that the instruments are valid. Sample sizes: Couples with children: $n = 2444$. $nT = 9611$. Couples no children: $n = 2618$. $nT = 9537$.
Significance level: *<0.1, **<0.05, ***<0.01.
Source: SOEP 1997-2009.

Table 6
Estimation results of model 3: males

	Panel A: with children				Panel B: no children			
Variable	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Partner: Life satisfaction	0.375***	0.274***	0.513***	0.161*	0.346***	0.263***	0.532***	0.201*
	(0.010)	(0.011)	(0.052)	(0.090)	(0.009)	(0.011)	(0.050)	(0.106)
Preferred working time	0.006**	0.006*	0.007***	0.006*	0.001	0.004	-0.000	0.004
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Underemployment (in hours)	-0.024***	-0.019***	-0.022***	-0.019***	-0.018***	-0.010*	-0.017***	-0.009*
	(0.005)	(0.005)	(0.005)	(0.006)	(0.004)	(0.005)	(0.004)	(0.005)
Overemployment (in hours)	-0.003	-0.001	-0.002	0.000	-0.007***	-0.002	-0.007***	-0.000
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Partner: Hours: GE 1 LE 15	-0.008	-0.023	-0.024	-0.029	0.008	0.052	0.023	0.059
	(0.038)	(0.047)	(0.038)	(0.047)	(0.060)	(0.082)	(0.062)	(0.082)
Partner: Hours: GT 30 LE 40	0.031	-0.023	0.024	-0.009	-0.028	-0.027	-0.014	-0.028
	(0.043)	(0.054)	(0.044)	(0.055)	(0.042)	(0.054)	(0.043)	(0.054)
Partner: Hours: GT 40	0.020	-0.046	0.040	-0.050	0.007	-0.016	0.032	-0.008
	(0.065)	(0.081)	(0.067)	(0.083)	(0.051)	(0.066)	(0.052)	(0.066)
Partner: Underemployment (in hours)	-0.004	-0.003	0.001	-0.003	-0.007*	-0.003	-0.004	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Partner: Overemployment (in hours)	-0.005*	-0.005	-0.003	-0.005	-0.001	-0.001	0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Sargan-Hansen test (p-value)	—	—	0.30	0.82	—	—	0.22	0.63
Instruments	no	no	yes	yes	no	no	yes	yes
Individual effects	random	fixed	random	fixed	random	fixed	random	fixed

Note: All estimations include controls for socioeconomic background characteristics of the individual. All estimations control for occupation and branch of industry. Random effects estimations additionally control for the survey year. Standard errors in parentheses. Instruments are variables of the interview context and characteristics of the partner. First stage results are available upon request. The Sargan-Hansen test reports the p-value of a test of the null hypothesis that the instruments are valid. Sample sizes: Couples with children: $n = 2444$. $nT = 9611$. Couples no children: $n = 2618$. $nT = 9537$.
Significance level: *<0.1, **<0.05, ***<0.01.
Source: SOEP 1997-2009.

A Appendix

Table A1
Summary statistics: females (with children)

Variable	Mean	Std. Dev.	Min.	Max.
Life satisfaction	7.282	1.507	0	10
Preferred working time	23.491	9.67	0	90
Overemployed	0.375	0.484	0	1
Underemployed	0.281	0.449	0	1
Overemployment (in hours)	2.593	5.473	0	55
Underemployment (in hours)	2.306	4.923	0	46
Log of hourly wage	2.439	0.509	0	5.125
Age	39.592	5.881	20	59
Age (squared)/100	16.021	4.682	4	34.81
Education in years	11.985	2.43	7	18
Vocational degree: none	0.175	0.38	0	1
Vocational degree: university	0.1	0.299	0	1
Citizenship: German	0.105	0.307	0	1
Disabled	0.022	0.147	0	1
Self employed	0.077	0.267	0	1
Number of children in HH	1.649	0.728	1	6
Occ.: Missing	0.029	0.168	0	1
Occ.: Managers	0.026	0.159	0	1
Occ.: Professionals	0.112	0.315	0	1
Occ.: Technicians	0.265	0.441	0	1
Occ.: Clerical support workers	0.173	0.379	0	1
Occ.: Service and sales workers	0.213	0.41	0	1
Occ.: Skilled agricultural workers	0.008	0.091	0	1
Occ.: Craft workers	0.029	0.167	0	1
Occ.: Operators and assemblers	0.033	0.178	0	1
Occ.: Elementary	0.111	0.315	0	1
NACE: Missing	0.045	0.207	0	1
NACE: Other	0.011	0.105	0	1
NACE: Agriculture and mining	0.027	0.163	0	1
NACE: Manufacturing	0.077	0.267	0	1
NACE: Electricity and gas supply	0.036	0.187	0	1
NACE: Water supply/construction	0.015	0.121	0	1
NACE: Trade, Retail	0.209	0.407	0	1
NACE: Information/finance	0.062	0.24	0	1
NACE: Administration activities	0.148	0.356	0	1
NACE: Education	0.285	0.451	0	1
NACE: Arts, entertainment	0.083	0.276	0	1

Source: SOEP 1997-2009.

Table A2
Summary statistics: males (with children)

Variable	Mean	Std. Dev.	Min.	Max.
Life satisfaction	7.202	1.51	0	10
Preferred working time	39.691	6.702	0	99
Overemployed	0.623	0.485	0	1
Underemployed	0.104	0.306	0	1
Overemployment (in hours)	5.297	7.174	0	55
Underemployment (in hours)	0.622	2.798	0	47
Log of hourly wage	2.809	0.41	0	5.850
Age	42.085	6.362	22	60
Age (squared)/100	18.116	5.442	4.84	36
Education in years	12.211	2.661	7	18
Vocational degree: none	0.11	0.312	0	1
Vocational degree: university	0.141	0.348	0	1
Citizenship: German	0.113	0.316	0	1
Disabled	0.045	0.207	0	1
Self employed	0.108	0.311	0	1
Number of children in HH	1.649	0.728	1	6
Occ.: Missing	0.015	0.12	0	1
Occ.: Managers	0.073	0.26	0	1
Occ.: Professionals	0.177	0.381	0	1
Occ.: Technicians	0.161	0.368	0	1
Occ.: Clerical support workers	0.068	0.251	0	1
Occ.: Service and sales workers	0.041	0.199	0	1
Occ.: Skilled agricultural workers	0.013	0.113	0	1
Occ.: Craft workers	0.265	0.441	0	1
Occ.: Operators and assemblers	0.127	0.333	0	1
Occ.: Elementary	0.058	0.233	0	1
NACE: Missing	0.028	0.166	0	1
NACE: Other	0.017	0.128	0	1
NACE: Agriculture and mining	0.032	0.176	0	1
NACE: Manufacturing	0.221	0.415	0	1
NACE: Electricity and gas supply	0.115	0.32	0	1
NACE: Water supply/construction	0.115	0.319	0	1
NACE: Trade, Retail	0.092	0.29	0	1
NACE: Information/finance	0.101	0.301	0	1
NACE: Administration activities	0.148	0.355	0	1
NACE: Education	0.077	0.267	0	1
NACE: Arts, entertainment	0.052	0.222	0	1

Source: SOEP 1997-2009.

Table A3
Summary statistics: females (no children)

Variable	Mean	Std. Dev.	Min.	Max.
Life satisfaction	7.33	1.572	0	10
Preferred working time	30.675	9.33	0	90
Overemployed	0.557	0.497	0	1
Underemployed	0.155	0.362	0	1
Overemployment (in hours)	4.381	6.401	0	50
Underemployment (in hours)	1.257	3.883	0	52.5
Log of hourly wage	2.508	0.419	0	4.979
Age	41.848	10.408	20	60
Age (squared)/100	18.596	8.436	4	36
Education in years	12.078	2.478	7	18
Vocational degree: none	0.161	0.368	0	1
Vocational degree: university	0.111	0.314	0	1
Citizenship: German	0.09	0.286	0	1
Disabled	0.051	0.22	0	1
Self employed	0.044	0.206	0	1
Occ.: Missing	0.026	0.16	0	1
Occ.: Managers	0.031	0.172	0	1
Occ.: Professionals	0.12	0.325	0	1
Occ.: Technicians	0.301	0.459	0	1
Occ.: Clerical support workers	0.193	0.395	0	1
Occ.: Service and sales workers	0.177	0.382	0	1
Occ.: Skilled agricultural workers	0.008	0.089	0	1
Occ.: Craft workers	0.03	0.172	0	1
Occ.: Operators and assemblers	0.032	0.176	0	1
Occ.: Elementary	0.081	0.273	0	1
NACE: Missing	0.038	0.192	0	1
NACE: Other	0.005	0.073	0	1
NACE: Agriculture and mining	0.031	0.173	0	1
NACE: Manufacturing	0.099	0.299	0	1
NACE: Electricity and gas supply	0.047	0.212	0	1
NACE: Water supply/construction	0.02	0.141	0	1
NACE: Trade, Retail	0.199	0.399	0	1
NACE: Information/finance	0.082	0.275	0	1
NACE: Administration activities	0.149	0.356	0	1
NACE: Education	0.257	0.437	0	1
NACE: Arts, entertainment	0.071	0.256	0	1

Source: SOEP 1997-2009.

Table A4
Summary statistics: males (no children)

Variable	Mean	Std. Dev.	Min.	Max.
Life satisfaction	7.282	1.523	0	10
Preferred working time	39.169	7.173	0	99
Overemployed	0.623	0.485	0	1
Underemployed	0.113	0.316	0	1
Overemployment (in hours)	5.413	7.228	0	70
Underemployment (in hours)	0.77	3.252	0	70
Log of hourly wage	2.774	0.424	0	5.122
Age	44.321	10.297	20	60
Age (squared)/100	20.704	8.82	4	36
Education in years	12.325	2.677	7	18
Vocational degree: none	0.111	0.314	0	1
Vocational degree: university	0.142	0.349	0	1
Citizenship: German	0.089	0.285	0	1
Disabled	0.089	0.285	0	1
Self employed	0.098	0.297	0	1
Occ.: Missing	0.026	0.159	0	1
Occ.: Managers	0.087	0.282	0	1
Occ.: Professionals	0.183	0.387	0	1
Occ.: Technicians	0.195	0.396	0	1
Occ.: Clerical support workers	0.076	0.265	0	1
Occ.: Service and sales workers	0.039	0.194	0	1
Occ.: Skilled agricultural workers	0.009	0.095	0	1
Occ.: Craft workers	0.216	0.411	0	1
Occ.: Operators and assemblers	0.116	0.32	0	1
Occ.: Elementary	0.045	0.207	0	1
NACE: Missing	0.038	0.192	0	1
NACE: Other	0.013	0.113	0	1
NACE: Agriculture and mining	0.035	0.184	0	1
NACE: Manufacturing	0.194	0.395	0	1
NACE: Electricity and gas supply	0.11	0.313	0	1
NACE: Water supply/construction	0.093	0.29	0	1
NACE: Trade, Retail	0.116	0.32	0	1
NACE: Information/finance	0.102	0.302	0	1
NACE: Administration activities	0.167	0.373	0	1
NACE: Education	0.078	0.269	0	1
NACE: Arts, entertainment	0.052	0.222	0	1

Source: SOEP 1997-2009.

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