

# ESSAYS ON THE ECONOMICS OF WELL-BEING

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## **Erklärung zu Co-Autorinnen und Co-Autoren**

Diese Dissertation umfasst neben einer Einleitung (Kapitel 1) vier Forschungspapiere (Kapitel 2, 3, 4 und 5). Die Kapitel 1, 3, und 5 sind allein verfasst worden. Kapitel 2 ist in Co-Autorenschaft mit Clemens Hetschko und Ronnie Schöb verfasst worden. Kapitel 4 ist in Co-Autorenschaft mit Maria Metzinger und Richard Lucas verfasst worden. Für die Dissertation sind alle Kapitel gegenüber den Vorveröffentlichungen leicht modifiziert worden. Diese Änderungen verantwortet allein der Autor der vorliegenden Dissertation. Die Übersicht der Vorveröffentlichungen findet sich auf Seite 154 dieser Arbeit.

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# **Chapter 1**

## **Introduction**

## **1.1 The economics of subjective well-being**

### *1.1.1 Measuring individual welfare*

Making individual welfare measurable has been part of economic thinking since the 19th century. For instance, utilitarians such as Francis Edgeworth aspired to integrate real-world measurements of individual utility using a ‘hedonimeter’, a psychological instrument that measures a constant stream of pleasure and displeasure over time (Colander 2007). The economic thinking of the 20<sup>th</sup> century, since the 1930s at the latest, has been strongly influenced by the Paretian turn, which propounded the delimitation of economics from such psychology-based empirical methods. According to this, conclusions concerning well-defined individual preferences could only be drawn on the basis of observable choices of individuals. Such preferences are expressed through utility functions within a rational choice framework (Bruni and Sugden 2007). Growing evidence on anomalies arising from this rationality assumption and the increasing availability of computational capacities and empirical data opened the door for modern behavioral economics in the second half of the 20<sup>th</sup> century. Since the 1990s, the economics of happiness has been emerging at an ever-accelerating pace in the literature as a field within behavioral economics concerned with the empirical measurement of human well-being (Clark 2018).

Current economic research is concerned with happiness for a variety of reasons. Normatively, happiness is described as the ultimate goal of life, at least since the emergence of liberal thinking during the Enlightenment. A famous expression for this normative approach is the US Constitution, which guarantees every person the right to the ‘pursuit of happiness’. In a narrower economic sense, the opportunities that arise from the insights of happiness economics for economic policy, on the one hand, and the interest in the drivers of human behavior as economic agents, on the other hand, are the positive reasons for working on happiness in economics (Frey and Stutzer 2002). In the late 20<sup>th</sup> century, most economists still defended a theory of unmeasurable, ordinal utility functions. Empirical happiness research was seen as either compatible or conflicting with neoclassical theory (Weimann, Knabe, and Schöb 2015, Appendix). Meanwhile, in the last 40 years, the empirical happiness economics literature has grown dramatically. The expansion has been so immense that today the question arises as to whether the marginal returns from further well-being research might be too small for further research agendas (Frey 2020). This thesis argues that economic research on subjective well-being is still a fertile research branch. Empirical evidence is neither so clear nor so

comprehensive that economic theory has extensively incorporated the insights of happiness research. The economics of subjective well-being offers, within the framework of behavioral economics, the considerable opportunity to understand economic behavior in a new way - thereby offering the possibility of falsifying prevailing theories and developing empirically based new theories of economic behavior. The utilitarian Edgeworth would have been happy to hear that measurement of individual welfare is currently moving to the core of economic research.

### *1.1.2 Subjective well-being in economics*

Economic happiness research is concerned with the causes, consequences, and policy implications of subjective well-being (SWB) for economic reasoning (Weimann, Knabe, and Schöb 2015, Clark 2018, Graham, Laffan, and Pinto 2018). A variety of measures represent individual welfare, with the best-known for economists being individual income, as it allows for more consumption. While the role of individual income and the aggregated incomes of GDP should be to represent individual and social progress, it is currently widely accepted that subjective well-being complements these classic measures (Stiglitz, Sen, and Fitoussi 2009, Weimann, Knabe, and Schöb 2015). Although the two dimensions are not a conclusive set of variables for a social welfare function, income and SWB are, arguably, by far the two most commonly used measures of individual progress in economics. These two welfare factors are by no means conclusive in relation to individual and social welfare. The methodological debate on whether and under which assumptions SWB can measure individual welfare continues (e.g., Benjamin et al., 2021). However, this thesis takes a pragmatic approach and follows assessments, such as that of Clark (2018), that emphasize the enormous insights for economics through SWB research without disregarding the methodological utility debate.

Measures of SWB can be broadly classified into two types. On the one hand, there are the hedonic or experiential well-being measures and, on the other, there are the evaluative measures of well-being (Frijters 2021). Furthermore, eudaimonic well-being is increasingly counted as an additional dimension (Graham, Laffan, and Pinto 2018). Hedonic well-being provides a momentary measurement of pleasant or unpleasant experiences. In the psychological literature, it is called affective well-being as it captures momentary emotional states. In economic research, it was introduced by Kahneman, Wakker, and Sarin (1997) under the name experienced utility. A prominent survey method is the Day Reconstruction Method (DRM), which asks respondents to keep time-use diaries of the previous day and subsequently asks them

to assign one or more self-reports on emotional experiences to the episodes reported (Kahneman et al. 2004a, 2004b, Diener and Tay 2014). Closer to the ideal of instantaneous measurements comes the experience sampling method (ESM), which uses electronic devices such as smartphones to assess experiences of pleasure, pain, or happiness very close to the actual occurrence. The counterpart is evaluative well-being as a judgment about one's life. It primarily asks for a reflection on one's own life as a whole. Hence, it is an assessment that is made cognitively and includes as many aspects as possible. Probably the most common evaluative well-being question thus asks, “*All things considered, how satisfied are you with your life as a whole?*” and respondents answer on an 11-point Likert scale from 0 (lowest satisfaction) to 10 (highest satisfaction). Sometimes, life domains such as job or financial satisfaction are also surveyed in the same way. Hedonic and evaluative well-being are both fundamentally different measures, but they show a weak positive correlation with each other (OECD 2013). Frijters (2021) discusses the various survey methods for evaluative and hedonic well-being in more detail. Further, eudaimonic well-being is increasingly entering economic reasoning (e.g., Nikolova and Graham 2020). Such measures ask about sensations of purpose and meaningfulness. In principle, however, eudaimonic well-being can be measured both hedonically and evaluatively.

## **1.2 Subjective well-being on the labor market**

### *1.2.1 Related literature on non-monetary labor economics*

The breakthrough in economic well-being research is closely linked to the attempt to falsify a central assumption of the neoclassical labor supply model. According to the model, a utility-maximizing agent (i.e., a worker) takes up a job if the tradeoff between sacrificing non-monetary leisure returns less marginal utility than the monetary earnings from the worker-specific wage rate of a job offer. Under the standard assumptions of the firm's labor demand, which state that the wage rate should equal the worker's marginal productivity, this model yields a group of voluntarily unemployed workers since their reservation wage is too high to accept a job offer. Empirical well-being research has compiled extensive evidence that having a job yields much more for workers than just earning a reasonable wage rate that compensates for foregone leisure. Taking SWB as an indicator of what matters for workers offers a wealth of evidence suggesting that the non-monetary aspects of the employment status are noticeably more important than a simple labor supply model suggests.

One central finding of economic well-being research is that the life satisfaction of the unemployed is lower than that of employed workers. Initially found in the UK and Germany (Clark and Oswald 1994, Gerlach and Stephan 1996, Winkelmann and Winkelmann 1998), this evidence has now been reported from sources encompassing large parts of the developed world (for a review, see Suppa 2021). Furthermore, this negative association between the employment status ‘unemployment’ and life satisfaction is not merely a statistical correlation but, at least by quasi-experimental standards, a causal relationship. The unemployed are not only less satisfied than employed workers, but they are also dissatisfied due to losing their jobs (Kassenboehmer and Haisken-DeNew 2009a). Moreover, such dissatisfied unemployed do not become accustomed to being unemployed. Adaptation in terms of life satisfaction over time does not fully occur, and unemployment scares workers even after reemployment (Clark et al. 2008, Knabe and Rätzel 2011a). Since life satisfaction declines due to the lost wage, a simple explanation would be that reduced consumption possibilities arising from the decrease in individual income cause this dissatisfaction. Although welfare states prevent income dropping below a specific benefit level, unemployment is still accompanied by reduced consumption possibilities, leading to reduced utility in the standard model. Hence, it is crucial to stress that the loss of life satisfaction goes beyond the reduction induced by income loss. A compensating differential, the hypothetical amount needed to keep the life satisfaction of a newly unemployed person stable on the pre-unemployment level, finds that a hypothetical compensating income needs to be increased by at least 50 percent of the pre-unemployment level to keep life satisfaction stable. Most papers find compensating variations that even exceed 100 per cent of previous earnings (Frijters, Haisken-DeNew, and Shields 2004, Knabe and Rätzel 2011b, Frijters, Johnston, and Shields 2011, Hetschko 2016). In other words, doubling the income of the unemployed would be needed to compensate them for the decline in life satisfaction resulting from the job loss. Losing a job is much more than losing labor income and gaining leisure time. Having a job has latent benefits for workers that substantially exceed the predicted non-monetary losses of more available leisure time. Subjective well-being research on the labor market allows an examination of what these latent benefits (and costs) of employment status are.

The study of the latent benefits of employment dates back to the seminal Marienthal study that observed the unemployed in the Austrian village of Marienthal after a factory closure (Jahoda, Lazarsfeld, and Zeisel 1933). The empirical examination of the consequences of involuntary unemployment led to the conclusion that work has non-monetary benefits taken



away from the unemployed with their jobs. Jahoda concretized these benefits, with work structuring daily time use, providing contacts outside one's household, and leading to workers generally becoming more active. In addition, employment helps fulfill life goals and allows the production of social status or social identity (Jahoda 1981, 1982). The two latter benefits of work, in particular, are 'social benefits' originating in social science and social psychology. These concepts became accessible for economic theory by relaxing the atomistic homo economicus assumptions of an individualistic utility maximizer and stressing the need to incorporate social preferences. By coincidence, with the demise of 'real-existing socialism', economists increasingly tried to incorporate such social dimensions into rational choice models. In particular, the seminal work of Jon Elster (e.g., 1989) has to be mentioned. He helped end the 'cold war' between 'social' sociology and 'individualistic' economics. He incorporated social norms into individualistic rational choice models, thus allowing socially motivated behavior to be represented in rational choice models. Currently, the most widely used 'social' economic model of human behavior is the identity utility model of Akerlof and Kranton (2000). The theoretical idea of this model is the conceptual foundation of this thesis.

The identity utility model is an extension of the individualistic leisure vs. wage model. Akerlof and Kranton (2000) incorporate social situations so that the model allows to explain an indirect utility function. Hence, besides the individualistic part, the underlying utility function has an augmented identity utility part. Rational utility maximization of individualistic preferences is not discarded, but the social self-concept – the social identity – complements choice. Hence, the identity part of the utility function is also a source of (dis) utility. In the terminology of Akerlof and Kranton (2000), workers are always part of many social categories that vary in relevance depending on the situation. A social category is the social self-concept of a person. For instance, a worker's category might be a 'manager' or a 'blue-collar worker', or, in addition, that of a 'female' or a 'black' person. Each social category comes along with a set of prescribed behaviors. Such behaviors or norms prescribe how a person in a specific social category *should* behave. Identity utility is obtained from conforming with such norms, and departing from the norms induces disutility (Akerlof and Kranton 2005). Such an identity-augmented utility function offers a suitable framework to analyze the non-monetary costs and benefits of labor market states. Schöb (2013), for example, describes unemployment and its consequences for life satisfaction with workers deviating from the prevailing norm of the 'working-age' category. Different empirical approaches allow such identity utility effects to be identified. Indirect approaches exploit (geographical) variations in the norm intensity. It is

shown that deviations from the norm are more harmful for SWB where compliance with the norm is high. For instance, unemployment hurts life satisfaction most where the unemployment rate is low (Clark, Knabe, and Rätzl 2010, Chadi 2014). Exogenous changes of the social category also change the prevailing norms. For example, retirement is a relief for ‘working-age’ unemployed as they no longer violate the norm that they should work since such a prescription does not exist for retirees (Hetschko, Knabe, and Schöb 2014). The combination of different SWB measures is a further approach. Hetschko, Knabe, and Schöb (2021), for instance, argue that different latent benefits of work are reflected differently in hedonic vs. evaluative well-being. Whereas evaluative well-being captures norm compliance and aim fulfillment, other latent benefits such as structured day or increased activities are reflected in hedonic well-being. Hence, the status of being unemployed might harm evaluative life satisfaction while it does not actually alter daily hedonic experiences (Knabe et al. 2010).

### *1.2.2 Advances in the economics of subjective well-being on the labor market*

The analysis of the non-monetary consequences of employment status is one of the three research foci of this thesis. The life satisfaction differences between unemployed and employed workers are the starting point for examining non-monetary factors shaping the SWB of workers. Chapters 2 and 3 extend the distinction between unemployed and employed persons by a further labor market status: workers receiving in-work welfare benefits. In terms of the life satisfaction level, such in-work benefit workers range at the intermediate position between regularly employed and unemployed workers. Since the welfare reform of 2005, the German welfare system has included an income support scheme to supplement own earnings with welfare benefits. This means-tested supplementary unemployment benefit II (UB II) scheme entitles low-income worker to receive welfare while working (for institutional details, see Chapter 2, Section 2.4). Empirical estimates of the consequences of the employment status as ‘in-work benefit worker’ or active labor market policy measures on SWB have been ambiguous so far. In general, most studies do not differentiate between the monetary and non-monetary effects of specific programs or general welfare schemes. Consequently, they find that the well-being effects of program participation are positive (Ifcher 2011, Hoynes and Patel 2018, Brewer and Hoynes 2019). As program participation is combined with monetary improvements for the low-wage workers, it remains unclear if there are also negative non-monetary countervailing effects. However, early observational evidence suggests that non-monetary factors worsen SWB given the amount of the monetary benefit. For example, overcoming unemployment by using specific

measures increases SWB compared to inactive unemployment (Korpi 1997, Knabe, Schöb, and Weimann 2017). Similarly, such workfare employment might not have the same latent benefits as regular employment. For instance, income from such programs may not be as satisfying as income earned entirely on the primary labor market (Krug 2009). Turning to the general welfare system, Chadi (2012) presents evidence that workers with supplementary in-work transfers are less satisfied with life than regularly employed workers. Following the definition of Elster (1989) and Stutzer and Lalive (2004), he attributes this to the existence of a social norm that obliges persons of the social category ‘working age’ *to make their living with these earnings* without financial support from the government. Chapter 2 of this thesis exploits this two-tier norm ‘*to work*’ and ‘*to be independent of public funds*’ for a quasi-experimental study on labor market transitions. Since unemployed workers who become reemployed with in-work benefits gain and subsidized workers who become unemployed lose, they conform solely to the first tier’s prescription ‘*to work*’. In contrast, in-work benefit workers who become regularly employed start conforming to the second tier ‘*independent of public funds*’. The deviation from the second-tier norm is also known as welfare stigma, which is defined as psychological costs that arise from being dependent on welfare benefits. It originates either from social sanctioning and resentment on the part of the taxpayers who finance the welfare programs or from the deviation from one’s own social categories that prescribe that one should not be dependent on public funds. Both impact negatively on individual well-being (Besley and Coate 1992, Stuber and Schlesinger 2006). Furthermore, Chapter 5 is concerned with the income of others, so-called comparison income. In contrast to social identity, it is social in the sense of an external effect from others’ income (Clark, Frijters, and Shields 2008). The potential of negative status effects, positive information effects, and local amenities, for example, as impact channels of such a ‘relative income’ are discussed. However, there are still questions concerning the effect the empirical method has on the discussed channels (Brown, Gray, and Roberts 2015). Thus, it might also depend on individual labor market status, which this thesis focuses on. Labor market transitions between the social categories ‘working age’ and ‘retirement’ are exploited to examine social comparison and its effects on SWB.

The second focus of this thesis is the effects of employment status on the different dimensions of SWB. The seminal paper of Knabe et al. (2010) shows that the evaluative life satisfaction and hedonic well-being of the unemployed are not congruent. The title stating “dissatisfied with life, but having a good day” reports the main finding: whereas life satisfaction of the unemployed is lower than that of the employed, there are no significant differences in

hedonic SWB measures between the employed and the unemployed. However, this weak reactivity of hedonic well-being does not indicate the inalterability of the hedonic measures. Instead, the authors demonstrate that the change in time use due to unemployment, the ‘time composition effect’ (no work episodes anymore, more leisure, more home production, more sleep), is accompanied by a substitution effect – the ‘saddening effect’. It weakens the positive experience of relatively pleasant and prolonged leisure activities. Although work-related episodes (e.g., commuting to work), which are perceived as rather unpleasant times, end, the same amount of time spent on pleasant activities such as watching TV and reading does not create the same valuable positive hedonic experience. These findings have initiated a series of subsequent papers addressing the question of the hedonic well-being of the unemployed (see, for instance, Krueger and Mueller 2012, von Scheve, Esche, and Schupp 2017, An Hoang and Knabe 2020). Chapter 4 of this thesis extends this literature by studying a representative dataset for Germany with a time-weighted hedonic SWB measure that also examines hedonic experiences of the unemployed. The finding that “being employed” increases life satisfaction relative to being unemployed but leaves hedonic well-being unchanged leads to the question of what makes working episodes pleasant or unpleasant hedonic experiences. For instance, experiences of workfare episodes as compared to being unemployed or in volunteer work improve hedonic experiences (Gimenez-Nadal and Molina 2015, Knabe, Schöb, and Weimann 2017). Generalizable empirical statements about the experiences during regular work are rare. Although the hedonic value of work differs depending on when, with whom, and which specific tasks are performed at work, the average employee experiences working as an activity with the least hedonic pleasure (Bryson and MacKerron 2017, Wolf, Metzger, and Lucas 2019, Hoang and Knabe 2020). This finding fuels the assumption that, in addition to income, non-monetary factors motivate the workers at work. The experience of meaningfulness and purpose is such a factor. Current studies suggest there is a crucial determinant for work motivation beyond income (Cassar and Meier 2018, Nikolova and Cnossen 2020). Given one’s own income, raising the comparison income is another candidate that might harm hedonic experiences, for instance, by causing envy or stress (Deaton and Stone 2013, Ifcher, Zarghamee, and Graham 2018). Therefore, in Chapter 5, this thesis also considers the relationship between comparison income and hedonic well-being.

The third research focus is the behavioral consequences of SWB on the labor market. Subjective well-being is not only a key outcome for workers; it also influences labor market behavior. For instance, there is evidence of a causal relationship between subjective well-being

and labor productivity. Quasi-experimental and experimental tests with exogenous variations of SWB reveal that productivity is positively affected by well-being (Oswald, Proto, and Sgroi 2015). The same holds for labor market transitions: they are not only a cause but also a consequence of SWB. SWB helps explain labor market behavior such as job changes as it allows non-monetary social identity and other non-monetary factors to enter into labor market estimations. Hence, SWB serves as an additional explanatory factor for job search and labor market status change. Given the individual earnings and other confounding factors, job quitting is induced by low job satisfaction (Freeman 1978, Clark 2001). For unemployed workers, the search intensity for a new job depends on how severe the drop in life satisfaction due to unemployment was (Clark 2003, Mavridis 2015). Despite the increased search effort due to the decline in satisfaction, the other subsequent labor market outcomes in the process of intended reemployment do not show such an association between life satisfaction and finding a job. The relatively dissatisfied unemployed do not have more job interviews, nor do they remain unemployed for shorter periods (Gielen and van Ours 2014, Krug, Drasch, and Jungbauer-Gans 2019). Instead, reemployment probability is hump-shaped in association with SWB. A mid-level SWB level maximizes the reemployment probability. Furthermore, this association is highly differentiated by subgroups such as gender and personality traits (Krause 2013, Rose and Stavrova 2019). Chapter 3 of this thesis also contributes to the examination of this relationship. It examines the relationship between life satisfaction and job search probability, on the one hand, and life satisfaction and time spent in in-work benefit employment episodes, on the other.

### **1.3 Contribution and main findings**

#### *1.3.1 Chapter 2: Income Support, Employment Transitions and Well-Being*

Chapter 2 examines the non-monetary life satisfaction effects of in-work benefits. It analyzes the transitions of workers between unemployment, regular employment, and employment accompanied by welfare receipt. We assume that non-compliance with the norm of making one's living is detrimental to subjective well-being.

The working hypothesis is that *ceteris paribus*, there are non-monetary advantages from having a job. Those latent benefits are reflected positively in the life satisfaction of in-work benefit workers compared to unemployed workers. However, these latent advantages are insufficient to reach, *ceteris paribus*, the level of life satisfaction of regular employees. In

particular, the deviation from a social norm stating that workers should earn their living independently from public transfers (“non-dependency norm”) might cause such an impairment of life satisfaction.

Using data from the German Labor Market and Social Security panel study (PASS) of the survey waves 2006/2007 – 2018, we examine each transition between unemployment and in-work benefit employment and between in-work benefit employment and regular employment in four difference-in-differences models separately. Each estimation comes with an entropy balancing matching approach to account for observed and unobserved heterogeneity that might confound life satisfaction during the labor market transitions.

The results show that beyond the monetary improvements that come along with transitions from unemployment to employment with public transfers, life satisfaction is also positively affected by non-monetary benefits from having a job. However, such subsidized employment does not fully remove the loss of well-being caused by unemployment as it is also associated with welfare dependency. Being employed but having to rely on income support leaves people dependent on public transfers and thus does not allow them to adhere to the non-dependency norm.

### *1.3.2 Chapter 3: Welfare While Working*

Chapter 3 investigates how life satisfaction affects both the job search and durations of in-work welfare benefit episodes. In this chapter, life satisfaction is the cause, not the consequence of behavior. The analysis focuses exclusively on the behavior of workers receiving in-work welfare benefits. As the life satisfaction of in-work benefit workers is *ceteris paribus* affected by welfare dependency (see Chapter 2), life satisfaction permits such a non-pecuniary welfare stigma to be incorporated into the labor market analysis.

We use PASS panel data linked with administrative data from the integrated employment biographies (PASS–ADIAB). The chapter examines whether and how life satisfaction affects on-the-job search and the time during which employees receive in-work benefits. The first hypothesis states that lower life satisfaction increases the probability of job search. In fact, a negative correlation is found only for marginally employed in-work benefit workers. No evidence for behavioral consequences of life satisfaction yields the second hypothesis that the duration of in-work benefits is negatively associated with life satisfaction. We conclude that non-monetary factors such as welfare stigma are present. However, the impact of life

satisfaction depends on the institutional regime the employees work in, and it is also subject to great heterogeneity.

### *1.3.3 Chapter 4: Experienced Well-Being and Labor Market Status*

Chapter 4 examines the experienced well-being of the employed and unemployed. Evaluative well-being, such as life satisfaction, is negatively affected by unemployment due to the loss of non-monetary advantages from the job. This chapter asks whether daily hedonic experiences affect SWB in the same way.

We use a survey-adapted and representative German DRM panel (SOEP-IS) 2012 – 2015 to aggregate the momentary flow of pleasant and unpleasant hedonic experiences on the previous day into one measure of experienced well-being – the ‘P-index’. Thereby, we compare the hedonic experiences of unemployed and employed persons with panel data methods and analyze further which differences result from the diverging time use of both employment statuses. We answer the question under which conditions respondents rate the hedonic experience at work as ‘rather pleasant’. In particular, we shed light on whether a meaningful experience at work contributes to a pleasant experience.

We find that unemployed workers have lower evaluative well-being, whereas the average hedonic well-being of employed and unemployed is similar. This chapter shows that working episodes are among the least pleasant hedonic experiences on an employed person’s day. Irrespective of the employment status, working reduces the hedonic well-being. Evidence in this chapter suggests that at least some workers strive to make working a more pleasurable experience - or generate more job satisfaction - from meaningful experiences at work.

### *1.3.4 Chapter 5: Comparison Income and Multidimensional Well-being*

Chapter 5 examines how employment status and comparison income both affect subjective well-being given the individual income. Theoretical considerations such as the relative income hypothesis, information or tunnel effects, or neighborhood externalities leave open if such ‘social’ other-regarding preferences affect SWB in total in a positive or negative manner. The chapter methodologically considers whether employment status and the choice of a hedonic or evaluative SWB measure explains the other's income to well-being association.

Previous chapters consider non-monetary social norms and social identity in relation to SWB. This chapter broadens the analysis in two perspectives. Comparison income is defined as income of relevant others. In this study, it is generated in panel data from the German Ageing Survey (DEAS) 1996 – 2017. The chapter examines the association of hedonic and evaluative

well-being regarding a change of the comparison income over time by an individual fixed-effects model. The findings show that the association between hedonic and evaluative well-being and comparison income are relatively similar, whereas accounting for employment status is central to the direction of the association of SWB and comparison income.



## **Chapter 2**

# **Income support, employment transitions and well-being**

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## **Chapter 3**

**Welfare while working: How does the life satisfaction approach help to explain job search behavior?**

### 3.1 Introduction

This paper examines the job search behavior and success of employees receiving supplementary welfare benefits. In-work benefit programs allow employed workers to combine labor income and transfers when falling below a certain income level. In general, such programs constitute a monetary incentive to extend labor supply: workers are financially better off than unemployed welfare claimants. Besides the monetary incentive structure, non-monetary factors may also shape the behavior of in-work workers. Welfare stigma – the psychological costs of being dependent on welfare – is such a broadly discussed factor. It makes entitled workers restrain themselves from applying for welfare benefits (Moffitt 1983, Besley and Coate 1992). While the monetary incentive structure is legally defined, and income is observable, welfare stigma is not directly observable. Hence, empirical identification relies on indirect proxies or simulations such as non-take-up rates of welfare-entitled workers (Riphahn 2001) and information treatments in the field (Bhargava and Manoli 2015) or from the lab (Friedrichsen, König, and Schmacker 2018). This paper provides another way of assessing the behavioral consequences of non-monetary factors for labor market behavior. The economics of well-being literature examines hard-to-observe or non-monetary factors by using subjective well-being (SWB) as a predictor of behavior (Clark 2016). We apply this approach to both the on-the-job search of in-work benefit recipients and leaving the welfare program. We examine the German case of in-work benefit recipients of Arbeitslosengeld II ('unemployment benefits II,' henceforth 'UB II').

Three features position this paper in the literature. (1.) The choice of *life satisfaction* as a measure to explain the behavior of *the employed*. Previous papers on labor market behavior broadly speaking split into studies on employed workers with the domain of job satisfaction as a predictor of behavior, and those on unemployed workers with life satisfaction as a predictor for job search. This paper, in contrast, uses life satisfaction to explain the behavior of employed workers. Life satisfaction correlates negatively with welfare stigma (Krug, Drasch, and Jungbauer-Gans 2019, Hetschko, Schöb, and Wolf 2020), whereas such evidence is missing for job satisfaction. Hence, life satisfaction enables us to take hard-to-observe factors outside the job domain into account.

(2.) The choice of the target group of workers receiving in-work welfare benefits bridges the gap between two stands of literature on the behavioral consequences of SWB on labor markets. Studies on unemployed workers show diverging findings regarding the SWB effect on the job search and finding a job. While searching is negatively associated with life satisfaction, the results for finding a job remain ambiguous (Gielen and van Ours 2014,

Mavridis 2015, Rose and Stavrova 2019). Studies on employed workers focus on job satisfaction as a proxy for job characteristics that explain job mobility (Freeman 1978, Clark 2001). Labor market institutions, the regulatory setting, or welfare stigma are rarely considered in both literature strands. As job search and labor mobility also take place among employed workers, the life satisfaction approach, known from studies on unemployed workers, is applied to employed UB II workers to examine the behavioral consequences of hard-to-observe stigma effects, excluding other non-pecuniary effects of unemployment on life satisfaction.

(3.) The behavioral outcomes we examine are the *on-the-job search* of UB II workers and the *duration until they leave welfare*. Job search is an expression of the intention to leave the current job. Job search is costly, as the well-being experienced during the job search is unpleasant – it is one of the least pleasurable activities (Knabe et al. 2010, Wolf, Metzging, and Lucas 2019, Hoang and Knabe 2020). Job search is the first step of a process that might end in job mobility (Böckerman and Ilmakunnas 2009). Consequently, the second outcome we use is the duration of the actual change from UB II status to regular employment without in-work benefits. In doing so, we examine if life satisfaction affects the aim of the welfare program UB II: overcoming welfare dependency (German Social Code II, §1).

This research agenda demands detailed information on labor market behavior, individual characteristics and biographies, and repeated information on life satisfaction. Such a demanding set of information is available and increasingly used by linking administrative and survey data (Böckerman and Ilmakunnas 2012, Böckerman et al. 2013). Therefore, we utilize PASS-ADIAB. It consists of an individual and household panel survey linked to administrative data from the German social security system and annual establishment data (Antoni and Bethmann 2019). The richness of the dataset makes it possible to extract the employment status from administrative records, and to obtain annual life satisfaction information, job search status from the survey as well as information on the respective firms of the UB II worker. The exact location of the establishment is linked and allows us to address local labor market and demand-side factors. As a methodological approach, we choose a panel analysis model with individual fixed effects to explain the job search (outcome 1) and a Cox proportional hazard model to estimate the duration until the actual UB II exit (outcome 2).

We find evidence that life satisfaction is *ceteris paribus*, a relevant predictor for the labor market behavior of in-work benefit recipients. Lower life satisfaction is associated with an increased likelihood of starting on-the-job search among UB II workers that go beyond the incentive arising from income. However, this finding holds for a sub-population of marginally

employed UB II workers. The duration until successfully leaving UB II is hardly affected by the life satisfaction level.

The rest of the paper is structured as follows. Section 3.2 describes the conceptual framework and related literature. Section 3.3 explains the institutional background of UB II, followed by Section 3.4, which introduces the PASS-ADIAB dataset. Section 3.5 explains the empirical estimation strategy. Section 3.6 summarizes descriptive statistics (3.6.1), the results for the on-the-job search (3.6.2, outcome 1), and the duration analysis of successfully leaving UB II (3.6.3, outcome 2). Section 3.7 discusses the findings, and Section 3.8 concludes.

### **3.2 Subjective well-being and labor market behavior of working welfare recipients**

We describe the labor market behavior of UB II workers under the assumption that an intrinsic cost-benefit analysis drives their decision to act. Workers compare the benefits and costs of their employment status with the expected outside costs and benefits of a different labor market status. If the benefit-cost ratio of the outside status outweighs that of the current position, the workers act, e.g., start to search for a better job. Such an approach builds on the idea of a general on-the-job search framework that describes labor turnover if the utility from the current job is outweighed by the expected returns from outside job offers (Burdett 1978, Pissarides and Wadsworth 1994). We describe this relationship with a modified version of the Green (2010) turnover function. An *action* to change employment status – such as job search – is carried out if the inequation (1) holds.

$$u^* - u - c > 0 \tag{1}$$

The decision to act depends on the relation between the expected utility of outside costs and benefits aggregated in  $u^*$  and the current utility of costs and benefits of the current employment status in  $u$ . Searching for a job also has transaction costs (or benefits) that are expressed with  $c$ . If the outside state  $u^*$  offers more utility than the current state  $u$  together with the transaction costs  $c$ , the worker acts in order to obtain the other labor market state. Hence, observing that an in-work benefit worker remains without any search efforts in welfare dependency might be due to his perception of an in-work benefit job having a sufficiently high amount of benefits, or due to the perception of rather sobering outside opportunities or due to individually prohibitively high search costs. Any outside status is only feasible if the search is not too costly. All three variables are subject to monetary and non-monetary attributes. This paper distinguishes between such monetary and non-monetary factors that shape  $u$  while holding the outside

options  $u^*$  and transaction costs  $c$  constant in order to explain job search and the welfare duration of working welfare recipients.

SWB makes it possible to distinguish between monetary and non-monetary attributes of labor market status (Schöb 2013). This distinction is needed to examine the extent to which life satisfaction is affected by the non-monetary aspects of an in-work benefit program. In general, the differentiation between monetary and non-monetary effects of such programs on SWB is rarely studied (Gregg, Harkness, and Smith 2009, Boyd-Swan et al. 2016). An exception is Hetschko, Schöb, and Wolf (2020), who differentiate between income and life satisfaction effects of welfare dependency on employees. The authors find that UB II workers have reduced life satisfaction due to their welfare compared to workers with the same income but without in-work welfare. The (non-monetary) deviation from the non-dependency norm (“one should make one’s own living”) is described as a cause for the *ceteris paribus* reduced life satisfaction. They present evidence that UB II workers who put a high weight on such a work norm experience a severe reduction in life satisfaction due to welfare dependency. Using self-reported stigma consciousness points in the same direction: the higher the stigma consciousness, the lower the life satisfaction given the income of the welfare recipients (Krug, Drasch, and Jungbauer-Gans 2019). The evidence in this respect suggests that life satisfaction proxies the non-monetary welfare stigma of being an in-work benefit worker.

In addition to welfare stigma, there are other non-monetary costs and benefits that shape  $u$ , and, hence, labor market switches. Taking a process perspective, the initial step to switch status is the expression of the intention-to-quit succeeded by actual job search attempts (Böckerman and Ilmakunnas 2009). Observed individual life satisfaction changes, foremost due to job losses, are used for the distinction between income loss and the loss of non-monetary benefits of a job. It is not that jobs are merely costly in terms of foregone leisure, however; they also offer substantial non-monetary benefits. For instance, in terms of identity (Hetschko, Knabe, and Schöb 2014), meaning (Cassar and Meier 2018) or individual autonomy (Kaplan and Schulhofer-Wohl 2018). Unemployment deprives workers of the non-monetary benefits of a job that is reflected in life satisfaction. As a behavioral consequence, unemployed with a more severe drop in life satisfaction search more frequently and more intensively for a new job (see Clark 2003, Mavridis 2015). Following this idea, we hypothesize for UB II workers that the likelihood of a job search is negatively associated with life satisfaction given the income level of the workers.

Examining the literature on re-employment reveals a less clear picture of the role of life satisfaction for the next step in the turnover process – the actual status change. Whereas Clark (2003) and Mavridis (2015) also find that lower life satisfaction due to unemployment leads to shorter unemployment durations and a higher likelihood of re-employment. Gielen and van Ours (2014) also find the above-mentioned increased job search effort due to reduced life satisfaction, but no correlation with actual unemployment duration. Self-reported stigma consciousness also affects search effort; however, this intensified effort does not result in more job interviews, nor does it increase the likelihood of leaving unemployment (Krug, Drasch, and Jungbauer-Gans 2019). A further strand of literature finds a rather non-linear association between SWB and re-employment (Krause 2013, Rose and Stavrova 2019). These papers find a hump-shaped association between SWB and unemployment duration and re-employment likelihood. Consequently, a moderate well-being level maximizes the likelihood of re-employment. The reasons for the discrepancy of the empirical results regarding search efforts and duration of unemployment and re-employment are manifold. For instance, re-employment and short unemployment periods require labor demand that matches the search efforts of the unemployed. Nevertheless, the demand side is hard to track and therefore might account for the unsuccessful search on the part of the unemployed (Gielen and van Ours 2014). Some reported findings are also driven by or hold only for specific subgroups, such as men (Mavridis 2015), or relate to specific types of re-employment, such as self-employment (Krause 2013). Further, not all studies account for time-stable individual traits, whereas personality traits are identified as relevant for searching and finding a job. Hence, unobserved stable traits might bias well-being effects on behavioral outcomes or may cause diverging findings regarding job searching and re-employment (Krause 2013, Rose and Stavrova 2019).

To estimate the role of life satisfaction in the duration until successfully leaving in-work benefits for a regular job, we also need evidence on the role of non-monetary job characteristics for employees. Simulations show that the importance of non-monetary job attributes is even more crucial for utility than monetary incentives (Sullivan and To 2014). The empirical literature examines non-monetary job attributes among employees foremost with job satisfaction to predict job quitting and job turnover. Early studies already suggest that lower job satisfaction is associated with a higher propensity to quit (Freeman 1978). More recent studies confirm this: *ceteris paribus*, job satisfaction is a significant negative predictor for job quitting and labor mobility (see, for instance, Clark, Georgellis, and Sanfey 1998, Clark 2001, Lévy-Garboua, Montmarquette, and Simonnet 2007). This finding holds specifically beyond income.

Structural, multi-equation models also use job satisfaction to account for hard-to-observe non-pecuniary aspects of a job, such as good relations to colleagues or advancement opportunities (Böckerman and Ilmakunnas 2009, Cornelißen 2009). Furthermore, comparable case studies on discrimination in specific occupations yield that job satisfaction, like life satisfaction, affects the likelihood of on-the-job search and quitting negatively. For instance, British ethnic minority nurses (Shields and Wheatley Price 2002) and racially discriminated US military personnel (Antecol and Cobb-Clark 2009) have a higher likelihood not to stay in their job due to reduced job satisfaction from discrimination. As we take general overall life satisfaction as a proxy for non-monetary factors, we assume that life satisfaction incorporates the effect of such non-monetary job attributes, too. Welfare stigma and non-monetary job attributes together affect life satisfaction. All things equal, we hypothesize that UB II workers with a reduced life satisfaction leave welfare faster to obtain a labor market status with the beneficial outside  $u^*$ .

### **3.3 Institutional setting: welfare while working**

The UB II in-work benefit program is part of the general German welfare system, which guarantees a socio-economic minimum income through welfare transfers. Hence, UB II is means-tested and it is granted to needy households. The neediness threshold of a household depends on the number of adults and children living in this household, the total household income, and the savings of the household.<sup>15</sup> Consequently, UB II is granted to applying households irrespective of the reasons for its low income level. Unemployment of one or more adults, low earnings, or a high number of dependent children substantially increases the risks for UB II. However, UB II workers have a job. They live in households receiving UB II while having earnings from a job or self-employment. UB II workers “combine” earnings with welfare transfers. The self-earned income is not fully deducted from the welfare amount and, hence, they have a monetary incentive to work. The deduction plan of UB II defines the monetary incentives the UB II workers face and is the central part of the reform debate on UB II (Knabe 2005, Schöb 2020). Currently, UB II workers have an individual monthly allowance of 100 euros without deductions of the welfare amount. For a single adult household, the welfare deduction rate of each euro earned above 100 euros is 80 percent up to monthly earnings of 1,000 euros. For higher earnings, the deduction rate rises to 90 percent, and phases out at

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<sup>15</sup> The official German term for a UB II household is “Bedarfgemeinschaft”.



individual earnings of 1,200 euros. The transfer phase-out threshold is extended to 1,500 euros for households with dependent children (for more details see Section 2.4 in Chapter 2).

In principle, UB II workers face the same monetary incentive structure that leads to the same financial outcomes. However, two crucial differences among the UB II workers are present: the employment regulation and the job search obligation. (1) The job might be either regular or marginal. UB II workers in regular employment pay full social security payroll tax. Marginal employment (ME), or so-called “Minijobber” (henceforth: ME UB II) are restricted to jobs with monthly earnings below 451 euros, which comes along with fewer working hours and lower wage rates. ME UB II workers’ earnings are not subject to social security contributions for the employee. As a result, such a scheme is often used to provide secondary employment, and more importantly, it is suitable for workers who are officially registered unemployed (Lietzmann, Schmelzer, and Wiemers 2017). (2) In principle, UB II welfare comes along with the obligation to search for a job to overcome the neediness by own earnings. This holds for UB II workers who have a job. ME UB II workers search more often, and they are also more often have an obligation to search from their respective Jobcenter (Bähr et al. 2018). About half of UB II workers are marginally employed. Another difference between UB II workers and other workers are the non-pecuniary attributes of the jobs carried out with in-work benefits. For instance, the jobs UB II workers have are more often temporary, leading to more reports of worries about losing the job (also for non-temporary jobs) or autonomy at work is perceived lower (Achatz and Gundert 2017).

### **3.4 Data**

This study utilizes PASS-ADIAB 7515 that combines survey data from the annual household panel study Labour Market and Social Security (henceforth PASS, see Trappmann et al. (2013)) with administrative labor market information from registers of the German Federal Employment Agency using record linkage techniques (Antoni and Bethmann 2019). Several advantages make PASS-ADIAB particularly compelling for this analysis. First, PASS oversamples households receiving welfare, guaranteeing a sufficiently high number of cases of UB II workers. Furthermore, the presence of individual panel data on life satisfaction and a broad set of life circumstances allows individual fixed effects to be applied. Also, the linked administrative register data allow for more reliable information on welfare dependency as this information comes from the welfare administration instead of self-reported welfare reports. The avoidance of error-prone survey answers on transfer dependency helps to account for

misreporting of UB II status (Bruckmeier, Müller, and Riphahn 2014). The detailed register information on the exact date of specific employment status is also an essential feature for estimating precise survival curves for UB II status as well as for accounting for employment biographies by generating measures for job tenure, welfare biographies, and the labor market histories of the UB II workers. Another advantageous feature of administrative data is the availability of a firm-identifier, which makes it possible to merge establishment information for each UB II worker. Furthermore, PASS-ADIAB supplies county-level information on the location of the establishment, allowing us to control location-specific factors.

The foundation of the working sample consists of the respondents of the PASS panel study. The initial wave of the annual survey, with approximately 18,000 persons in about 12,000 households, was drawn in December 2006/2007. The PASS study consists of two survey populations facing the same questionnaire design, one of which represents the German residential population, while the other is a random sample from the UB II recipient register (Trappmann et al. 2010, 2013). The administrative records that are, in principle, linkable to PASS contains each person in Germany who was subject to social security (since 1975), in marginal employment (since 1999), a recipient of benefits from unemployment insurance (since 1975), and a recipient of UB II (since 2005) as well as a registered job seeker at the employment agency or a participant in an active labor market program. Hence, in principle, all UB II workers have at least one record in the administrative IEB data. The maximum possible spell for which information is available starts on the 1<sup>st</sup> of January 1975 and ends on the 31<sup>st</sup> December 2014 for PASS-ADIAB 7515 (Antoni and Bethmann 2019).

For the working sample, we use the PASS-ADIAB 7515 scientific use file that consists of respondents from PASS waves 2007/2008, 2008/2009, 2010, 2011, 2012, 2013, and 2014. The first PASS survey wave (2006/2007) is dropped due to subsequent changes in the questionnaire design. Moreover, we cannot use PASS wave 9 (2015) due to the lack of administrative records for that year. Furthermore, the working sample consists of workers who granted linkage consent for the administrative records during the survey process. The selectivity from denied linkage consent is small with a weak tendency towards persons who have fewer privacy concerns, and therefore, having fewer missing values on sensible variables. In general, the average linkage consent rate is 81 percent. Estimations on socio-demographic outcomes suggest that consent bias does not change the results significantly (Beste 2011, Antoni and Bethmann 2019). We form the UB II workers sample from those PASS respondents who granted consent. A respondent qualifies as a UB II worker if, on the PASS survey interview day, she has an overlap

of an administrative employment spell (regular employment or marginal employment on indicator ‘erwstat’) and a UB II welfare spell (registered UB II recipient who is indicated as an adult and employable on the variables ‘quelle’ and ‘erwstat’). Over all waves, this leads to N = 7,516 cases of UB II workers. In total, the working sample shrinks to N = 4,016 UB II workers by dropping all the observations without information on job search, life satisfaction, and all applied covariates.

Job search is generated from the PASS survey question:

*In the past four weeks, have you been looking for. . .*

(1) *a different job*, (2) *an additional job*, (3) *no job at all*, or (4) *an additional as well as for a different job*. The binary outcome variable is defined such that (3) becomes No = 0, and (1), (2), and (4) as Yes = 1.<sup>16</sup>

The duration until successfully ending UB II are the days between the onset of the *risk of leaving UB II* and leaving UB II for regular employment without welfare. It defines a successful exit as the day on which a UB II spell ends, and within the following five days, an employment spell is observed. Working UB II episodes not ending within the period of observation are right-censored on the 31<sup>st</sup> December 2014 and kept for the survival analysis dataset.

Regarding the two outcome variables, we condition on essential factors affecting either UB II entitlement (such as household income, cohabitation, and the number of children in the household) and job search (such as tenure, working hours, and firm characteristics). For a comprehensive summary of all covariates, see Table 3.A1 in the Appendix.

### **3.5 Estimation strategies**

#### *3.5.1 On-the-job search of UB II workers*

We examine the role of non-monetary factors in the on-the-job search of UB II workers by estimating a linear probability model with individual fixed effects. The outcome is whether a UB II worker is searching for a new job or not ( $(JS) = 1$  if yes; 0 otherwise). The model is expressed by the equation:

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<sup>16</sup> A detailed overview of the generation of dependent and independent variables from PASS-ADIAB is available in Appendix A1.

$$\begin{aligned}
JS_{it}^* &= \beta_0 + \beta_1 LS_{it} + \beta_2 \ln(y_{it}) + \beta_3 h_{it} + \beta_4 h_{it}^2 \\
&+ \mathbf{job}'\beta_{job} + \mathbf{firm}'\beta_{firm} + \mathbf{soc}'\beta_{soc} + \alpha_i + \varphi_k + \tau_t + \varepsilon_{it}
\end{aligned}
\tag{2}$$

We estimate the latent likelihood of  $JS_{it}^* = 1$  of a UB II worker  $i$  at the interview wave  $t$ . The coefficient of interest is  $\beta_1$ , which states the partial correlation between life satisfaction ( $LS$ ) and the likelihood of searching. Such types of longitudinal linear probability models are applied in related works on non-experimental labor supply decisions of in-work benefit recipients (Francesconi and van der Klaauw 2007) and estimations on mental health affecting employment rates in register data (Greve and Nielsen 2013). The SWB and job search literature either rely on past life satisfaction changes from job loss to explain a current binary outcome (Clark 2003, Gielen and van Ours 2014) or does not account for individual fixed effects (Krause 2013, Rose and Stavrova 2019).

The identification of the  $\beta_1$ -coefficient rests on the assumption that  $LS_{it}$  is not endogenous. We choose a longitudinal probability model to avoid the arbitrary process of choosing the “correct” past life satisfaction (change) relevant to the current job search decision. Job search and life satisfaction are measured at the same point in time (the interview date). This comes at the cost of a higher risk for reverse causality that might also run from job search to well-being. This is specifically the case as job search is among the least pleasurable activities for experienced well-being that is associated with life satisfaction (Knabe et al. 2010, Wolf, Metzger, and Lucas 2019). However, we tolerate this caveat as we are able to address this issue with sensitivity analysis, whereas two other potential sources of biases are ruled out with our approach. Taking past life satisfaction would require two consecutive steps: one change in life satisfaction at an arbitrary point in time and using this life satisfaction change for the search estimation. Therefore, the risk of a selective outflow from the UB II status depending on life satisfaction between step one and step two are severe. Especially, Hetschko, Schöb, and Wolf (2020) show that the likelihood of experiencing a status transition (either to regular employment or to unemployment) is correlated with life satisfaction. Besides, the elapsed time in a two-step procedure is prone to adaption in life satisfaction (Gielen and van Ours 2014). By examining job search and life satisfaction simultaneously, we overcome both two limitations. As a sensitivity analysis, we show that past life satisfaction also influences today’s search decisions and that the effect is not the opposite direction (see Table 3.A4 in the Appendix).

Another source of endogeneity is the omission of relevant covariates of job search. Here, the richness of PASS-ADIAB with its combination of administrative and survey information is beneficial and allows to reduce the risk for biased estimates. To distinguish between monetary and non-monetary factors, we need an appropriate proxy that allows us to keep the monetary circumstance of the labor market status fixed. Therefore, we control for monthly disposable household income  $y$ . Household income positively correlates with earnings, which express the monetary value of a job (Pissarides and Wadsworth 1994). Furthermore, it proxies three additional monetary factors that would otherwise affect life satisfaction. Household income is also positively correlated to one's partner's earnings. Consequently, it constitutes the central UB II eligibility criteria that shape the prospects of leaving UB II (Hetschko, Schöb, and Wolf 2020). As household income approximates consumption possibilities as well, we use a log-linear specification to reflect the diminishing returns of consumption for well-being (Stevenson and Wolfers 2013). Working hours  $h$  and hours squared  $h^2$  reflect the opportunity costs of being at work and are an essential job characteristic workers care about (Grün, Hauser, and Rhein 2010). Hence, we also control for non-linear associations between working time and life satisfaction. Under perfect market clearing, income and hours allow considering the wage rate.

Job characteristics, however, turn out to be important predictors of job search beyond income (Delfgaauw 2007). Hence, we control for job characteristics by using the vector ***job***, which encompasses indicators for individual tenure at the firm and an indicator for fixed-term contracts that shape the decision for on-the-job search, too. Firm-specific factors also influence the decision to search. These factors are addressed by the vector of controls ***firm***. Individual socio-demographic characteristics are considered by the vector ***soc*** encompassing a health status control as well as family characteristics such as cohabitation and the number of children in the household. Specifically, the latter are also determinants of the UB II entitlement that is granted on the household level (see Section 3.3).

Unobserved individual characteristics are essential covariates that affect job search and employment transitions (Krause 2013, Rose and Stavrova 2019). Therefore, we focus also on the unobserved heterogeneity among the workers. One strategy in well-being research is the inclusion of individual fixed effects (here:  $\alpha_i$ ) that condition the estimation on time-stable individual traits that affect, for instance, life satisfaction, income and job search (Ferrer-i-Carbonell and Frijters 2004). However, some other unobserved traits are not entirely stable over time and, therefore, potential confounders of life satisfaction association. The locus of control is such a trait that may alter depending on the employment status (Preuss and Hennecke 2018).

As a consequence, we control for administrative employment biographies of the UB II workers, too. Such biographical measures typically from administrative records affect labor market outcomes and allow to proxy unobserved heterogeneity that might alter over time (Caliendo, Mahlstedt, and Mitnik 2017). Specifically, the total number of transfer episodes and the total days in UB II since its introduction 2005 should correlate with time-varying heterogeneity in personality.

The search behavior is affected by the labor demand by the firms around. In terms of a search model, job search depends on the individual expectations about the job offer arrival rate. A search without any opportunity to receive a job offer might be felt to be a hopeless endeavor (Gielen and van Ours 2014). Hence, we need to make labor demand comparable between the different workers. Therefore, we introduce county-specific fixed effects  $\varphi_k$  in order to address local labor market effects. Hence, we estimate the likelihood of searching, given that the UB II workers remain under the same labor market conditions.

The wave controls  $\tau_t$  completes the estimation equation and further controls for business cycle aspects. We use a linear probability model as the estimation technique. However, logit models are also a suitable solution for binary outcomes, and we estimate the same model with the conditional logit estimator with fixed effects.<sup>17</sup>

### 3.5.2 Duration analysis: Outflow sample towards working without welfare

In a second step, we examine the duration until successfully leaving welfare for regular employment without welfare dependency. We examine if life satisfaction shows an association with the duration of being in the UB II worker state. The exit into regular employment indicates the end of a process that is initiated by the job search. To estimate the time for such an outflow sample, we use a proportional hazard model with continuous time (Jenkins 2005). We estimate the hazard rate  $h(s)$  with  $s$  representing the number of days of working while being a welfare recipient. The model is estimated in the following form:

$$h(s|LS, \mathbf{X}, u) = h_0(s) \exp(\beta_1 LS_{it} + \beta_2 \ln(y_{it}) + \beta_3 h + \beta_4 h^2 + \mathbf{job}'\beta_{job} + \mathbf{firm}'\beta_{firm} + \mathbf{soc}'\beta_{soc} + \mathbf{X}'\beta + u) \quad (3)$$

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<sup>17</sup> The results are presented in Appendix A2 and A3. The signs of the coefficients confirm the findings of the linear probability model. The magnitude of the logit coefficients is not directly comparable to coefficients of the linear probability model.

We examine the hazard rate  $h(s)$  describing the chance of successfully leaving UB II for each day  $s$  since the beginning of the UB II episode. The number of days  $s$  between the onset of the chance to the failure event (= successfully leaving UB II) is the increment to be explained.<sup>18</sup> We estimate a semi-parametric Cox proportional hazard model, and so we do not need to assume a specific form of the baseline hazard function  $h_0(s)$  as long as the proportional hazard assumption over time holds. As a robustness check, we redo the procedure with a parametric Weibull baseline hazard function (Luecke 2018).<sup>19</sup>

Analogously to the model in (2), life satisfaction  $LS$  is the variable of interest. The other vectors of covariates are part of the estimated model to condition on the socio-demographic, firm, and job characteristics of the UB II workers that experience the successful end to welfare. We make the usual assumption that the explanatory variables from the last interview before the exit event are stable over time. For instance, in the case of the last PASS interview having taken place 143 days before leaving UB II, the life satisfaction score from that interview is assumed to be valid during the remaining days until the exit event occurs.

By taking the within worker perspective in the job search model (2), we control time-stable characteristics. Nevertheless, duration models require a different data structure that restricts the possibility for individual fixed effects as units of analysis are expiring UB II episodes. Consequently, the number of occurrences of the exit event during the observation period determines how often an individual appears in the dataset. Due to the low number of cases of repeated occurrences, individual fixed effects are not feasible here. Hence, we rely on additional (time-stable) covariates in vector  $\mathbf{X}$ . Namely, we rely on controls that proxy personality traits and human capital as well as gender to account for between UB II worker differences that may also affect the duration of successful leaving UB II.

## 3.6 Results

### 3.6.1 On-the-job search of UB II workers

The target group of UB II workers differs from the rest of the German workforce. UB II workers work fewer hours with fewer earnings, and, on average, they are less satisfied with life. Earnings affect the household income and, consequently, the UB II entitlement (Hetschko,

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<sup>18</sup> A successful end of an UB II episode of a worker (= failure) is assigned if a working episode with no UB II parallel to the UB spell follows immediately afterwards. A maximum of four days of non-work between end-of-UB II and working is accepted.

<sup>19</sup> Results are presented in Appendix A6.

Schöb, and Wolf 2020). We are interested in the search behavior of UB II workers. We, therefore, differentiate between the characteristics of searching UB II workers and non-searching UB II workers. Table 3.1 depicts these differences. UB II workers searching for a job are 0.5187 points less satisfied with life ( $p < 0.001$ ). Of course, we cannot claim that the difference in life satisfaction causally induces job search. For instance, a complementary factor potentially inducing job search is a lower salary that is reflected in €154.51 less monthly household income of the searching UB II workers ( $p < 0.001$ ).<sup>20</sup> This is a pecuniary incentive to seek a better-paid job. Employment contracts also differ considerably. The share of workers with a fixed-term contract is higher in the group of job seekers. Hence, this employment is more prone to the necessity of finding a new job. A substantial share of ME UB II workers do not search for a new job, although their monthly earnings are limited to 450 euros a month (see Section 3.3).

The UB II workers, in general, differ from other employees in that they are more frequently employed in a rather small set of service jobs. Cleaning jobs, cooks, salesperson, drivers, and waiters account for about 25 percent of all UB II workers (Achatz and Gundert 2017). Nevertheless, within the UB II workers, there are minor differences between seekers and non-seekers regarding the job requirements that are assigned to the specific occupation. In particular, workers at the lowest level of job requirements more frequently search for a new job. The job seekers among the UB II workers cohabit less often, and the number of dependent children in the household is lower. Both point to the role of household composition, which may affect the job search decision of UB II workers.

The lower panel of Table 3.1 shows time-stable (cross-sectional) characteristics. UB II workers with higher educational attainment have a higher likelihood of job search, potentially reflecting better outside job options. Slightly over two-thirds of UB II workers are female, the share of males is a bit higher among the searching UB II workers. In PASS wave five, a psychological standard measure for personality traits – the so-called Big Five – was surveyed. We extrapolated the respective scores for the five traits to all the other waves of the same person under the assumption that they remain stable over time. Searching UB II workers differ significantly from non-searching UB II workers. Job seekers have higher scores for extraversion ( $p = 0.0912$ ), conscientiousness ( $p = 0.0538$ ), and openness ( $p = 0.0375$ ).

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<sup>20</sup> The monthly gross earnings are surveyed for a subgroup of UB II workers only. The difference is € 136.18 ( $p < 0.000$ ) for them.



Table 3.1: Characteristics of UB II workers by job search

	On-the-job search			
	No		Yes	
	Mean / Pct.	Std. Dev.	Mean / Pct.	Std. Dev.
Life satisfaction	6.59	1.84	6.07	1.97
Monthly household income (disposable, in €)	1,389.33	648.35	1,234.82	570.11
Actual working hours (per week)	26.33	14.40	18.87	14.07
Tenure (in years)	2.91	3.73	2.31	3.04
Biography: Total number of transfer episodes	4.77	3.90	4.69	3.54
Since 2005: Total time in UB II (in years)	5.03	2.40	5.35	2.40
Fixed-term contract (in %)	22.84		26.55	
Marginal Employment (in %)	26.83		56.60	
Job requirements: Level 1 (in %)	41.28		46.35	
Job requirements: Level 2 (in %)	52.49		46.04	
Job requirements: Level 3 (in %)	3.19		3.57	
Job requirements: Level 4 (in %)	3.04		4.04	
Active trade union member (in %)	3.63		4.81	
Establishment: 1-20 employees (in %)	41.06		48.21	
Establishment: 21-100 employees (in %)	30.21		21.12	
Establishment: 101-500 employees (in %)	19.94		21.43	
Establishment: 501-2000 employees (in %)	./.		./.	
Establishment: 2000+ employees (in %)	./.		./.	
Establishment: Time since first appearance: < 5 years (in %)	19.17		20.65	
Establishment: Time since first appearance: 5-9 years (in %)	17.16		18.09	
Establishment: Time since first appearance: 10-19 years (in %)	32.29		30.98	
Establishment: Time since first appearance: 20+ years (in %)	30.72		30.28	
Cohabitation (in %)	47.25		37.97	
Number of children in household	1.01	1.11	0.84	1.02
Age bracket: 18-32 (in %)	18.99		17.00	
Age bracket: 33-42 (in %)	26.98		24.61	
Age bracket: 43-51 (in %)	27.82		32.61	
Age bracket: 52-61 (in %)	26.21		25.78	
Number of doctoral consultations (last three months)	2.45	4.53	2.60	4.66
Number of observations (pooled)	2,728		1,288	

	Time-stable characteristics within UB II worker				N <sup>a</sup>
Big Five personality trait: extraversion <sup>b</sup>	3.52	0.86	3.56	0.80	2,823
Big Five personality trait: agreeableness <sup>b</sup>	3.24	0.71	3.27	0.73	2,823
Big Five personality trait: conscientiousness <sup>b</sup>	4.12	0.58	4.16	0.56	2,822
Big Five personality trait: neuroticism <sup>b</sup>	2.83	0.81	2.86	0.82	2,823
Big Five personality trait: openness <sup>b</sup>	3.57	0.50	3.61	0.49	2,818
Highest educational attainment: ISCED 1-2 (in %)	26.40		23.42		4,008
Highest educational attainment: ISCED 3 (in %)	54.57		52.37		4,008
Highest educational attainment: ISCED 4-6 (in %)	19.02		24.20		4,008
Gender: Male (in %)	34.42		37.40		4,014

Source: PASS-ADIAB, version 7515, own calculations.

Note: ./ denotes cells with information that are censored by IAB data processing due to very low number of cases. <sup>a</sup> The number of cases deviates from the longitudinal panel above due to missing values. <sup>b</sup> Big 5 indicators were surveyed exclusively in PASS wave 5. We transferred these traits to all other available PASS waves of the same person under the assumption of time stability.

### 3.6.2 Does life satisfaction affect job search?

In order to address the association of life satisfaction with the on-the-job search of UB II workers over time, we estimate a linear probability model with individual fixed effects. Table 3.2 shows the results. In (1), a baseline model shows the association of within-person life

satisfaction changes and the on-the-job search likelihood of UB II workers. Household income, working hours, and socio-demographic controls, as well as firm-specific factors, are added in (2). Column (3) incorporates the local labor market by introducing county fixed effects.

*Table 3.2: Job search of UB II workers and life satisfaction*

Dependent: <i>Pr</i> (JS = 1)	(1)		(2)		(3)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.0220 ***	0.0075	-0.0160 **	0.0074	-0.0176 **	0.0075
Monthly household income (ln)			-0.0316	0.0341	-0.0307	0.0343
Hours			-0.0130 ***	0.0040	-0.0137 ***	0.0040
Hours (sq)			0.0002 ***	0.0001	0.0002 ***	0.0001
Tenure			0.0152	0.0113	0.0142	0.0114
Tenure (sq)			-0.0002	0.0008	-0.0001	0.0008
Fixed-term contract (yes = 1)			0.0465	0.0371	0.0457	0.0375
Marginal Employment (yes = 1)			0.2320 ***	0.0522	0.2331 ***	0.0538
Job requirements: Level 1 (Reference: Level 2)			0.0105	0.0415	0.0072	0.0424
Job requirements: Level 3			-0.0773	0.0929	-0.0792	0.0926
Job requirements: Level 4			0.1104	0.0869	0.1102	0.0875
Active trade union member (yes = 1)			0.0486	0.0621	0.0380	0.0613
Establishment: 1-20 employees			0.0659	0.0494	0.0598	0.0504
Establishment: 101-500 employees			0.0994 *	0.0576	0.0839	0.0583
Establishment: 501-2000 employees			0.0516	0.0716	0.0344	0.0743
Establishment: 2000+ employees			-0.2507	0.1948	-0.2669	0.1954
Establishment: Time since first appearance: < 5 years			-0.0744	0.0460	-0.0638	0.0467
Establishment: Time since first appearance: 10-19 years			-0.0537	0.0407	-0.0481	0.0408
Establishment: Time since first appearance: 20+ years			-0.0616	0.0520	-0.0614	0.0520
Cohabitation (yes = 1)			0.0312	0.0663	0.0308	0.0681
Number of children in household			0.0234	0.0368	0.0327	0.0374
Age bracket: 18-32 (Reference: 33-42)			-0.0246	0.0688	-0.0147	0.0746
Age bracket: 43-51			-0.0627	0.0701	-0.0450	0.0696
Age bracket: 52-61			-0.0588	0.0933	-0.0431	0.0936
Number of doctoral consultations (last three months)			-0.0006	0.0025	-0.0008	0.0025
Biography: Total number of transfer episodes			-0.0337 **	0.0170	-0.0318 *	0.0178
Since 2005: Total time in UB II (in years)			-0.0342	0.0314	-0.0322	0.0317
Constant	0.4623 ***	0.0480	0.8709 ***	0.2849	0.8442 ***	0.2874
Individual fixed effects		yes		yes		yes
Wave controls				yes		yes
County fixed effects						yes
Number of observations		4,016		4,016		4,016
R <sup>2</sup> (overall)		0.0063		0.0722		0.0937

*Source: PASS-ADIAB, version 7515, own calculations.*

*Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level.*

In all three columns, life satisfaction shows a statistically significant negative coefficient that changes only slightly with the stepwise integration of controls. Increasing (decreasing) life satisfaction is accompanied by a decreasing (increasing) propensity to search for another job. In column (3), a one-point increase in life satisfaction is accompanied by a 1.76 percentage-point lower likelihood of job search ( $p < 0.0189$ ). As we focus exclusively on the within-person perspective, observed, but time-stable, factors (e.g., gender) and unobserved time-stable factors are controlled and do not bias these results. Working time shows a negative coefficient; the likelihood of searching becomes lower, the more hours UB II workers work per week. Household income remains insignificant. Controlling for individual earnings instead of

household income yields a negative coefficient (see Table 3.A4, col. 4-6 in the Appendix). The insignificant household income coefficient is thus a sign that other income sources (like earnings of a partner) affect job search with the opposite sign. These findings are in line with standard models of on-the-job search (Pissarides and Wadsworth 1994). The estimation combines UB II workers in marginal employment as well as regular employed UB II workers. Even given the working hours, marginal employment is a strictly positive predictor of job search. An extensive transfer biography is the strongest negative predictor for job search. The likelihood of searching for another job drops with each additional transfer episode in the past by more than three percentage points. It is remarkable that despite a comprehensive set of controls, life satisfaction remains a significant predictor that supplements the explanatory power and shows a negative sign.

Life satisfaction and job search are both measured at the same point in time. Hence, reverse causality might be an issue. As a sensitivity check, we substitute lagged life satisfaction ( $t-1$ ) for current life satisfaction. Past satisfaction is not affected by current dissatisfaction due to job search. Furthermore, we combine current and lagged satisfaction measures in one estimation together as predictors for job search (see Table 3.A4, col. 1-3 in the Appendix). The results show that changes in life satisfaction in the past and also past and current life satisfaction together are negatively associated with job search. This makes us confident that it is not job search that reverses the causal direction.

Table 3.3 attempts to understand the channel through which life satisfaction affects search behavior. Initially, we address the heterogeneity among UB II workers and estimate the role of marginal employment in column (1) since ME UB II workers are confronted with different individual and institutional constraints regarding, for instance, their time budget. The role of the German ‘Jobcenter’ as a government body that ‘activates’ UB II workers is examined in column (2). These ‘Jobcenters’ attempt to incentivize transfer recipients to overcome welfare dependency – for instance, they impose the obligation to search for a job on the UB II worker (Hetschko, Schöb, and Wolf 2020). Column 3 examines the role of perceived job security, which is known as an essential determinant of job search (Clark, Knabe, and Rätzl 2010).<sup>21</sup>

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<sup>21</sup> For all three estimations, we do not include county fixed effects as this would prevent the maximum likelihood function from converging.

Table 3.3: Job search of UB II workers and life satisfaction: Institutions and expectations

Dependent: $Pr(JS = 1)$	(1)		(2)		(3)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.0050	0.0089	-0.0212 *	0.0112	-0.0110	0.0145
ME = 1 × Life satisfaction	-0.0323 ***	0.0110				
Number of contacts to Jobcenter			-0.0175	0.0411		
Jobcenter: Obligation to search for a job = 1			0.1726 ***	0.0375		
Expectations: Worries about future job loss = 1					0.1112 **	0.0485
Monthly household income (ln)	-0.0318	0.0339	-0.0149	0.0500	0.0121	0.0604
Hours	-0.0131 ***	0.0040	-0.0158 **	0.0077	-0.0221 **	0.0094
Hours (sq)	0.0002 ***	0.0001	0.0002	0.0001	0.0003 **	0.0001
Tenure	0.0163	0.0113	0.0183	0.0154	0.0144	0.0208
Tenure (sq)	-0.0002	0.0008	-0.0005	0.0009	-0.0010	0.0013
Fixed-term contract (yes = 1)	0.0474	0.0372	0.0222	0.0533	0.0695	0.0966
Marginal Employment (yes = 1)	0.4108 ***	0.1029	0.2034 **	0.0867	0.1227	0.0999
Job requirements: Level 1 (Reference: Level 2)	0.0071	0.0416	-0.0449	0.0557	0.0833	0.1438
Job requirements: Level 3	-0.0719	0.0929	-0.0784	0.1219		
Job requirements: Level 4	0.1043	0.0887	0.0069	0.1204	0.1338	0.2071
Active trade union member (yes = 1)	0.0459	0.0633	-0.0118	0.1019	-0.1532	0.1422
Establishment: 1-20 employees	0.0673	0.0495	-0.0007	0.0650	-0.0088	0.1318
Establishment: 101-500 employees	0.1016 *	0.0575	-0.0494	0.0783	0.1004	0.1255
Establishment: 501-2000 employees	0.0506	0.0713	-0.1781	0.1090	0.2525	0.2102
Establishment: 2000+ employees	-0.2480	0.1935	-0.4925 ***	0.1733	0.2084	0.1825
Establishment: Time since first appearance: < 5 years	-0.0716	0.0459	-0.0889	0.0590	-0.0708	0.0924
Establishment: Time since first appearance: 10-19 years	-0.0532	0.0406	-0.1446 ***	0.0547	-0.0006	0.1162
Establishment: Time since first appearance: 20+ years	-0.0620	0.0520	-0.1439 **	0.0722	-0.0724	0.1155
Cohabitation (yes = 1)	0.0296	0.0658	0.0155	0.0895	0.0023	0.1774
Number of children in household	0.0234	0.0367	0.1207 **	0.0539	-0.1019	0.0839
Age bracket: 18-32 (Reference: 33-42)	-0.0179	0.0676	-0.1530	0.0974	0.1113	0.1879
Age bracket: 43-51	-0.0659	0.0698	0.0273	0.0971	-0.0678	0.1576
Age bracket: 52-61	-0.0649	0.0931	0.0736	0.1314	-0.1841	0.2184
Number of doctoral consultations (last three months)	-0.0007	0.0025	-0.0051	0.0041	0.0042	0.0065
Biography: Total number of transfer episodes	-0.0336	0.0170	-0.0030	0.0262	-0.0953	0.0518
Since 2005: Total time in UB II (in years)	-0.0354	0.0314	-0.0243	0.0467	-0.0664	0.0642
Constant	0.8049 ***	0.2841	0.6068	0.4176	1.3765 *	0.7475
Individual fixed effects		yes		yes		yes
Wave controls		yes		yes		yes
Number of observations		4,016		2,421		1,552
R <sup>2</sup> (overall)		0.0749		0.1373		0.0908

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Column 1 is the same specification as Table 3.2, column 2. Column 2 shows the same specification, but without wave seven as no information on the Jobcenter contacts and search obligation is available for PASS-ADIAB wave 7. Column 3 shows the estimation results for within-person changes between wave seven and wave eight that offer information on worries about future job loss.

The role of marginal employment (ME) for the search behavior of UB II workers is examined in column 1. The baseline likelihood to search for ME UB II workers is about 40 percentage points higher than the likelihood of regularly employed UB II workers. The interaction effect of life satisfaction with marginal employment shows that a one-point increase in life satisfaction reduces the likelihood of ME UB II workers for job search by 3.7 percentage points ( $p < 0.0034$ ) while for regularly employed UB II workers no significant coefficient emerges. As a sensitivity check, we estimate the model above separately for ME UB II workers and for regularly employed UB II workers (see Table 3.A5 in the Appendix for the results). For

marginally employed UB II workers, we find a negative life satisfaction coefficient of -0.0216 ( $p < 0.0849$ ). Estimating the model solely for regular employed UB II workers does not yield any significant association of life satisfaction with the likelihood for job search (The  $\beta_1$ -coefficient is -0.009 ( $p < 0.3545$ )). We take this as evidence for the negative association found in Table 3.2 and Table 3.3, col. 1 is due to the marginal employed UB II workers.

Column 2 of Table 3.3 examines if Jobcenters or life satisfaction are the driving forces behind the job search of UB II workers. Hence, we complement two control variables for the contact with the local Jobcenter. We suppose that the number of personal contacts to the Jobcenter and the self-reported obligation-to-search imposed by the case managers affects life satisfaction, and henceforth the job search behavior. 51 Percent of the UB II workers confirming that an obligation by the Jobcenter is imposed.<sup>22</sup> We find that the life satisfaction coefficient remains roughly the same when we add both controls. Unsurprisingly, reporting that one has the personal obligation to search increases the likelihood to search. Nevertheless, the negative association of life satisfaction with job search remains statistically significant, given that this obligation applies. Hence, the supposed association via the case managers is not sufficient to explain the association between life satisfaction and job search. To dig deeper into the role of institutional pressure (or activation measures), we run a sensitivity analysis to differentiate between UB II workers with different institutional pressure to search. In the UB II workers sample are 55,7 percent are registered as unemployed, meaning that these workers have signed an “Eingliederungsvereinbarung” contract where they state that they actively search for a job. However, compliance with this agreement is rather weak. Controlling for such registered job seekers confirms that life satisfaction plays a genuine role in job search as the life satisfaction coefficient also remains significant and negative (-0.0157,  $p < 0.0328$ ).

Column 3 of Table 3.3 examines the role of job insecurity for job search of UB II workers. UB II workers worried about their job security may have a higher intrinsic motivation for job search than workers perceiving their job as safe. PASS-ADIAB has two waves available with information on the worries about a future job loss (wave 7 and 8). This considerably reduces the number of cases and yields coefficients of a first-difference estimation. The results show that worries about future job loss are associated with job search, whereas the life satisfaction coefficient becomes insignificant. Unfortunately, it cannot be ruled out that the insignificant

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<sup>22</sup> The exact question from the question of PASS wave 8 is: “Not everyone who obtains unemployment benefit II (“Arbeitslosengeld II”) is expected by the Jobcenter to look for work, for example because this person is 58 years of age or older, looks after children, cares for relatives or is ill. How about you? Does the Jobcenter expect you to look for work?”

coefficient of life satisfaction results from the low number of cases and not from adding the qualitative effect of expectations.<sup>23</sup> It remains partially open whether a low level of life satisfaction is the channel for anticipating future unemployment.

We carry out several sensitivity checks on the estimation technique, too. The results of Table 3.2 and Table 3.3 from a conditional logit model with individual fixed effects do not differ qualitatively (see Table 3.A2 and Table 3.A3 in the Appendix). As heterogeneity analysis, we estimate the model of Table 3.2 by gender and find that the negative life satisfaction coefficient is driven by the women among the UB II workers.

### 3.6.3 Duration until successfully ending UB II episodes

We investigate the relationship of life satisfaction to a second outcome variable: the duration of the UB II episode of employees. The chosen successful UB II episodes are spells with follow-up employment within five days after leaving UB II welfare. Thus, we exclude all episodes ending in unemployment or with longer records gaps after leaving UB II. This restriction also applies to brief interruptions to enduring working UB II episodes. Overall, this procedure considerably reduces the number of available episodes (see Table 3.4).

*Table 3.4: Number of cases of UB II episodes and exit events*

	N =
UB II worker	4,016
1 of those with information on exit status	2,886
2 of those with right-censored spell	1,073
3 of those ending successfully	605
4 of those ending in unemployment	1,208

*Source: PASS-ADIAB, version 7515, own calculations.*

*Note: 1 counts all spells with valid information on the ending of the spell; 2 counts all spells that are right-censored at the 31st December 2014; 3 counts spells that end with a subsequent episode of working without UB II (gaps of less than 5 days are allowed); 4 counts episodes that end with subsequent episodes of UBII and official registration as a job seeker.*

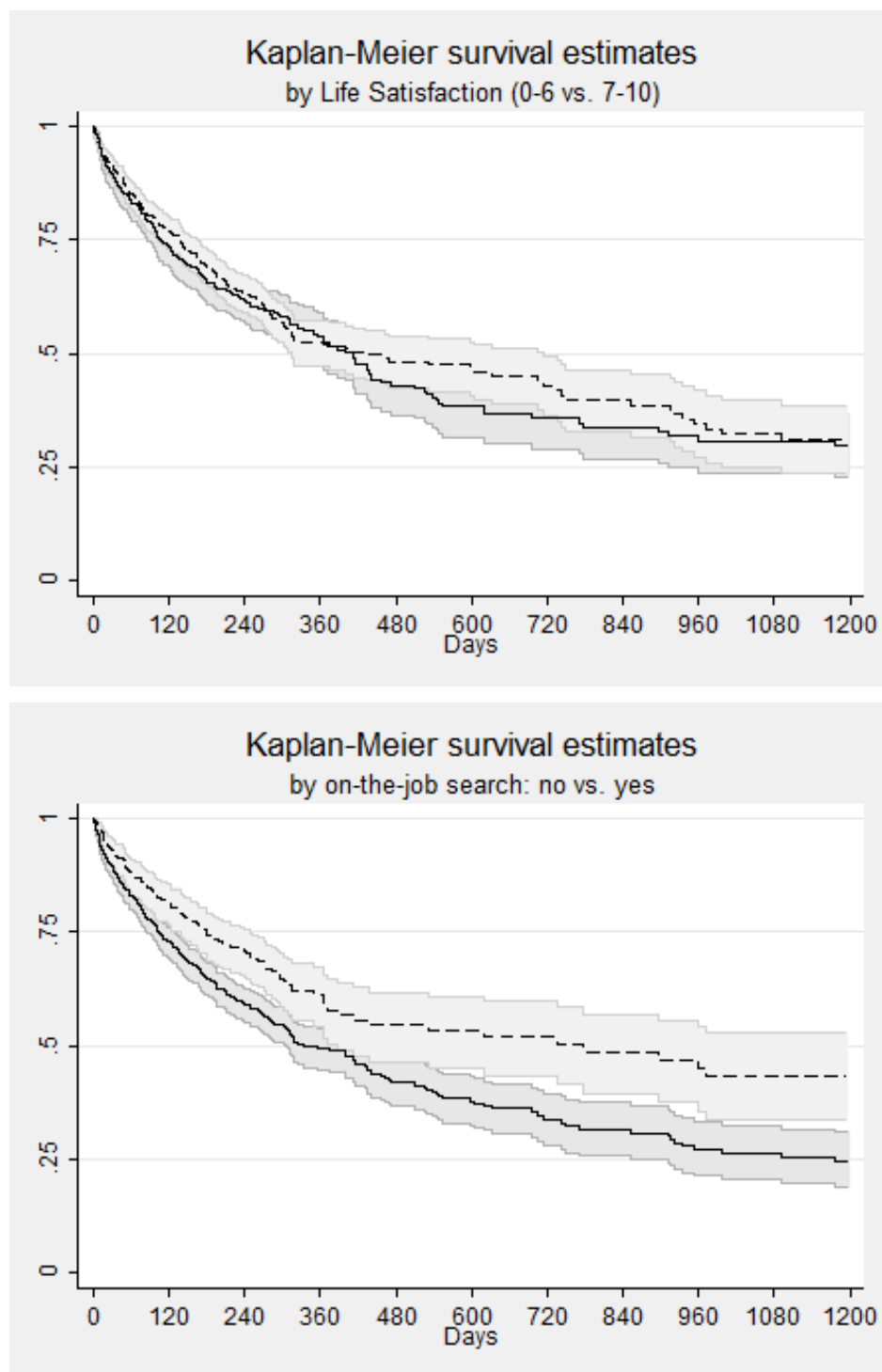
In principle, the observed episodes (2) and (3) in Table 3.4 are suitable for the evaluation of the duration of exposure. As we additionally use control variables with missing values, the number of episodes shrinks to a total of N = 987 with 469 observed successful UB II exit events.

The median length of the sample of a successful working UB II episode is 412 days. The mean duration is higher due to a group of mid- to long-term UB II spells which are right-censored at the 31st December 2014. These findings correspond to results showing UB II status

<sup>23</sup> Estimations with the same reduced sample size of column 3, Table 2.3 without the „worries about job loss“ - dummy lead to an insignificant life satisfaction coefficient (-0.0125, p < 0.3890).

is persistent as two-thirds of UB II workers are still or again in UB II within one year. The other third of all UB II workers leave UB II – not all successful – within one year (Bruckmeier et al. 2013a). To obtain a descriptive impression of the impact of life satisfaction on the duration of successful episodes, we estimate Cox survival curves depending on well-being (low/high) and search activity (no/yes), as shown in Figure 3.1.

Figure 3.1: Survival time estimates of UB II workers



Source: PASS-ADIAB, version 7515, own calculations.

Note: The upper panel of Figure 3.1 depicts Cox survival time curves of UB II workers with the exit event regular employment differentiated by their life satisfaction at the last interview before UB II exit. The solid line represents workers who reported a life satisfaction of 0-6, the dashed line is the curve for workers with a life satisfaction of 7-10. The lower panel of Figure 3.1 depicts Cox survival time curves of UB II workers with the exit event regular employment differentiated by the job search status reported at the last interview before UB II exit. The solid line represents workers who reported no job search, while the dashed line is the curve for workers who reported job search.



The estimated survival curves depict the relative survival propensity for each day until the successful UB II exit. The upper panel shows the survival curves with the dashed line representing reports of high life satisfaction (7-10 life satisfaction score at the last interview before exit), while the solid line shows the same trend, but for low life satisfaction reports (0-6 life satisfaction scores). The 95% confidence intervals almost wholly overlap, suggesting that life satisfaction is not associated with the duration of successful leaving UB II.

The lower panel of Figure 3.1 shows the survival curves of UB II workers differentiated by reporting job search or not. Hence, it indicates if labor market behavior affects successful UB II episodes. The solid line depicts workers who did not search for a job, and the dashed line indicates episodes of workers reporting job search within the last four weeks (the outcome variable of Subsection 3.6.2). In contrast to differentiation by life satisfaction, in the case of job search, we see some systematic differences in the survival curves: the solid non-search line is completely located below the dashed search line. This means that searching UB II workers always have a lower hazard of successfully leaving their status of UB II worker to move into regular employment. However, this puzzling result needs to be addressed in a multivariate framework as one would expect that searching UB II workers leave UB II faster, whereas the descriptive results show the opposite.

We estimate a Cox proportional hazard model to examine the role of life satisfaction in the duration of UB II ending successfully. Initially, we regress the hazard rate solely on life satisfaction to validate the descriptive findings (Table 3.5, col. 1). Column 2 adds the covariates of the job search model in Subsection 3.6.2. As individual fixed effects are not feasible, we extend the model with controls for time-stable differences in educational attainment, gender, and personality traits in column 3. Column 4 of Table 3.5 picks up the puzzling descriptive result above and estimates a model with an interaction of job search with life satisfaction to examine the group of fast-and-successful welfare leaves among the UB II workers.

Table 3.5: Cox proportional hazard model: UB II episodes ending in regular work

Dependent: Hazard of exit UB II (in days)	(1)		(2)		(3)		(4)	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.
Life satisfaction	1.0251	0.0261	1.0315	0.0428	0.9141	0.0737	0.8485 **	0.0801
Job search = 1							0.7928	0.2634
Job search = 1 × Life Satisfaction							1.2287	0.1816
Monthly household income (ln)			0.9468	0.2685	0.7377	0.3253	0.7305	0.3329
Hours			1.0415 **	0.0167	1.0922 ***	0.0269	1.0836 ***	0.0271
Hours (sq)			0.9998	0.0002	0.9995	0.0003	0.9996	0.0003
Tenure			0.7937 ***	0.0489	0.7029 ***	0.0922	0.6930 ***	0.0947
Tenure (sq)			1.0102 ***	0.0022	1.0152 ***	0.0040	1.0157 ***	0.0040
Fixed-term contract (yes = 1)			0.8513	0.1650	0.5346 **	0.2437	0.5212 ***	0.2466
Marginal Employment (yes = 1)			0.7663	0.2241	1.2549	0.3531	1.2382	0.3585
Job requirements: Level 1 (Reference: Level 2)			0.8855	0.1506	1.2014	0.2426	1.1856	0.2374
Job requirements: Level 3			0.5586 *	0.3475	0.3886 **	0.4521	0.4130 *	0.4636
Job requirements: Level 4			1.5367	0.3868	5.5515 ***	0.5960	5.6440 ***	0.6170
Active trade union member (yes = 1)			1.8980 **	0.2553	2.7807 **	0.4329	3.0675 ***	0.4302
Establishment: 1-20 employees			0.6979 *	0.1898	0.8318	0.2588	0.8358	0.2504
Establishment: 101-500 employees			0.9788	0.1821	0.9830	0.2740	0.9769	0.2704
Establishment: 501-2000 employees			1.9378 **	0.2591	4.4808 ***	0.4577	4.1928 ***	0.4409
Establishment: 2000+ employees			1.5534	0.4457	0.8582	0.9793	0.8799	0.9778
Establishment: Time since first appearance: < 5 years			0.9887	0.2230	0.8539	0.3506	0.8535	0.3561
Establishment: Time since first appearance: 10-19 years			0.9400	0.2044	1.0362	0.3321	1.0505	0.3381
Establishment: Time since first appearance: 20+ years			0.9236	0.2031	0.9945	0.3319	0.9968	0.3379
Cohabitation (yes = 1)			0.8913	0.1756	0.7482	0.2316	0.7244	0.2307
Number of children in household			1.0422	0.0782	0.9878	0.1291	0.9838	0.1319
Age bracket: 18-32 (Reference: 33-42)			1.4084 *	0.1920	1.2612	0.3636	1.2211	0.3704
Age bracket: 43-51			1.0517	0.1944	1.3535	0.3222	1.3661	0.3333
Age bracket: 52-61			0.8818	0.2189	0.7223	0.3676	0.7029	0.3789
Number of doctoral consultations			1.0015	0.0267	0.9992	0.0217	1.0035	0.0229
Biography: Total number of transfer episodes			1.0721 ***	0.0243	1.0397	0.0369	1.0360	0.0372
Since 2005: Total time in UB II (in years)			0.8069 ***	0.0282	0.6912 ***	0.0498	0.6854 ***	0.0503
Gender: Male					0.5460 **	0.2839	0.5352 **	0.2770
Highest educational attainment: ISCED 1-2					1.0849	0.2791	1.0492	0.2833
Highest educational attainment: ISCED 4-6					0.4564 **	0.3369	0.4365 **	0.3403
Big Five personality trait: extraversion					1.2903 *	0.1502	1.2762 *	0.1474
Big Five personality trait: agreeableness					0.8917	0.1328	0.9082	0.1348
Big Five personality trait: conscientiousness					0.8010	0.2260	0.8413	0.2326
Big Five personality trait: neuroticism					1.1440	0.1424	1.1116	0.1401
Big Five personality trait: openness					1.4184 *	0.2066	1.3874	0.2158
Number of subjects	=	958	958		614		614	
Number of observations	=	987	987		639		639	
Number of failures	=	469	469		316		316	
Log pseudolikelihood	=	-2,908.7849	-2,724.5808		-1,639.8440		-1,637.5559	

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Estimation includes all episodes that are right-censored and episodes that show regular employment (without UB II) after the occurrence of exit from UB II.

Recall that the outcome is that of workers successfully leaving UB II for a regular job without transfers. We estimate the factors that affect the duration in the UB II welfare while working status until it terminates. First, column 1 validates that there is no significant correlation between life satisfaction and duration in UB II. This result holds for estimations (2) and (3) that condition on the set of time-varying and time-stable covariates. Significant hazard ratios of the covariates are consistent with the job search theory. So, UB II workers with longer tenure also have a lower hazard ratio and remain in the UB II jobs longer. Fixed-term contracts prolong the process of leaving welfare successfully as do biographies with more prior transfer experiences. In particular, the trait of extraversion seems to foster the process of leaving UB II while still having a job.

In column 4, we examine why UB II workers reporting that they search for a job remain longer in the status. The baseline hazard ratio of life satisfaction for non-searching individuals is significantly and below one. Those non-searching UB II workers have a longer duration in UB II before leaving the status depending on the life satisfaction level. The higher their satisfaction level is, the longer they remain in UB II. However, the episodes of searching individuals seem not to be influenced by this inverse association of satisfaction with the duration in the welfare while working status. An explanation is that at the time of the interview, the seeking individuals are already anticipating the future change of job and, therefore, their satisfaction can no longer influence the duration of future employment transition. These findings are replicated by a Weibull estimation (see Table 3.A6 in the Appendix).

As an interim conclusion, we show that life satisfaction plays – if at all – a subordinate role for the duration until leaving UB II successfully. Only for particular groups, like non-searching UB II workers that will leave UB II soon, life satisfaction may have a role.

### **3.7 Discussion**

Lower life satisfaction of UB II workers is *ceteris paribus* associated with a higher likelihood of on-the-job search. This finding is in line with results for employees without welfare transfers who report lower job satisfaction, which leads to a job search. Self-reported intentions to quit (Scott et al. 2006, Böckerman and Ilmakunnas 2009), on-the-job search (Delfgaauw 2007), and actual quitting (Clark 2001, Green 2010) become more likely if job satisfaction declines. We find that this also holds after controlling for household income and individual earnings, which have the same negative sign as life satisfaction (see Table 3.A4 in the Appendix). In this respect, the findings reinforce the notion that the welfare assessment of a job and the subsequent turnover decisions depend on pecuniary and non-pecuniary job attributes alike. Given the *ceteris paribus* character of the estimation, the on-the-job search of UB II workers is affected by life satisfaction beyond the role of individual earnings and household income, with this being important for joint decisions on labor supply. Searching for a job becomes attractive if either income or non-monetary aspects deteriorate.

Taking the heterogeneity of UB II workers into account shows that the association of life satisfaction and job search depends on the institutional setting. ME UB II workers are the source of the negative coefficient of life satisfaction. These workers have a higher likelihood of searching for another job. A prominent difference to regular employed UB II workers is that the ME UB II workers work fewer hours and earn less. More leisure goes hand in hand with a

relatively relaxed time constraint, leaving more time for the costly job search (Knabe et al. 2010). Lower earnings leave space for substantially higher outside earnings, also making the job search relatively more attractive than for higher earning regular UB II workers. Regularly employed workers can hardly leave UB II by working more hours as they often work (close to) full-time or their family context imposes high levels of neediness (for instance, for single parents); thus, they cannot hope to overcome welfare dependency by finding a slightly better-paid job. A survey on the reasons for not searching for another job confirms this different motive. Regular employed UB II workers refuse to search for another job due to “little financial gains from finding another job,” whereas ME UB II workers do not search due to feelings of resignation or mental health issues (Bruckmeier et al. 2015). Time and monetary constraints define the space that non-monetary life satisfaction has as a predictor of labor market behavior.

The second outcome is the duration until a UB II worker leaves welfare for a regular job. We do not find an association between life satisfaction and time elapsed until leaving welfare for those who leave welfare. For UB II workers, searching, and the actual successful exit from welfare do not coincide. This is in contrast to Clark (2003) and Mavridis (2015), who describe a similar effect of life satisfaction on searching for and finding a job. Other papers also find that finding a job is not accelerated by reduced life satisfaction (Gielen and van Ours 2014, Krug, Drasch, and Jungbauer-Gans 2019). One explanation may be two opposing effects reflected in life satisfaction. As satisfaction captures welfare stigma, this makes the UB II status relatively costly (Hetschko, Schöb, and Wolf 2020). Hence, the likelihood of searching for another job increases. However, life satisfaction may also reflect the negative impact of welfare stigma in terms of the reduced employability found for unemployed welfare recipients (Contini and Richiardi 2012). Consequently, the reduced employability keeps workers in the current job as their search becomes less effective, and the likelihood of finding a new job decreases. Such a dilemma situation is, for instance, observed in the case of Finnish workers with poor working conditions. They search for another job, but actual job switches are hampered due to their poor employability (Böckerman et al. 2013). Finding the negative coefficients for the obligation to work points in the same direction as in the face of this activation policy, the UB II workers show a negative association with the life satisfaction coefficient. This means that welfare stigma may have an impact beyond the intended activation via life satisfaction.

Papers on employees often use job satisfaction to account for non-monetary job amenities. We show that UB II workers’ general life satisfaction is also associated with behavioral consequences. A systematic comparison of the predictive power of subjective indicators for

employees that are no sub-indicators of job satisfaction is rare. An exception is Green (2010), who shows that different SWB measures affect labor turnover similarly. However, job satisfaction predicts job mobility better than experienced well-being.<sup>24</sup> From this paper, we can learn that job satisfaction of employees exposed to welfare stigma (but also other forms of psychological stress such as ethnic discrimination) could be too narrow as a predictor for labor market behavior.

### **3.8 Concluding remarks**

This study deals with the effects of life satisfaction on the labor market behavior of employees receiving welfare. We examine the extent to which life satisfaction alters the likelihood of searching for a new job and the welfare duration of those workers who leave welfare dependency. UB II workers experiencing a reduction in life satisfaction are more likely to search for a new job. This effect goes beyond monetary incentives and unobserved, but time-stable, personality traits of the in-work benefit workers. The findings suggest that the institutional framework of the welfare system, roughly speaking, splits the UB II workers into two groups of different regulatory regimes: marginally employed workers and regularly employed workers, with both groups receiving in-work benefits. Only the search behavior of the former is affected by changes in life satisfaction. The duration of the successfully ended transfer period is not affected by workers' life satisfaction.

The heterogeneity of the UB II workers in the role of life satisfaction is remarkable. It suggests that a unified framework for the behavioral consequences of life satisfaction needs to take institutional characteristics, like a marginal employment contract, into account. General life satisfaction correlates with welfare stigma and other hard-to-observe factors, and it seems to matter for the decision to search. Hence, it is reasonable to use it in future studies as a covariate to account for these factors. Moreover, if there are measures for welfare stigma and life satisfaction together available, the relevance of an indirect life satisfaction channel and direct stigma channel for search behavior seems a promising research direction.

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<sup>24</sup> The experienced well-being scales are called subjective well-being and measure feelings on the Depression–Enthusiasm and the Anxiety–Comfort axis.

## Appendix of Chapter 3

Table 3.A1 Description of variables

Variable	Source	Note
On-the-job search ( <i>JS</i> )	PASS-Survey	Based on the question: "In the past four weeks, have you been looking for (1) a different job, (2) an additional job, (3) no job at all (4) an additional as well as for a different job?". (3) was coded as "0" while (1), (2), and (4) are coded as "1".
Life satisfaction ( <i>LS</i> )	PASS-Survey	Based on the question: "In general, how satisfied are you currently with your life on the whole? '0' means, that you are 'very dissatisfied', '10' means that you are 'very satisfied'. The numbers '1' through '9' allow you to grade your assessment."
Disposable household income ( <i>y</i> )	PASS-Survey	Monthly net income of the household from PASS variable <i>hhincome</i> .
Actual working hours per week ( <i>h</i> )	PASS-Survey	The weekly actual working hours ( <i>azges2</i> ), in the case of marginal employment ( <i>PET 0700</i> ) as it was asked separately.
Tenure (days / 365)	Administrative records	Number of days within the same establishment at the date of interview at the respective PASS wave. To obtain easy-to-interpret coefficients transformed to years.
Fixed-term contract	Survey and administrative records	The source variable "befrist" (from PASS) and "befrist" (from PASS-ADIAB) each cover only a subset of the UB II target group. While PASS only asks whether there is an employment contract if there is a regular employment relationship (otherwise filter), PASS-ADIAB reduces the number of cases as not all administrative information are actually filled. Specifically, the administrative information based on the occupational classification KldB2010 allows only a coverage of the limited number of spells that end after 30th November 2011 due to conversion of data processing. By combining both source variables, the prevalence of an fixed-term employment contract is approximated by a only a few losses of observations.
Marginal employment (ME)	Administrative records	Dummy variable, which takes the employment level from the variable <i>erwstat</i> = 109. The marginal employment is the main employment.
Job requirements	Administrative records	Skill level requirements of an occupation assigned by the "Classification of Occupations 2010" of the Bundesagentur für Arbeit by the tasks carried out in the job. Level 1 is assistant and training tasks, level 2 are specialized tasks, level 3 are complex tasks, and level 4 are highly complex tasks (own translation of the German task bundles of the occupations).
Active member of trade union	PASS-Survey	Self-reported answer on the question of active engagement in trade union.
Establishment: Time since first appearance	Administrative records	Current year minus the year of first appearance of the establishment number in the dataset. The four categories are (1) < 5 year, (2) 5-9 years, (3) 10-19 years, and (4) 20+ years.
Establishment: Number of employees	Administrative records	Total number of an establishment's employees reported to the social security agencies as of 30 June of a year. (1) 1-20 Employees; (2) 21-100 employees, (3) 101-500 employees, (4) 501-2000 employees, and (5) 2000+ employees.
Cohabitation	PASS-Survey	Partner is living in the same household (married or unmarried).
Number of children in own household	PASS-Survey	Number of children living in the same household.
Age bracket	PASS-Survey	The age control collapsed to four age brackets since an annual change of age otherwise forms with annual fixed effects almost perfect collinearity. The age groups are (1) 18-32, (2) 33-42, (3) 43-51 and (4) 53-65.
Doctoral consultations	PASS-Survey	Number of doctoral consultations within the last 3 months.
Biography: Total number of transfer episodes	Administrative records	Total number of transfer episodes in the whole employment biography since the first record in the administrative data.
Since 2005: Total time in UB II (in years)	Administrative records	Total number of (days/365) in UB II since the 1st January 2005.
County identifier	Administrative records	Based on a 5-digit county identifier in "wo_kreis".
Number of Jobcenter contacts	PASS-Survey	Based on the question: "How many times have you personally been to the Jobcenter since your household has been obtaining unemployment benefit 2 ("Arbeitslosengeld 2")?"
Jobcenter: Obligation to search for a job	PASS-Survey	Based on the question: "Not everyone who obtains unemployment benefit 2 ("Arbeitslosengeld 2") is expected by the Job centre to look for work, for example because this person is 58 years of age or older, looks after children, cares for relatives or is ill. How about you? Does the Job centre expect you to look for work?" Answers: (1) Yes, the Job centre expect me to look for work, (2) No, the Job centre does not expect me to look for work and I don't look, (3) No, the Job centre does not expect me to look for work but I look nevertheless. (2) and (3) as No (= 0).
Expectations: Worries about future job loss	PASS-Survey	Based on the question: "To what extent are you worried that you could lose your job?" (1) very worried, (2) somewhat worried, (3) slightly worried only, (4) not worried at all. Reference category (= 0) are workers with little or no worries to lose the job ((3) + (4)). Workers with less favorable future expectations ((1) + (2)) are coded (1).

Source: PASS-ADIAB, version 7515.

Table 3.A2 Job search of UB II workers and life satisfaction - clogit estimations

Dependent: <i>Pr</i> (JS = 1)	(1)		(2)	
	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.1512 ***	0.0516	-0.1020 *	0.0578
Monthly household income (ln)			-0.3109	0.2719
Hours			-0.1112 ***	0.0374
Hours (sq)			0.0016 **	0.0007
Tenure			0.1661	0.1116
Tenure (sq)			-0.0021	0.0080
Fixed-term contract (yes = 1)			0.3851	0.3080
Marginal Employment (yes = 1)			1.3460 ***	0.3821
Job requirements: Level 1 (Reference: Level 2)			0.0878	0.3387
Job requirements: Level 3			0.0067	1.0050
Job requirements: Level 4			1.0297	0.9201
Active trade union member (yes = 1)			0.4021	0.5813
Establishment: 1-20 employees			0.1096	0.3740
Establishment: 101-500 employees			0.5209	0.3748
Establishment: 501-2000 employees			0.3580	0.6265
Establishment: 2000+ employees			-1.2004	1.3194
Establishment: Time since first appearance: < 5 years			-0.6523 *	0.3397
Establishment: Time since first appearance: 10-19 years			-0.5689	0.3637
Establishment: Time since first appearance: 20+ years			-0.4207	0.3904
Cohabitation (yes = 1)			0.1913	0.6091
Number of children in household			0.2127	0.3452
Age bracket: 18-32 (Reference: 33-42)			-0.0697	0.6909
Age bracket: 43-51			-0.3501	0.4881
Age bracket: 52-61			-0.3473	0.7293
Number of doctoral consultations (last three months)			-0.0014	0.2148
Biography: Total number of transfer episodes			-0.3282	0.9339
Since 2005: Total time in UB II (in years)			-0.2464	0.2331
Individual fixed effects	yes		yes	
Wave controls			yes	
Number of observations		932		932
Pseudo R <sup>2</sup>		0.0130		0.1302

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. This table replicates the estimations of Table 3.2 with a conditional logit estimator. The maximum likelihood estimation for column 3 (adding county-specific fixed effects) does not converge. The number of observations reports all UB II workers who experienced at least one within-person change on the outcome variable job search over time.

Table 3.A3 Job search of UB II workers - Institutions - conditional logit estimations

Dependent: $Pr(JS = 1)$	(1)		(2)		(3)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.0512	0.0728	-0.1541 *	0.0909	-0.0712	0.1912
ME = 1 × Life satisfaction	-0.1806 **	0.0917				
Number of contacts to Jobcenter			0.1100	0.5653		
Jobcenter: Obligation to search for a job = 1			1.1746 ***	0.3234		
Expectations: Worries about future job loss = 1					0.9838 *	0.5490
Monthly household income (ln)	-0.3176	0.2740	-0.1503	0.4388	-3.1304	1.9320
Hours	-0.1104 ***	0.0374	-0.1070 *	0.0576	-0.4098 **	0.1764
Hours (sq)	0.0016 **	0.0007	0.0013	0.0051	0.0103 **	0.0051
Tenure	0.1796	0.1127	0.2248	0.1786	0.5173	0.5189
Tenure (sq)	-0.0028	0.0080	-0.0048	0.0113	-0.0149	0.0304
Fixed-term contract (yes = 1)	0.3870	0.3080	0.3742	0.4809	0.1563	1.2252
Marginal Employment (yes = 1)	2.1690 ***	0.8281	1.3009 **	0.5422	2.6348	2.6645
Job requirements: Level 1 (Reference: Level 2)	0.0657	0.3401	-0.5924	0.5858	-0.5240	1.8655
Job requirements: Level 3	-0.0026	1.0032	0.3648	1.4692		
Job requirements: Level 4	1.0503	0.9201	-0.0432	1.3612		
Active trade union member (yes = 1)	0.4123	0.5809	-0.2382	0.8732	-16.4086	2,736.42
Establishment: 1-20 employees	0.1268	0.3740	-0.7815	0.6532	-1.9895	1.6086
Establishment: 101-500 employees	0.5511	0.3762	-1.1115 *	0.5906	-0.0326	1.3695
Establishment: 501-2000 employees	0.4014	0.6292	-1.1068	0.9853	18.5897	1,743.95
Establishment: 2000+ employees	-1.1597	1.3274	-16.2326	1,314.73		
Establishment: Time since first appearance: < 5 years	-0.6212 *	0.3414	-0.8000	0.6021	-2.3416	2.3114
Establishment: Time since first appearance: 10-19 years	-0.5511	0.3640	-2.0504 ***	0.7169	-0.7243	1.0954
Establishment: Time since first appearance: 20+ years	-0.4118	0.3913	-1.4722 **	0.6544	-1.2851	2.3597
Cohabitation (yes = 1)	0.1576	0.6097	-0.7906	1.3640	-3.4764	2.9738
Number of children in household	0.2278	0.3462	1.2325 **	0.6158	1.0700	1.6258
Age bracket: 18-32 (Reference: 33-42)	-0.0670	0.6895	-2.5889 *	1.4103	15.6476	2,182.01
Age bracket: 43-51	-0.3580	0.4893	-0.0399	0.6605	-0.0530	1.6538
Age bracket: 52-61	-0.3336	0.7307	0.7694	1.0614	-3.5287	3.2724
Number of doctoral consultations (last three months)	-0.0031	0.0171	-0.0165	0.0333	0.0371	0.0729
Biography: Total number of transfer episodes	-0.3397	0.2150	-0.0564	0.3889	-1.1297	1.1294
Since 2005: Total time in UB II (in years)	-0.2580	0.2329	-0.1132	0.3953	-0.3750	0.8250
Individual fixed effects		yes		yes		yes
Wave controls		yes		yes		yes
Number of observations		932		439		172
Pseudo R <sup>2</sup>		0.1321		0.2586		0.2883

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. This table replicates the estimations of Table 3.3 with a conditional logit estimator. The number of observations reports all UB II workers who experienced at least one within-person change on the outcome variable job search over time.



Table 3.A4 Sensitivity analysis: job search and lagged life satisfaction and earnings

Dependent: <i>Pr</i> (JS = 1)	(1)		(2)		(3)		(4)		(5)		(6)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.0203 **	0.0091			-0.0258 ***	0.0092	-0.0112	0.0100	-0.0100	0.0100	-0.0100	0.0100
Life satisfaction (t-1)			-0.0174 *	0.0090	-0.0231 **	0.0092						
Monthly gross earnings (ln)									-0.1213 **	0.0509	-0.1224 **	0.0513
Monthly household income (ln)	0.0124	0.0408	0.0056	0.0399	0.0068	0.0408	0.0015	0.0454			0.0119	0.0442
Hours	-0.0139 **	0.0056	-0.0144 **	0.0057	-0.0136 **	0.0056	-0.0185 ***	0.0067	-0.0143 **	0.0072	-0.0143 **	0.0072
Hours (sq)	0.0002 *	0.0001	0.0002 **	0.0001	0.0002 *	0.0001	0.0002 **	0.0001	0.0002 **	0.0001	0.0002 **	0.0001
Tenure	-0.0030	0.0140	-0.0020	0.0139	-0.0026	0.0138	0.0194	0.0142	0.0200	0.0140	0.0199	0.0140
Tenure (sq)	0.0005	0.0009	0.0004	0.0010	0.0005	0.0009	0.0000	0.0008	-0.0001	0.0008	-0.0001	0.0008
Fixed-term contract (yes = 1)	0.0416	0.0460	0.0418	0.0461	0.0454	0.0456	0.0138	0.0453	0.0143	0.0446	0.0144	0.0446
Marginal Employment (yes = 1)	0.1924 ***	0.0663	0.1972 ***	0.0662	0.1866 ***	0.0662	0.1095	0.0839	0.0593	0.0857	0.0574	0.0859
Job requirements: Level 1 (Reference: Level 2)	0.0271	0.0526	0.0275	0.0523	0.0225	0.0516	-0.0263	0.0508	-0.0239	0.0507	-0.0243	0.0507
Job requirements: Level 3	0.0703	0.1175	0.0659	0.1202	0.0644	0.1187	0.0299	0.1169	0.0097	0.1114	0.0099	0.1115
Job requirements: Level 4	0.0366	0.0609	0.0444	0.0652	0.0525	0.0616	0.0711	0.1084	0.0748	0.1130	0.0741	0.1127
Active trade union member (yes = 1)	-0.0510	0.0583	-0.0374	0.0623	-0.0404	0.0620	0.0197	0.0665	0.0164	0.0658	0.0165	0.0659
Establishment: 1-20 employees	0.0096	0.0574	0.0089	0.0579	0.0055	0.0576	0.1165 *	0.0595	0.0998 *	0.0589	0.1003 *	0.0591
Establishment: 101-500 employees	0.0077	0.0681	0.0106	0.0681	0.0054	0.0677	0.1006	0.0751	0.0978	0.0743	0.0981	0.0744
Establishment: 501-2000 employees	-0.0355	0.0968	-0.0319	0.0962	-0.0316	0.0970	0.0534	0.1162	0.0477	0.1138	0.0479	0.1138
Establishment: 2000+ employees	-0.3634	0.2295	-0.3390	0.2210	-0.3323	0.2249	-0.3311	0.2655	-0.3528	0.2676	-0.3529	0.2672
Establishment: Time since first appearance: < 5 years	-0.0478	0.0569	-0.0430	0.0570	-0.0471	0.0568	-0.0340	0.0638	-0.0285	0.0633	-0.0293	0.0638
Establishment: Time since first appearance: 10-19 years	-0.0150	0.0535	-0.0193	0.0538	-0.0223	0.0534	-0.0452	0.0561	-0.0405	0.0558	-0.0406	0.0558
Establishment: Time since first appearance: 20+ years	-0.0204	0.0653	-0.0170	0.0658	-0.0275	0.0649	0.0020	0.0723	0.0075	0.0721	0.0077	0.0719
Cohabitation (yes = 1)	0.0658	0.0870	0.0668	0.0843	0.0446	0.0856	0.0265	0.0913	0.0329	0.0965	0.0352	0.0976
Number of children in household	0.0328	0.0471	0.0324	0.0473	0.0271	0.0471	0.0372	0.0448	0.0345	0.0451	0.0332	0.0450
Age bracket: 18-32 (Reference: 33-42)	-0.0713	0.0869	-0.0592	0.0865	-0.0640	0.0863	-0.0228	0.0737	-0.0246	0.0748	-0.0243	0.0749
Age bracket: 43-51	-0.1429	0.0918	-0.1482	0.0911	-0.1517 *	0.0905	-0.0279	0.0913	-0.0417	0.0904	-0.0419	0.0905
Age bracket: 52-61	-0.0995	0.1169	-0.1064	0.1166	-0.0970	0.1167	0.0057	0.1149	-0.0112	0.1141	-0.0118	0.1143
Number of doctoral consultations (last three months)	-0.0012	0.0033	-0.0006	0.0033	-0.0006	0.0032	-0.0015	0.0030	-0.0021	0.0031	-0.0021	0.0031
Biography: Total number of transfer episodes	-0.0420 *	0.0224	-0.0437 *	0.0225	-0.0459 **	0.0222	-0.0413 **	0.0183	-0.0401 **	0.0184	-0.0403 **	0.0184
Since 2005: Total time in UB II (in years)	-0.0273	0.0363	-0.0267	0.0366	-0.0251	0.0360	-0.0104	0.0377	-0.0088	0.0377	-0.0092	0.0378
Constant	0.7683 **	0.3658	0.7961 **	0.3542	1.0124 ***	0.3641	0.6290 *	0.3793	1.3555 ***	0.3366	1.2812 ***	0.4414
Individual fixed effects	yes		yes		yes		yes		yes		yes	
Wave controls	yes		yes		yes		yes		yes		yes	
County fixed effects	yes		yes		yes		yes		yes		yes	
Number of observations	2,757		2,757		2,757		2,607		2,607		2,607	
R <sup>2</sup> (overall)	0.0798		0.0788		0.0862		0.0752		0.0825		0.0826	

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level.

Table 3.A5 Sensitivity analysis: job search of marginal employed UB II workers

Dependent: <i>Pr</i> (JS = 1)	Baseline (Table 3, Col. 1)		Marginal employed only		Regular employed only	
	(1)	(1)	(2)	(2)	(3)	(3)
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Life satisfaction	-0.0050	0.0089	-0.0216 *	0.0849	-0.0095	0.0103
ME = 1 × Life satisfaction	-0.0323 ***	0.0110				
Monthly household income (ln)	-0.0318	0.0339	-0.0543	0.0596	-0.0088	0.0429
Hours	-0.0131 ***	0.0040	-0.0096	0.0062	-0.0200 ***	0.0071
Hours (sq)	0.0002 ***	0.0001	0.0001	0.0001	0.0003 ***	0.0001
Tenure	0.0163	0.0113	0.0059	0.0262	0.0229 *	0.0138
Tenure (sq)	-0.0002	0.0008	0.0013	0.0023	-0.0001	0.0008
Fixed-term contract (yes = 1)	0.0474	0.0372	0.1025	0.0932	0.0073	0.0447
Marginal Employment (yes = 1)	0.4108 ***	0.1029				
Job requirements: Level 1 (Reference: Level 2)	0.0071	0.0416	0.0843	0.0819	-0.0208	0.0524
Job requirements: Level 3	-0.0719	0.0929	0.2332	0.1784	0.0331	0.1084
Job requirements: Level 4	0.1043	0.0887	0.2028 *	0.1172	0.0136	0.1245
Active trade union member (yes = 1)	0.0459	0.0633	0.0088	0.2074	0.0766	0.0614
Establishment: 1-20 employees	0.0673	0.0495	-0.1335	0.1200	0.1121 **	0.0569
Establishment: 101-500 employees	0.1016 *	0.0575	0.1663	0.1214	0.0562	0.0727
Establishment: 501-2000 employees	0.0506	0.0713	-0.1270	0.1340	0.1033	0.1115
Establishment: 2000+ employees	-0.2480	0.1935	-0.3876	0.3512	-0.3108	0.2798
Establishment: Time since first appearance: < 5 years	-0.0716	0.0459	-0.1734 **	0.0823	-0.0235	0.0647
Establishment: Time since first appearance: 10-19 years	-0.0532	0.0406	-0.0262	0.0700	-0.0124	0.0535
Establishment: Time since first appearance: 20+ years	-0.0620	0.0520	-0.0734	0.0898	-0.0038	0.0694
Cohabitation (yes = 1)	0.0296	0.0658	-0.0288	0.0673	-0.0331 *	0.0194
Number of children in household	0.0234	0.0367	-0.1562 ***	0.0586	0.0118	0.0378
Age bracket: 18-32 (Reference: 33-42)	-0.0179	0.0676	0.1699 *	0.0951	0.0491	0.0948
Age bracket: 43-51	-0.0659	0.0698	0.0111	0.0793	0.0449	0.0441
Age bracket: 52-61	-0.0649	0.0931	0.3457 *	0.1976	-0.0361	0.1034
Number of doctoral consultations (last three months)	-0.0007	0.0025	-0.0853	0.1017	-0.0528	0.0904
Biography: Total number of transfer episodes	-0.0336 **	0.0170	-0.1764	0.1705	-0.0189	0.1085
Since 2005: Total time in UB II (in years)	-0.0354	0.0314	0.0034	0.0045	-0.0030	0.0029
Constant	0.8049 ***	0.2841	1.4168 **	0.6540	0.6311 *	0.3575
Individual fixed effects	yes		yes		yes	
Wave controls	yes		yes		yes	
County fixed effects	yes		yes		yes	
Number of observations	4,016		1,461		2,530	
R <sup>2</sup> (overall)	0.0749		0.1045		0.0730	

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. The sum of the observations from column (2) and column (3) is  $N = 3,991$ . 25 workers are excluded from the analysis as they could not clearly be assigned to one status only.

Table 3.A6 Sensitivity analysis: Duration model with Weibull distribution

Dependent: Hazard of exit UB II (in days)	(1)		(2)		(3)		(4)	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.
Life satisfaction	1.0283	0.0266	1.0399	0.0429	0.9200	0.0722	0.8575 **	0.0783
Job search = 1							0.8273	0.2579
Job search = 1 × Life Satisfaction							1.2194	0.1789
Monthly household income (ln)			0.9852	0.2608	0.7135	0.3151	0.7062	0.3189
Hours			1.0409 **	0.0169	1.0773 ***	0.0251	1.0712 ***	0.0255
Hours (sq)			0.9998	0.0002	0.9996	0.0003	0.9997	0.0003
Tenure			0.7779 ***	0.0496	0.7067 ***	0.0870	0.6961 ***	0.0899
Tenure (sq)			1.0111 ***	0.0023	1.0152 ***	0.0038	1.0158 ***	0.0039
Fixed-term contract (yes = 1)			0.8480	0.1666	0.5281 ***	0.2403	0.5182 ***	0.2425
Marginal Employment (yes = 1)			0.7868	0.2269	1.1994	0.3585	1.1990	0.3638
Job requirements: Level 1			0.8961	0.1510	1.1190	0.2229	1.0983	0.2187
Job requirements: Level 3			0.5362 *	0.3383	0.3756 **	0.4003	0.3967 **	0.4029
Job requirements: Level 4			1.5726	0.3952	5.0600 ***	0.5767	5.0771 ***	0.5960
Active trade union member (yes = 1)			1.9457 ***	0.2563	2.8446 **	0.4356	3.1419 ***	0.4355
Establishment: 1-20 employees			0.7002 *	0.1924	0.8236	0.2521	0.8300	0.2427
Establishment: 101-500 employees			0.9862	0.1870	1.0933	0.2758	1.0979	0.2692
Establishment: 501-2000 employees			1.9579 **	0.2659	4.4981 ***	0.4408	4.3389 ***	0.4155
Establishment: 2000+ employees			1.6504	0.4639	0.8324	0.9592	0.8796	0.9523
Establishment: Time since first appearance: < 5 years			1.0071	0.2242	0.9858	0.3438	0.9826	0.3517
Establishment: Time since first appearance: 10-19 years			0.9437	0.2070	1.0044	0.3307	1.0243	0.3373
Establishment: Time since first appearance: 20+ years			0.9237	0.2031	0.9142	0.3353	0.9252	0.3402
Cohabitation (yes = 1)			1.0742 ***	0.0254	1.0421	0.0392	1.0378	0.0399
Number of children in household			0.8075 ***	0.0288	0.6974 ***	0.0485	0.6929 ***	0.0485
Age bracket: 18-32			0.9324	0.1731	0.7796	0.2300	0.7557	0.2259
Age bracket: 43-51			1.0429	0.0786	0.9795	0.1229	0.9769	0.1259
Age bracket: 52-61			1.4104 *	0.1925	1.4339	0.3425	1.4012	0.3497
Number of doctoral consultations			1.0023	0.0268	1.0000	0.0214	1.0038	0.0227
Biography: Total number of transfer episodes			1.0742 ***	0.0254	1.0421	0.0392	1.0378	0.0399
Since 2005: Total time in UB II (in years)			0.8075 ***	0.0288	0.6974 ***	0.0485	0.6929 ***	0.0485
Gender: Male					0.6012 *	0.2736	0.5909 **	0.2668
Highest educational attainment: ISCED 1-2					0.9993	0.2815	0.9682	0.2863
Highest educational attainment: ISCED 4-6					0.5228 **	0.3248	0.4993 **	0.3280
Big Five personality trait: extraversion					1.2599	0.1446	1.2415	0.1425
Big Five personality trait: agreeableness					0.8843	0.1366	0.8958	0.1387
Big Five personality trait: conscientiousness					0.8225	0.2219	0.8652	0.2298
Big Five personality trait: neuroticism					1.0553	0.1349	1.0309	0.1328
Big Five personality trait: openness					1.4224 *	0.2107	1.3883	0.2168
Constant	0.0088 ***	0.1539	0.0017	2.0891	0.0027	2.7291	0.0037	2.7938
Number of observations	=	987	987		639		639	
Log pseudolikelihood	=	-1,305.0491	-978.9209		-523.6947		-521.9295	

Source: PASS-ADIAB, version 7515, own calculations.

Note: \* denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level.

**Chapter 4**  
**Experienced well-being and Labor Market Status:**  
**the role of pleasure and meaning**

## 4.1 Introduction

Subjective well-being (SWB) is a multidimensional concept that encompasses evaluative and experiential measures. While evaluative well-being measures like life satisfaction ask people what they think about their life, experiential measures cover how people experience their life (Stiglitz, Sen, and Fitoussi 2009, Fleurbaey 2009). In principle, both measures of well-being are suitable to describe the subjective quality of different labor market states. However, the consequences of (un-)employment for SWB are mostly examined by evaluative SWB. Based on questions asking how satisfied workers are with their life in general, they show that unemployed are less satisfied than employed (see, for instance, Kassenboehmer and Haisken-DeNew 2009). One domain of life satisfaction is, at least for the employed, job satisfaction. It is also an evaluative measure and asks if people are satisfied with their job, thus it is used as an empirical proxy of utility from one's job. However, both evaluative measures neglect that SWB has a temporal dimension. We study experienced well-being that combines well-being valuations with time use. Being employed or being unemployed crucially shapes individual time use. Hence, experienced well-being is particularly important in this context.

Empirically experienced well-being is based on the theoretical concept of the experienced utility of Kahneman et al. (1997). It works out Bentham's idea that time comes along with experiences of pleasure or pain in every instantaneous unit.<sup>25</sup> It is defined as the temporal integral of positive or negative valuations, i.e. time becomes the weighting factor for experiences of pleasure and displeasure (Kahneman et al. 2004a, Krueger et al. 2009b, Diener and Tay 2014). Experienced well-being aggregates such instantaneous experiences into one single measure and enables the comparisons of groups of individuals on an aggregate level (Kahneman et al. 2004b).

We use the day reconstruction method (DRM) module of the nationally-representative innovation sample of the German Socio-Economic Panel Study (SOEP-IS), which was included in the annual GSOEP survey from 2012 to 2015. We examine experienced well-being on labor markets and take standard evaluative SWB measures for life and job satisfaction – as quantities that in general are used to evaluate labor market states – as reference measures. Namely, we investigate if being employed is valuable in terms of experienced well-being in comparison to being unemployed. Workers experienced well-being is expressed in terms of the novel P-index, which reports the share of pleasurable minutes a person experiences on the DRM day.

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<sup>25</sup> Allocation of time was already introduced into economics in the mid-20<sup>th</sup> century (see Juster and Stafford 1991 for a literature review).

Two potential sources of (dis-)amenities from work beyond the monetary remuneration are examined: experiences of pleasure and experiences of meaning during the job. The latter – meaning, a feeling that an activity has a deeper sense, – specifically needs more investigation. We hypothesize that working becomes a pleasurable activity due to the production of meaning that it enables. A review suggests that workers strive for such experiences of meaning during work (Cassar and Meier 2018). In the course of the paper, we shift the perspective from the outcome of experienced well-being for the whole day to working episodes alone. We ask if working becomes pleasurable because it provides a meaningful experience and examine how pleasure and a meaningful experience affect experienced well-being and job satisfaction.

We contribute to the literature by comparing experienced well-being of the employed and the unemployed by accounting for unobserved individuals' heterogeneity with individual fixed effects. Representative SOEP-IS also allows for strengthening the external validity compared to prevailing experimental DRM populations. Both aspects allow methodological progress to understand how workers experience being employed and being unemployed. By integrating experienced meaning as a predictor for pleasure during work, we assess a central non-monetary determinant for utility from work. We find that, in contrast to income and working hours, perceiving meaningfulness enhances experienced pleasure at work. Consequently, total experienced well-being is increased by meaning. Nonetheless, on average, the unemployed experience more pleasurable time, which is mainly due to the absence of the working episodes in their daily life.

The rest of the article is organized as follows. Section 4.2 reviews the related literature and Section 4.3 describes the SOEP-IS DRM data. In Section 4.4, we describe the methodological aspects of experienced well-being and pleasure from job meaning. The results for experienced well-being are presented in Section 4.5, while Section 4.6 reports the findings regarding pleasure and well-being from experienced meaning. Finally, in Section 4.7, we sum up and discuss implications.

#### **4.2 Related literature on experienced well-being, labor market status and meaning**

Unemployment reduces *life satisfaction* beyond the shrinking financial abilities from the job loss (e.g. Winkelmann and Winkelmann 1998; Kassenboehmer and Haisken-DeNew 2009). This decline in life satisfaction is explained by a loss of non-pecuniary benefits from employment (e.g. Clark 2003; Schöb 2013; Hetschko et al. 2014). The daily routine of employed and unemployed individuals differs fundamentally. The unemployed have more time

discretion without the obligation to work. Measures of experienced well-being incorporate the valuation of elapsed time and allow us to incorporate it into labor market analysis. The few papers contrasting employment and unemployment using experienced well-being show ambiguous findings for the role of employment status: In two female-only samples from Rennes (France) and Columbus (USA), the unemployed have lower experienced well-being (Krueger et al. 2009a). In contrast, results from Berlin and Magdeburg (Germany) show that the experienced well-being of the unemployed does not significantly differ from that of the employed (Knabe et al. 2010). Krueger and Mueller (2012) examine reemployment of unemployed in New Jersey (USA), specifically tracking the hedonic experiences of happiness, sadness and stress. They find that reemployment increases the experienced intensity of happiness while it reduces stress and sadness. Another survey on experiences of happiness, anxiousness, and sadness of unemployed shows during a retrospective four-week window a comparable pattern for the unemployed in Germany. Unemployed report more frequent feelings of sadness and anxiety, and less frequent feelings of happiness (von Scheve, Esche, and Schupp 2017). However, in a study on unemployed in France, the difference to employed in terms of experienced well-being is not significant, unemployed in the USA again show reduced experienced well-being (Flèche and Smith 2017). For the UK, experienced well-being is similar between employed and unemployed (Hoang and Knabe 2020). To sum up, it is not clear whether employed and unemployed differ in terms of experienced well-being. These findings may result from the different locations, the selectivity of the survey populations, measurement issues, empirical approaches to experienced well-being, or the incomplete accounting for the differences in the day-to-day schedule of employed and unemployed.

At least for working days, activities like commuting and working exclusively shape the days of employees. The unemployed have more leisure time at their discretion. It is remarkable that among the reported activities, ‘working’ ranks among the least pleasurable (Kahneman et al. 2004a, Bryson and MacKerron 2017, Hoang and Knabe 2020). Given the detrimental role of working time, a hypothetical *time composition effect* would lead to higher experienced well-being among non-working persons as they can avoid unpleasant work. However, a counteracting *saddening effect* is also present: a lower intensity of positive valuations of leisure activities which is potentially due to diminishing marginal returns from leisure time. Therefore, the overall difference in experienced well-being depends on whether time composition or saddening effect dominates (Knabe et al. 2010). Two exceptions from harmful working experiences are ‘volunteer’ workfare participants (German ‘one Euro’ jobs) allowing for

holidays from unemployment (Knabe, Schöb, and Weimann 2017) and US volunteers who enjoy their work (Gimenez-Nadal and Molina 2015). Both groups experience greater well-being during working given their income level. We take this as a hint that pleasure from work depends not only on pecuniary aspects, times use and pleasure but also on a further factor that may be experienced meaningfulness.

Meaning is a feeling of purpose or a deeper sense. Stated preference studies suggest that workers have such a preference for a general sense of meaning in life (Benjamin et al. 2014, Adler, Dolan, and Kavetsos 2017). Among specific activities, working is described as an activity with a high level of perceived meaningfulness and rather low pleasure (White and Dolan 2009). Workers might obtain meaning from work for several reasons that help to foster utility (for an overview see Cassar and Meier 2018). For instance, meaning is described as a production technology for identity utility that links own actions (like working in a specific job as well as the choice of an occupation or a task) to a societal goal. Following a specific narrative of prescribed behavior, it allows for perceiving own work as meaningful. This is why workers prefer to act in a prescribed way of their social category (Akerlof and Kranton 2000, Schöb 2013). Experienced meaning during work is an expression of identity utility production during work. Further, meaning is also described as the biologically determined process or a human drive (Chater and Loewenstein 2016) or as an assertion for free will (Karlsson, Loewenstein, and McCafferty 2004). Organizational studies further suggest that each firm's perceived pro-social mission allows for experiencing meaning during work. While it is difficult to separate these distinct channel of non-monetary advantages from work, the conjecture that the reduced life satisfaction of the unemployed is partly due to a loss of the opportunity to experience meaning is plausible (Cassar and Meier 2018).

Work meaningfulness might be relevant for labor market behavior. A current empirical paper shows that meaning affects workers' effort measured in terms of absenteeism, skills training, and retirement intentions (Nikolova and Cnossen 2020). Other applied papers show that meaning correlates positively with measures of well-being. For instance, feeling that ones' job is socially useless (the opposite of a meaningful experience) correlates negatively with evaluative job satisfaction. Remarkable here is that those individuals who claim that meaning does not matter for them do not have reduced job satisfaction (Dur and van Lent 2019).<sup>26</sup> This finding suggests that preference heterogeneity among workers matters a lot in terms of meaning

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<sup>26</sup> A comparable correlation is found for a flourishing scale that encompasses a question on meaning and evaluative life satisfaction (Clark 2016).



(Bryce 2018). In line with the relevance of meaning, work-effort experiments suggest that increasing the meaning of tasks increases the work effort for this task. This does not hold for all subjects as some persons do not care about meaningfulness at all (Ariely, Kamenica, and Prelec 2008, Chandler and Kapelner 2013, Kosfeld, Neckermann, and Yang 2017). Thus, we expect that pleasure at work is positively associated with meaning.

### 4.3 Data

For our analysis, we use the German Socio-Economic Panel Innovation Sample (SOEP-IS) which started in 2011. It contains a reduced form of the SOEP survey questionnaire and the representative sampling design of the SOEP household study (Goebel et al. 2019). A broad set of items, like socio-economic status, questions on life satisfaction and income information, are included. Moreover, the SOEP-IS enriches the SOEP household survey with supplemental modules, including experiments and additional questions within the SOEP survey design (Richter and Schupp 2015). One of these modules is a survey-adapted version of the day reconstruction method (Kahneman et al. 2004a). SOEP-IS DRM combines a time use assessment with self-reported well-being for episodes (Anusic, Lucas, and Donnellan 2017).

The SOEP-IS DRM data were collected in 2012, 2013, 2014, and 2015.<sup>27</sup> The interviewer asks the respondents to report what time the respondent got up on the previous day. Subsequently, the respondents were asked episode-wise to choose one out of a set of 23 activities, followed by the question about what they did afterwards. This procedure was repeated until the person reports that she went to bed. Besides the listed activities, respondents could also use an open text field for activities. These open answer episodes are also part of our sample as they were manually categorized (Wolf 2018). Every activity of the previous day is tracked with its exact timing (in 5 minutes increments) from the beginning to its end.<sup>28</sup> After finishing the diary, the respondents assessed each reported activity in their diary by answering the following question:

*“Overall, was this episode [name of the episode] from [episode begin] until [episode end] rather pleasant or rather unpleasant?”<sup>29</sup>*

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<sup>27</sup> More specifically, respondents from the former SOEP core samples E (initially drawn 1998) and I (initially drawn 2009) were asked to answer the DRM module. Respondents from refreshment samples of SOEP-IS were not part of the DRM module.

<sup>28</sup> The diary is complemented by asking for parallel activity spells.

<sup>29</sup> English translation of the German interview question “Insgesamt gesehen, war diese Episode [...] von [...] bis [...] eher angenehm oder eher unangenehm?”

This binary measure of episode satisfaction reduces the (temporal) burden of assessing the whole DRM day for the respondents while still capturing the information for each episode of the previous day. Besides, three activities of each diary were randomly drawn and an additional battery of ratings for more detailed experiences was surveyed:

*“On a scale from 1 (not at all) to 7 (very strongly) how strongly did you experience the following feelings during the listed activity?”<sup>30</sup>*

The hedonic experiences are happiness, anger, frustration, fatigue, mourning, worries, pain, enthusiasm, satisfaction, boredom, loneliness, and stress. Further, a deeper meaning is also surveyed. Both the location of activity and the presence of other persons were additionally asked for these random episodes. As we examine the role of work in detail (Section 4.6), we specifically make use of randomly chosen work episodes. The experience that we use for our analysis in Section 4.6 is the question on the intensity of a *deeper meaning* – the measure for experienced meaning.

We take evaluative SWB measures: life satisfaction and job satisfaction. While life satisfaction is surveyed by asking *“On a scale from 0 (completely dissatisfied) to 10 (completely satisfied), how satisfied are you with your life, all things considered?”*, for job satisfaction the response on the question *“On a scale from 0 (completely dissatisfied to 10 (completely satisfied), how satisfied are you with your job?”* is used.

We make use of all observations with at least one answered DRM diary per person.<sup>31</sup> During the survey period, 2,299 individuals answered 7,370 DRM diaries, with 1,409 persons surveyed in all four years, 301 persons answering three times, 242 persons answering two times, and 347 persons once. We distinguish between two employment states: employed and unemployed. *Employed* workers are individuals with information on the current occupational position (from untrained worker to executive civil service). We exclude persons working in sheltered workshops, in apprenticeship, traineeship, vocational training, or in (partial) retirement. *Unemployed* are individuals who are officially registered as unemployed on the interview day

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<sup>30</sup> We use the 2012 English translation of the German interview question “Wie stark haben Sie auf einer Skala von 1 (gar nicht) bis 7 (sehr stark) die folgenden Gefühle bei der angeführten Aktivität empfunden?“ The emotions are happiness (Glück), anger (Ärger), frustration (Frustration), fatigue (Müdigkeit), mourning (Trauer), worries (Sorgen), pain (Schmerzen), enthusiasm (Begeisterung), satisfaction (Zufriedenheit), boredom (Langeweile), loneliness (Einsamkeit), stress (Stress), and a deeper meaning (einen tieferen Sinn).

<sup>31</sup> Three respondents from the supplement samples (S1 Supplementary 2012 and S2 Supplementary 2013 Sample) accidentally filled in the DRM and have been dropped for our analysis.

and do not report any working spell in their diary.<sup>32</sup> Additionally, we drop nine respondents who do not give any information about their activities or pleasure.

Table 4.A1 presents an overview of the control variables we rely on: socio-demographic characteristics like gender, age, family status, educational attainment, number of adults, and children in the household. As a proxy for consumption possibilities, we use individual disposable income, measured as net household income equalized by the new OECD scale. Health status is proxied by the number of doctoral consultations within the last three months. In addition, for the employed, we also have information on the job: monthly labor gross income, the occupational position (self-employed, white-collar worker, blue-collar worker, or civil service), company size, weekly working hours, tenure, and perceived autonomy at work as covariates of pleasure at work.

On the work episode level, we use DRM questions on a possible second activity during work, the time of beginning and ending a work episode, the number of working spells on the day, the work spell duration, the place of work, and involved persons during work. Due to the survey procedure, a subset of work episodes come along with information on experienced meaning.<sup>33</sup> Given the reported restrictions and missing values on the covariates, the sample of work episodes contains 3,699 observations across 1,308 individuals.

## 4.4 Methods and Hypotheses

### 4.4.1 Experienced well-being by employment status

Experienced well-being combines two aspects: time use and an accompanying experiential valuation of each temporal increment. It allows for aggregating such instantaneous experiences into a single measure. We employ the P-index to compare the daily valuation of experiences of the employed and the unemployed. It is a measure for experienced well-being across the entire DRM day based on episode wise and dichotomous valuations. Thus, a person  $i$  in survey year  $t$  reports  $\sum a_{ijt} = J_{it}$  episodes with specific duration  $s_{ijt}$ . The sum of all episode durations on a day is  $S_{it}$ . An episode is either reported as *rather pleasurable* ( $p_{ijt} = 1$ ) or as *rather unpleasurable* ( $p_{ijt} = 0$ ) such that experienced well-being denotes as following:

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<sup>32</sup> In Germany, unemployed have the permission to work at maximum 15 hours (German Law: § 138 SGB III). The work spells of the unemployed can be informal work or studying episodes. To have a clear interpretation, we drop such cases. As a robustness check, we left these (marginally) working unemployed in the sample and find no different results (available on request).

<sup>33</sup> Consequently, two other episodes of the same person on the same day are available with meaning information making it impossible to deduce the experienced meaning of the remaining non-working time or even the whole day.

$$P_{it} = \frac{\sum_{j=1}^J S_{ijt} \cdot p_{ijt}}{S_{it}} \quad (1)$$

$P_{it}$  records the individual share of pleasurable time awake. In order to keep it comparable between persons,  $P_{it}$  is normalized by the total time a person is awake  $S_{it}$ . The maximum value of 1.00 characterizes a fully pleasurable day while  $P_{it} = 0.00$  indicates a completely unpleasurable day.

While the cardinal time in minutes has clear and comparable meanings,<sup>34</sup> experiences raise methodological issues (for detailed discussions see: Krueger et al. 2009b, Knabe et al. 2010). The main advantage of our study is that we leave the choice of the relevant adjectives for experiences to the respondents' introspection. Therefore, it is not necessary to select positive or negative emotions as a researcher. We interpret the P-index analogously to the inverse of the widespread U-index. The main difference is that it is not based on the intensity of different emotions but based on one statement on experienced pleasure per episode.<sup>35</sup>

In our analysis, we compare conditional group means of  $P_{it}$  to investigate the difference in experienced well-being of employed and unemployed workers. The fixed-effects estimation equation has the following form:

$$P_{it} = \gamma_0 + \gamma_1 es_{it} + \gamma_2 w_{it} + day_{it} \gamma_a + X' \gamma_b + J' \gamma_c + wave_{it} \tau_t + \alpha_i + \mu_{it}, \quad (2)$$

where  $\gamma_0 \neq \gamma_1 \neq \gamma_2 \neq \gamma_a \neq \gamma_b \neq \gamma_c$ .

As the employed are the baseline, the  $\gamma_1$ -coefficient states whether unemployed experience more, equal, or less pleasurable time. While not all employed were working on the reported DRM day (e.g. on the weekend or on holidays), we control for the prevalence of a working episode on the DRM day  $w_{it} = \{0; 1\}$ . In order to account for day-of-the-week effects, we

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<sup>34</sup> For the sake of simplicity, we circumvent for the theory of individual perceptions of timing and assume that the physical definition of a minute (or another quantity of timing) applies to all respondents the same way.

<sup>35</sup> A widespread method of measuring affective experiences in psychological research is the positive affect scale (PA) and the negative affect (NA) scale. The weighted mean of positive adjectives like "happy" and "enthusiasm" on Likert-scales asking for the intensity constitutes the PA measure. Negative adjectives like "anger" and "worries" are used to generate NA of the specific episode. NA and PA are often used to calculate one single measure of net affect: (PA-NA). There are two drawbacks: (1) the researcher has to choose an appropriate set of relevant adjectives and (2) different scales for these adjectives are interpreted intrapersonal exactly on the same scale. This cardinality issue is discussed in the economic literature and led to the proposal of the so-called u-index (Kahneman and Krueger 2006; Krueger et al. 2009). The u-index summarizes the emotional experience of an episode by dichotomizing it either as pleasurable or unpleasurable. An episode is considered as unpleasant (= 1) in the case the strictly most intensive feeling during this episode is a negative one. This means that the u-index is independent of scaling effects (Knabe et al. 2010, p.871) but the researcher has to choose the set of relevant emotional adjectives.

integrate interview day controls as well as interview year fixed effects  $\tau_t$  that capture business cycle aspects. To make both groups comparable, we also account for socio-demographic characteristics  $X$ , encompassing, for instance, income, working hours, or family status (see for details Table 4.A1). As respondents are surveyed up to four times with an approximate temporal distance of 12 months, we address endogeneity issues arising from unobserved individual heterogeneity (like personality traits) with individual fixed effects  $\alpha_i$ . Thus,  $\gamma_1$  and  $\gamma_2$  dummy coefficients are interpreted as average *within* an individual change of  $P_{it}$  resulting from a labor market status change respective the prevalence of working on the DRM day. We further account for activity-specific fixed effects by the vector  $J_{it}$  containing information whether a person was engaged in this activity on the DRM day. Finally, we assume that the idiosyncratic error term  $\varepsilon_{it}$  is uncorrelated with the explaining variables of every wave within the same individual.

#### 4.4.2 Pleasure and meaning from work

In the second step, we shift the analytical perspective and exclusively examine working episodes. We investigate the potential channels through which meaning could affect well-being. Therefore, we examine if meaning affects pleasure at work beyond income, working hours, and further standard job characteristics. In line with the literature, we hypothesize that the propensity of reporting work as *rather pleasurable* ( $p_{ijt} = 1$ ) is positively associated with experienced meaning. We estimate the latent propensity of experiencing the working episode  $p_{it}^*$  pleasurable<sup>36</sup> as follows:

$$p_{ijt}^* = M' \delta_a + Y' \delta_b + Z' \delta_c + \varepsilon_{it} \quad \varepsilon_{it} \sim NID(0,1)$$

$$p_{ijt} = 1 \quad \text{if } p_{ijt}^* > 0 \text{ and}$$

$$p_{ijt} = 0 \quad \text{if } p_{ijt}^* \leq 0 \text{ and} \tag{3}$$

$$\delta_a \neq \delta_b \neq \delta_c.$$

The measure for experienced meaning  $M$  is a vector that includes two different specifications. First, using dummies for each category of an ordinal meaning scale allows the representations of non-linear associations. Specifically, persons reporting working as “not meaningful at all” should be controlled for separately as the literature suggests that some people do not value

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<sup>36</sup> The additional question on how meaningful the activity was experienced was only asked for three randomly selected episodes (see Section 4.3). Therefore, estimating a fixed effects probit model makes no sense. For instance, if three working episodes of a person in one year were randomly selected, either an average of  $p$  has to be calculated or only one period per person can be used for the analysis. Option 1 needs a different estimation strategy by applying option 2, observations have to be skipped.

meaning at all. For such subjects, it is not clear whether they experience no meaning because their work experience is meaningless or they do not care about it. Second, we define  $M$  by a dummy that is equal to one if persons report working as “not meaningful at all” and zero otherwise (“extensive meaning scale”) and the other meaning values as a metric variable (“intensive meaning scale”). As pleasure at work is not only affected by meaning, we also condition on a vector  $Y$  of socio-demographic and job characteristics. Further, vector  $Z$  characterizes the working spell (for details see Section 4.3 and Table 4.A1 in the Appendix), e.g. for the early beginning of work or shift work, durations of each work spell or reporting behavior like more than one work spell at the DRM day due spell splits from breaks.

To clarify if meaningfulness of work has an overall effect on well-being and not just an effect on the pleasure of the work episode, we regress two general well-being measures on meaning. If meaning is associated with pleasure at work, experienced well-being (P-index) should also show an association. For instance, collecting pleasurable and meaningful episodes may increase experienced well-being. Since the day for employees is characterized by work, pleasure and meaning should influence the general experiences of well-being measure (P-index). As a second indirect measure for the role of meaning, we employ the established job satisfaction measure. The association of experienced meaning to this standard measure for utility from work gives us an additional impression on the relevance of meaning.

## **4.5 Experienced well-being of employed and unemployed workers**

### *4.5.1 Time use and pleasure during activities*

The DRM sample comprises 3,384 employed and 315 unemployed respondents. Over the four years under study, 70 persons changed their labor market status. In order to portray representative characteristics of the German residential population, we apply population weights provided by the SOEP (Kroh, Kühne, and Siegers 2017) and compare the weighted socio-demographic characteristics with the unweighted. For a set of basic observable characteristics (age, gender, earnings, etc.) the application of population weights yields only marginal differences (see Table 4.A2). This suggests that the representative sampling procedure of SOEP-IS portrays the German residential population with sufficient precision. The distribution of employed and unemployed person is roughly similar before and after weighting. The average age in our sample is about 44 years and gender is almost equally distributed. Unemployed persons have, on average, less disposable household income, while education

levels are higher among the employed. On average, the respondents report about 12 episodes, such that the sample consists in total of 40,325 episodes.

Initially, we pool all episodes, comparing the employed and unemployed on the activity level. Not all employed worked on the DRM day (due to holidays, weekends, or part-time jobs).<sup>37</sup> The prevalence of most leisure activities is significantly higher for the unemployed (see Table 4.1). The unemployed more frequently report typical leisure activities (e.g. watching TV, browsing the internet), but they are also more often engaged with non-market work (e.g. doing housework, preparing meals). The only activities with higher frequencies among the employed are *commuting to/from work*, *working*, and *body care*. A diverse picture emerges by comparing durations of the specific activities. The unemployed report longer durations for almost all activities, both non-market work and leisure activities.<sup>38</sup> Differences on the activity level are not statistically significant for many activities due to low case numbers.

In general, experience during the activities is overwhelmingly reported as *rather pleasurable*. Even activities that rank among the least pleasurable like *working*, *commuting*, *housework*, or *renovation tasks* are rated as pleasurable in about 80 % of all reports. Only doctoral consultations are more often reported as *rather unpleasurable*. Differences between the employed and unemployed are small. However, the groups significantly differ for four activities. A large share of the unemployed finds caring for children as pleasurable whereas the employed find watching TV, exercising, and strolling as pleasurable more often. These findings are in line with the idea of a ‘saddening effect’ from unemployment, as the unemployed engage in these latter activities more frequently and for longer times.

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<sup>37</sup> Among the employed, about 65 % worked on the DRM day (for more details see Table 4.1).

<sup>38</sup> The unemployed report also more minutes of sleep, which we calculate as a residual of the time awake.

Table 4.1: Time use and pleasure by employment status and activity

Activity	Reported spell (N=)		Reported (share of persons)			Total minutes (per day), unconditional			Total minutes (per day), conditioned on			Reported "rather pleasureable"		
	E	UE	E	UE	Diff	E	UE	Diff	E	UE	Diff	E	UE	Diff
Way to/from work	3756	./	0.642	./	./	48.375	./	./	75.334	./	./	0.882	./	./
Way to/from leisure activity	1367	141	0.259	0.238	0.020	20.340	29.127	-8.787**	78.663	122.333	-43.670***	0.933	0.943	-0.011
Working	3448	./	0.714	./	./	322.651	./	./	451.925	./	./	0.861	./	./
Shopping	1045	134	0.287	0.403	-0.116***	23.033	39.048	-16.014***	80.190	96.850	-16.660***	0.902	0.858	0.044
Preparing food	2518	341	0.497	0.625	-0.128***	23.212	39.968	-16.756***	46.700	63.909	-17.208***	0.960	0.971	-0.010
Eating	6023	609	0.891	0.914	-0.023	60.412	74.206	-13.794***	67.783	81.163	-13.380***	0.989	0.990	-0.001
Washing oneself	4600	382	0.925	0.895	0.030**	29.645	28.889	0.757*	32.041	32.270	-0.229	0.953	0.966	-0.012
Doing housework	2356	292	0.468	0.610	-0.141***	50.303	73.619	-23.316***	107.465	120.781	-13.316	0.781	0.791	-0.010
Childcare	1507	233	0.226	0.279	-0.054	32.951	63.206	-30.256***	145.949	226.250	-80.301***	0.938	0.970	-0.032**
Meet friends	604	113	0.162	0.276	-0.114***	27.590	58.825	-31.235***	170.374	212.989	-42.614***	0.983	0.973	0.010
Resting/taking a nap	697	106	0.190	0.314	-0.124***	20.634	32.476	-11.842***	108.593	103.333	5.259	0.989	0.972	0.017
Relaxing	1051	111	0.265	0.286	-0.021	25.833	33.556	-7.722**	97.567	117.444	-19.877**	0.996	1.000	-0.004
Intimate relations	36	./	0.010	./	./	0.550	./	./	53.143	./	./	1.000	./	./
Worship/meditation	59	./	0.014	./	./	0.895	./	./	65.870	./	./	0.983	./	./
Watching TV	2720	384	0.680	0.832	-0.152***	99.972	173.556	-73.584***	147.025	208.664	-61.639***	0.988	0.977	0.012**
Reading	719	52	0.183	0.140	0.043	12.299	12.825	-0.526	67.237	91.818	-24.581**	0.994	1.000	-0.006
Computer/internet	939	130	0.231	0.327	-0.096*	24.165	53.413	-29.248***	104.438	163.350	-58.911***	0.967	0.954	0.013
On the phone	361	58	0.098	0.156	-0.058	3.756	11.127	-7.371***	38.515	71.531	-33.015***	0.931	0.897	0.034
Exercising	380	23	0.108	0.060	0.048	11.195	5.381	5.814**	103.229	89.211	14.018	0.979	0.826	0.153***
Visiting doctor	223	33	0.064	0.092	-0.029	6.300	11.365	-5.065***	99.163	123.448	-24.285*	0.583	0.515	0.068
Gardening	283	30	0.076	0.083	-0.007	9.205	12.905	-3.700	121.680	156.346	-34.666**	0.926	0.967	-0.041
Keep oneself busy with pets	600	119	0.125	0.219	-0.094**	7.110	22.857	-15.747***	56.879	104.348	-47.468***	0.968	0.992	-0.023
Have a coffee/tee	350	47	0.090	0.124	-0.033	3.496	6.254	-2.758**	38.660	50.513	-11.853	0.989	1.000	-0.011
Listen to radio/music	29	./	0.008	./	./	0.609	./	./	79.231	./	./	1.000	./	./
Care giving to relatives	32	12	0.008	0.016	-0.008	0.804	4.683	-3.879***	97.143	295.000	-197.857***	0.844	1.000	-0.156
Volunteering	31	./	0.009	./	./	1.107	./	./	124.833	./	./	1.000	./	./
Walking/stroll	67	14	0.019	0.041	-0.023	1.974	3.222	-1.248	106.032	78.077	27.955	1.000	0.929	0.071**
Job search/job center	8	14	./	./	./	./	./	./	./	./	./	./	./	./
Meeting/talking to partner or relatives	175	16	0.048	0.048	0.001	4.833	9.460	-4.627**	99.726	198.667	-98.941***	0.949	1.000	-0.051
Artistic activity	58	./	0.017	./	./	1.882	./	./	113.750	./	./	1.000	./	./
Service of hairdresser, manicure, pedicure, cosmetician	36	./	0.011	./	./	0.804	./	./	75.556	./	./	0.972	./	./
At party/events/going out	23	./	./	./	./	./	./	./	./	./	./	./	./	./
Doing DIY, handicrafts, renovate	108	10	0.028	0.029	0.000	4.840	7.048	-2.207	170.625	246.667	-76.042	0.870	0.700	0.170
Playing (board) games, solving quizzes	12	14	./	./	./	./	./	./	./	./	./	./	./	./
Drinking alcoholic drinks, smoking	12	./	./	./	./	./	./	./	./	./	./	./	./	./

Source: SOEP-IS 2012-2015, own calculations.

Note: E denotes employed, UE unemployed and Diff denotes the difference between employed and unemployed. \*\*\* Significant on a 1 % level, \*\* significant on a 5 % level\* significant on a 10 % level. ./ Values from cells with N < 30 in total or N < 10 for the distinct labor market status are truncated by the authors due to low case numbers.



#### 4.5.2 Experienced well-being

The comparison of the aggregate experienced well-being measures is reported in Table 4.2. Experienced well-being of the unemployed is higher than the experienced well-being of the employed. The employed spend on average 91.3 percent of their time awake in *rather pleasurable* activities whereas the unemployed experience 94.2 percent of their time in a subjectively *rather pleasurable* mood. Although both shares are rather high, we find that the difference is statistically significant ( $p < 0.00$ ). For initial evidence on the role of working for experienced well-being, we calculate a hypothetical P-index. The hypothetical experienced well-being level is calculated such that it reports the values as if the working employed had not worked. Hence, the hypothetical P-index reports experienced well-being without the time of working episodes during the DRM day and its accompanying valuation.<sup>39</sup> A higher hypothetical experienced well-being compared to the actually experienced well-being indicates a negative impact from the work episodes. Comparing employed without any working episodes with unemployed shows that both groups have similarly experienced well-being of about 0.94 ( $p < 0.31$ ). This finding suggests that working episodes of the employed particularly harm the overall experienced well-being.

Table 4.2: Experienced well-being (P-index) by employment status

<i>Status</i>	<i>P-index</i>	<i>P-index (without work)</i>	<i>Life Satisfaction</i>	<i>N</i>
Employed (E)	0.913	0.949	7.453	3384
Unemployed (UE)	0.942	0.942	6.044	315
Difference	$p < 0.00$ ***	$p < 0.31$	$p < 0.00$ ***	3699

Source: SOEP-IS 2012-2015, own calculations.

The 'P-index' reports the average share of pleasurable time awake on the DRM day (see Section 4.3). The 'P-index without work' reports this share of pleasurable time excluding working and commuting episodes. The time of these episodes is also excluded from the time weighting. Life satisfaction was taken from the respondents answer on the general life satisfaction question in SOEP-IS (scale: 0-10).

Contrasting experienced well-being with the general life satisfaction of the same respondents replicates a standard result that the unemployed are significantly less satisfied with their lives. Thus, experienced well-being and life satisfaction show opposite signs when comparing the employed and unemployed. While experienced well-being of the unemployed is higher, life

<sup>39</sup> We exclude the *work* and *commuting to/from work* episodes.

satisfaction is lower for the unemployed. This is in line with the “unemployed are dissatisfied with their lives, but having a good day” hypothesis of Knabe et al. (2010).<sup>40</sup>

In the next step, we run multivariate regressions on the P-Index controlling for individual fixed effects (see Table 4.3). We stepwise integrate controls for day and year effects (col. 1), control for the prevalence of work spells (col. 2), and, finally, integrating socio-demographic controls and the set of dummies for the prevalence of other activities on the DRM day (col. 3). The experienced well-being level increases when becoming unemployed and decrease when being reemployed. Due to low case numbers, this finding is statistically insignificant. The inclusion of a dummy variable indicating the prevalence of a working spell on the DRM day is associated with reduced experienced well-being of 3.8 percentage points less pleasurable time compared to a work-free day of the same person (col. 2). This indicates that working is, on average, detrimental for employed. Controlling for all other activities and socio-demographics slightly increases this effect to 4.5 percentage points less pleasurable time (col. 3). The prevalence of job search activities, visits to the job center, and visits to a doctor are also negatively associated with the P-index. Negative experiences are reduced by the prevalence of gardening or person to person services e.g., manicure or hairdresser. By far, the most intensive positive association with experienced well-being is the prevalence of time spent on consuming alcohol and cigarettes.

In summary, daily experienced well-being is, on average, negatively associated with working given income, hours, and time-stable individual characteristics. There are only a few activities that yield the same negative impact on experienced well-being as working. As the unemployed do not report working spells, they, on average, experience more well-being. However, while visits to a doctor (due to illness) or the job center (looking for a job) is not at the discretion of the respondents, working has a substantially choice component. As most workers report their working spells as rather pleasurable, we attempt to understand which non-pecuniary aspects of work episodes (given hours and earnings) predict (un-)pleasant experiences. One under-investigated factor that can be obtained from work is experienced meaning. Therefore, we shift the perspective of analysis towards the working spells.

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<sup>40</sup> In order to test the validity of the findings, we use alternative experienced well-being measures. Based on positive and negative affect scales, we find that the unemployed also experience significantly more positive moods ( $p < 0.02$ ) and less negative moods (see Table 4.A3 in the Appendix).

Table 4.3: Individual fixed effects estimation on experienced well-being

Dependent variable:	(1)		(2)		(3)	
	P-index		P-index		P-index	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Labor market status: Unemployment	0.026	0.029	0.028	0.029	0.033	0.030
Reported: Work Spell			-0.038***	0.008	-0.048***	0.012
Year (Reference: 2012)						
2013	0.003	0.007	0.019	0.016	0.017	0.016
2014	-0.006	0.008	0.027	0.030	0.020	0.030
2015	0.009	0.008	0.060	0.046	0.052	0.045
DRM day (Reference: Wednesday)						
Sunday	-0.008	0.012	-0.008	0.012	-0.007	0.013
Monday	-0.006	0.009	-0.006	0.009	-0.005	0.009
Tuesday	-0.008	0.010	-0.007	0.010	-0.003	0.010
Thursday	-0.011	0.011	-0.009	0.011	-0.008	0.011
Friday	0.013	0.013	0.014	0.013	0.015	0.013
Saturday	0.001	0.021	0.002	0.021	0.001	0.023
HH income (log)					0.017	0.016
Age					-0.012	0.018
Age <sup>2</sup>					0.000	0.000
Family Status (Reference: Single)						
Married					-0.026	0.029
Divorced/Seperated					-0.009	0.034
Widowed					-0.142	0.090
Number of doctural consultations (last 3 month)					0.001	0.001
Number of Persons in HH					-0.023**	0.009
Number of Children in HH					0.017	0.013
Way to/from work					0.013	0.011
Way to/from leisure activity					-0.001	0.008
Shopping					0.008	0.008
Preparing food					0.009	0.008
Eating					-0.005	0.012
Washing oneself					-0.012	0.015
Doing housework					-0.007	0.009
Childcare					0.016	0.012
Meet friends					0.009	0.008
Resting/taking a nap					0.006	0.009
Relaxing					-0.004	0.007
Intimate relations					-0.016	0.039
Worship/meditation					-0.011	0.024
Watching TV					0.013	0.009
Reading					0.002	0.009
Computer/internet					0.007	0.009
On the phone					-0.006	0.010
Exercising					0.029***	0.010
Visiting doctor					-0.062***	0.015
Gardening					0.031**	0.012
Keep oneself busy with pets					0.004	0.011
Have a coffee/tee					0.020*	0.010
Listen to radio/music					0.011	0.032
Care giving to relatives					-0.027	0.028
Volunteering					0.040	0.027
Walking/stroll					-0.034**	0.017
Job search/job center					-0.066*	0.036
Meeting/talking to partner or relatives					-0.001	0.013
Artisic activity					0.011	0.029
Service of hairdresser, manicure, pedicure, cosmetician					0.048**	0.023
At party/events/going out					0.020	0.021
Doing DIY, handicrafts, renovate					-0.029	0.025
Playing (board) games, solving quizzes					0.037	0.035
Drinking alcoholic drinks, smoking					0.087**	0.041
Constant	0.941***	0.01	0.939***	0.029	0.930***	0.036
Number of observations		3699		3699		3699
Number of persons		1308		1308		1308
R <sup>2</sup> (within)		0.01		0.02		0.05

Source: SOEP-IS 2012-2015, own calculations.

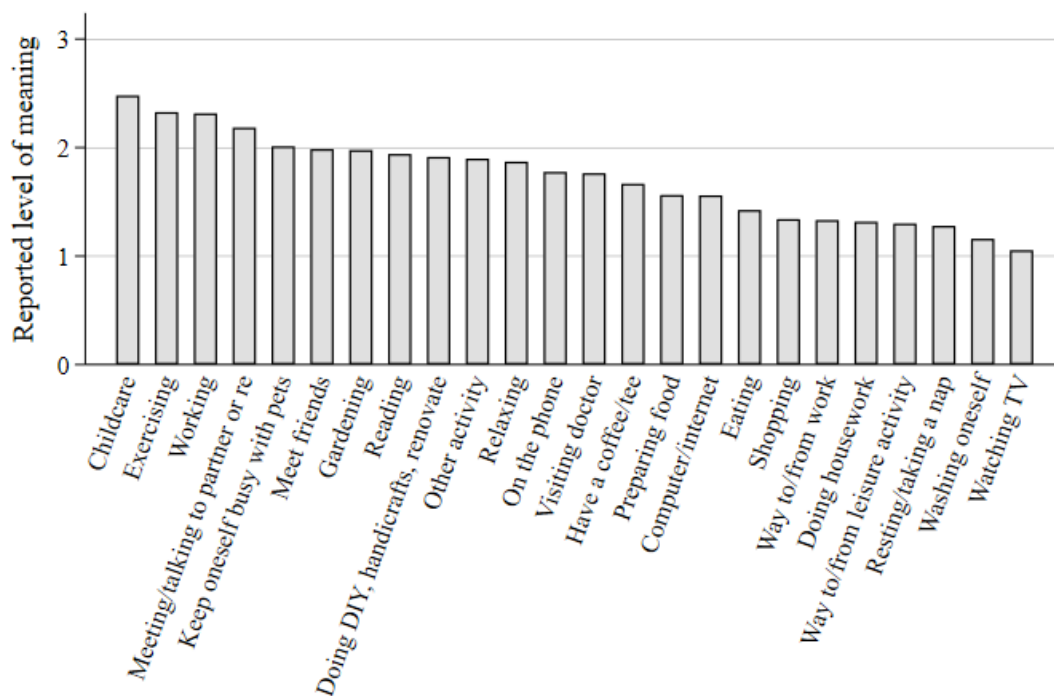
Note: OLS estimation with individual fixed effects; \*\*\* significant on a 1 % level, \*\* significant on a 5 % level, \* significant on a 10 % level.

## 4.6 Pleasure and meaning during work

### 4.6.1 Does experienced meaning explain pleasure at work?

Working is one of the activities that most harms experienced well-being. However, most respondents report that their working episodes are overall valued *rather pleasurable* and working is a widespread activity. Therefore, we further investigate the sources of pleasure at work. We examine if pleasure is affected by meaning during working (Subsection 4.6.1) and overall experienced well-being and job satisfaction (Subsection 4.6.2) are influenced by experienced meaning. Initially, we rank the reported experienced meaning between activities during each episode (see Figure 4.1). The ranking of average valuations shows almost a reversed picture in comparison to pleasure (see Table 4.1). While working ranks very low in terms of pleasure, the opposite pattern emerges when looking at meaning. Only taking care of children and exercising rank higher in terms of experienced meaning. This indicates that meaning could be a highly relevant predictor for pleasure during these activities.

Figure 4.1: Average level of experienced meaning by activity



Source: SOEP-IS 2012-15, own calculations. The graph depicts the average level of experienced meaning on a scale from 1-7 for different activities. Calculations based on three random episodes from each DRM interview with a question on experienced meaning during this activity. Activities with less than 30 observations are dropped. The total case numbers are  $N = 10.668$  episodes.

To understand whether meaning also affects experienced pleasure at work, we estimate a probability model for all observed work episodes. When focusing on randomly drawn episodes with information on experienced meaning (see Section 4.3), the sample of working spells shrinks to 849 episodes. Table 4.4 depicts the resulting average marginal effects in four specifications. In columns 1 and 2, we integrate experienced meaning as dummies variables for each category (scale from 1 ‘not at all’ to 7 ‘very strongly’). We use the scale category two as a reference since it represents the lowest value on the “intensive meaning scale.” We stepwise integrate controls for survey effects (col.1) and socio-demographic factors, job characteristics, and DRM-specific characteristics (col. 2). To account for non-linear associations (col. 3 and col. 4), we repeat the previous regressions and use a modified experienced meaning control. Instead of dummies for each category, we distinguish between an extensive and intensive meaning scale. Therefore, we integrate a dummy for workers reporting that work is *not meaningful at all* (“extensive meaning scale”) and zero otherwise (the scales two to seven are recoded to zero). In addition, we introduce a metric variable for meaning including all categories. In column 4, we add an interaction term of meaning with males (0/1) in order to investigate gender differences.

We find that working is perceived as pleasurable if no meaning is experienced at all or the meaning score is high. This non-linear association suggests that a group of workers sees working as completely meaningless but experiences working as pleasurable while other groups have an increased propensity for pleasure with increasing experienced meaning. Including all controls (col. 2) does not change this finding. Accounting for the non-linearity in meaning yields a positive association between meaning and pleasurable working episodes. Again, the only exception is the dummy-indicator for *not meaningful at all*. The positive coefficient indicates that compared to the baseline probability of all other persons, workers experiencing *no meaning at all*, also report a higher probability of pleasure at work. Column 4 shows that this holds mainly for women as the ordinal meaning coefficient for males has the opposite sign and magnitude, canceling the overall effect almost out.

Table 4.4: Probit estimation on pleasure at work: the role of meaning

Dependent variable:	(1)		(2)		(3)		(4)	
	Pr(pleasure = 1)		Pr(pleasure = 1)		Pr(pleasure = 1)		Pr(pleasure = 1)	
	AME	Std.E.	AME	Std.E.	AME	Std.E.	AME	Std.E.
Meaningful (Ref: 2)								
Meaningful 1 -Not at all	0.130**	0.053	0.129**	0.051				
Meaningful 3	0.022	0.070	0.041	0.066				
Meaningful 4	0.089	0.058	0.076	0.056				
Meaningful 5	0.106*	0.060	0.119**	0.057				
Meaningful 6	0.090	0.061	0.089	0.059				
Meaningful 7 -Very strongly	0.152**	0.063	0.165***	0.058				
Meaningful Dummy -Not at all					0.125***	0.033	0.186***	0.048
Meaningful (1-7)					0.026***	0.009	0.047***	0.015
Meaningful -Not at all * male							-0.146	0.103
Meaningful (1-7) * male							-0.034*	0.019
Labor Income (log)			0.060***	0.022	0.058***	0.022	0.057**	0.022
Weekly working hours			-0.002	0.003	-0.002	0.003	-0.003	0.003
Weekly working hours (sq.)			0.000	0.000	0.000	0.000	0.000	0.000
DRM day & wave fixed effects	yes		yes		yes		yes	
Socio-demographic controls			yes		yes		yes	
Job characteristics			yes		yes		yes	
DRM-specific controls			yes		yes		yes	
Number of observations	849		849		849		849	
Pseudo R <sup>2</sup>	0.025		0.160		0.158		0.162	

Source: SOEP-IS 2012-15, own calculations.

Note: \*\*\* significant on a 1 % level, \*\* significant on a 5 % level, \* significant on a 10 % level. The table reports the average marginal effects (AME) of probit estimations. The models comprise all working episodes reported by employed workers. All estimations control for survey year and DRM day fixed effects; controls for socio-demographic factors are age, gender, marital status, number of doctoral consultations, education, number of persons in the household, number of children in the household; job characteristics: tenure, tenure (sq.), duration in work spell, duration in work spell (sq.), occupation position, autonomy, company size; DRM specific controls: second activity, begin and end of the work spell, place of work, involved person(s). The full table with all coefficients is available on request.

#### 4.6.2 Relevance of meaning for experienced well-being and job satisfaction

Perceived meaning at work is associated with a higher propensity to experience working pleasurable for some workers. In this subsection, we examine how meaning influences overall experienced well-being of the DRM-day. In order to fit this result into the labor market literature, we validate this finding by regressing it on evaluative job satisfaction. As a standard measure for utility from work, we examine if job satisfaction is also affected by experienced meaning.

Table 4.5 presents the results. Meaning is significantly positively associated with experienced well-being (col. 1). The higher experienced meaning during the work episode is, the higher is the share of pleasurable time for the respondents, given income, working hours, socio-demographic controls, and job characteristics. Again, the dummy indicator for *not meaningful at all* shows that, compared to the average level of meaningful work, individuals experiencing more pleasurable time. Hence, the association of experienced meaning with pleasurable working episodes is also reflected in the experienced well-being of the whole day.

Further, in cols. 2 and 3, we regress experienced meaning on job satisfaction, measured on a 0–10 scale (for details see Section 4.3). Experienced meaning is positively associated with job satisfaction. The higher the experienced meaning during a work episode, the higher is job satisfaction. As before, the positive coefficient of the *not meaningful at all*-indicator has a substantially higher level of job satisfaction. In contrast to experienced well-being, labor income and working hours per week are associated with job satisfaction. In column 3, we add a dummy indicating that working episodes are pleasurable (1 if the episode was pleasurable, 0 otherwise). The positive association of experienced meaning with job satisfaction becomes only slightly weaker while the other coefficients remain qualitatively the same. Pleasure during work increases, *ceteris paribus*, job satisfaction. Experienced meaning is also a positive predictor of job satisfaction, given that the group of individuals with *no meaning at all* are also more satisfied with their jobs.

Experienced meaning and experienced pleasure both come along with higher experienced well-being, indicating more pleasurable time on an average day. Experienced meaning qualitatively has a similar association with job satisfaction as does experienced well-being. Hence, the evaluative measure job satisfaction is also positively affected by experienced meaning (of a work episode of the DRM day). Further, the non-linearity of this meaning association is also similar: those workers who experience *no meaning at all* (about 30 % of the workers report *no meaning at all*) also report higher job satisfaction. Comparing the impact of the income coefficient with the meaning and pleasure coefficients suggest that, in terms of job satisfaction, a pleasurable working episode is worth about three log-points of income. Or, in other words: A more than 300 percent increase in income could compensate for unpleasant work episode. Experienced meaning is also valued relatively high with a positive coefficient such that a 60 percent increase in income would buy a meaning point in order to keep job satisfaction constant.

Table 4.5: Meaning, experienced well-being and job satisfaction

Dependent variable:	(1)		(2)		(3)	
	P-index (0.00-1.00)		Job satisfaction (0-1)		Job Satisfaction (0-1)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Meaningful Dummy -Not at all	0.082***	0.025	0.641***	0.237	0.512**	0.236
Meaningful (1-7)	0.016***	0.006	0.185***	0.054	0.161***	0.053
Pleasure					0.900***	0.194
Labor income (log)	0.012	0.012	0.316**	0.126	0.269**	0.125
Weekly working hours	0.002	0.002	-0.044**	0.020	-0.042**	0.020
Weekly working hours (sq.)	0.000	0.000	0.001**	0.000	0.001**	0.000
DRM day & wave fixed effects		yes		yes		yes
Socio-demographic controls		yes		yes		yes
Job characteristics		yes		yes		yes
DRM specific controls		yes		yes		yes
Number of observations		849		849		849
Pseudo R <sup>2</sup>		0.025		0.160		0.190

Source: SOEP-IS 2012-15, own calculations.

Note: \*\*\* significant on a 1 % level, \*\* significant on a 5 % level, \* significant on a 10 % level. The models comprise all working episodes reported by employed workers. All estimations control for survey year and DRM day fixed effects; controls for socio-demographic factors are age, gender, marital status, number of doctoral consultations, education, number of persons in the household, number of children in the household; job characteristics are tenure, tenure (sq.), duration in work spell, duration in work spell (sq.), occupational position, autonomy, company size; DRM specific controls are second activity, begin and end of the work spell. The full table with all coefficients is available on request.

#### 4.7 Concluding Discussion

We examine experienced well-being for a nationally representative population with individual fixed effects and find that the experienced well-being of the unemployed in Germany higher than experienced well-being of the employed. The unemployed experience more pleasurable minutes awake. This paper shows that this is due to the absence of working episodes for unemployed. It does not depend on employment status. This difference holds after controlling for income and other covariates and, in particular, after introducing person fixed effects controlling for person-inherent stable traits. Hence, the consequences of unemployment for SWB differ between evaluative life satisfaction and hedonic experienced well-being as the outcome. The incorporation of individual time use with its valuations renders being unemployed less detrimental than just focusing on life satisfaction that diminishes.

The relatively high share of unpleasant experiences during work compared to other activities is in line with findings obtained for work experiences in the UK, France, and the US that examine the intensity of pleasure (Bryson and MacKerron 2017, Flèche and Smith 2017). Our simple pleasure (vs. no pleasure) indicator seems sufficient to identify reasons for work misery while reducing costs (survey time). Beyond other wages, working hours, or episode-



timing, the experienced meaning is a significant predictor for pleasure during work. The higher experienced meaning during work is, the higher is the propensity to report a pleasurable working episode. However, this association is non-linear, as persons reporting *no meaning at all* also have a higher (than average) propensity to report a pleasurable work episode. One potential explanation for this finding is that meaning depends on preference heterogeneity. Not all persons wish to experience a meaningful job. They still report *no meaning at all*, even if working is pleasurable for them. This explanation is in line with evidence from the lab showing that varying meaning of certain tasks affects only specific individuals prone to it (Fehrler and Kosfeld 2014). One source for such heterogeneity are gender differences. We find that the positive association of meaning and pleasure during work is due to the women in the sample. For men, we hardly find any positive association. As experienced meaning is positively associated with pleasure during work, it is not surprising that we find the same association for daily experienced well-being. Evaluative job satisfaction, however, measures completely different components of SWB, but still, it shows the same association with experienced meaningfulness.

Our results have implications for personnel economics and labor market policy. On the firm level, it seems clear that worker heterogeneity in terms of a “taste for meaning” makes it necessary for the management to know the underlying structure of its workforce’s preferences. Indeed, an incentive compatible contract for such workers is feasible (Besley and Ghatak 2017) – and gains more relevance with an increasing share of female workers who prefer meaning during work. In a labor supply framework, a preference for meaning helps to explain the intensive margin of labor supply. Excessive extra hours with a low marginal monetary return (workaholic behavior) might come along with experienced meaning that intrinsically generates pleasure.

## Appendix of Chapter 4

Table 4.A1: Covariates of experienced well-being (variable description)

Variable	Description
<i>Survey effects</i>	
Year	Year defines the year of the interview using four dummies: 2012, 2013, 2014 and 2015.
DRM day	DRM day describes the day the respondent reports about using 7 dummies (Monday to Sunday). The DRM dataset is the base to generate this variable.
<i>Socio-demographic characteristics</i>	
Age	The survey year minus year of birth defines the age of the respondent.
Gender: male = 1	This variable is a dummy taking the value '1' if respondent is a male.
Disposable income (Household)	The variable hginc in dataset hgen is the base to generate the disposable household income.
Disposable income (Household, equival. OECD)	This variable uses hginc, hgnrpers and hgnrkid14 from the dataset hgen to generate the equivalized disposable household income. It divides hginc by $1+0.5*(\text{number of persons in household} - \text{number of children (below 14) in household} - 1) + 0.3 * \text{number of children (below 14) in household}$ .
Earnings (log)	This variable presents the logarithm of the gross labor income. The variable pglabgro from the dataset pgen allows to generate the gross labor income of the respondent.
Education level	Three dummies describe education: low, middle and high. These dummies take the value '1' if respondent highest education level is primary or secondary (low), upper secondary or post-secondary non-tertiary (middle) or short-cycle tertiary or tertiary (high) education. The variables pgisced from the dataset pgen are the base to generate these dummies.
Marital status	Four dummies describe the family status: single, married, and divorced/seperated/widowed. The variable pfgamst from the dataset pgen is the base to generate this variable.
Number of Persons in Household	The number of persons in the household is a variable from the dataset hgen.
Number of Children in Household	This variable comprises the number of children (below 18 years) in the household. The dataset h and hgen provide the information to generate this variable.
Number of doctoral consultations (last 3 month)	The dataset p provides counts the number of doctoral consultations in the last three months and is provided in the dataset p.
<i>Job characteristics</i>	
Labor market status: unemployed	This dummy describes the labor market status and takes the value '1' if the respondent is unemployed. 'Unemployed' characterizes persons who are officially registered as unemployed and report no weekly working hours (pgtatzt). 'Employed' characterizes individuals with a current occupational position (from untrained worker to executive civil service) working full-time or part-time, including marginal or irregular employed people. The variables pgstib and empl from the dataset pgen provide this information.
Weekly working hours	The weekly working hours base on a generation using the variable pgtatzt in the dataset pgen.
Tenure	The job tenure of a person.
Occupational Position	Four dummies describe the occupational position: worker, self-employed, employee and civil servant. The variable pgstib from the dataset pgen provides the information to generate the occupational position.
Autonomy	Five dummies describe autonomy: low, low-middle, middle, middle-high and high. The generation uses pgauto from the dataset pgen that has this five expressions.
Company Size	Three dummies describe company size: below 200, 200-2000, >2000. The dataset pgen provides this information.
<i>DRM specific controls</i>	
Number of episodes per DRM day	This variable counts the number of episodes per reported DRM day and is generated from the information in the DRM dataset.
Reported activity	The respondents were asked episode-wise to choose activities out of a set of 23 and one open answering option. In the second wave, the activities were extended to 25. In addition, we recoded open answering options into activities as advised in Wolf (2018).
Reported second activity while working	The respondents were asked episode-wise to choose activities out of a set of 23 and one open answering option. Until the second wave, the activities were extended until 25. In addition, we recoded open answering options into activities as advised in Wolf (2018).
Begin to work of first spell	12 dummies for every two hours describe the begin to work of the first spell, e.g. start work between 0 to 2 am.
Finish with work of last spell	12 dummies for every two hours describe the end of work of the last spell, e.g. finish work between ten to 12 pm.
Duration in work spell	This variable describes the duration of the reported work spell.
Break during work	Three dummies describe a break during work: no break, 1 break or >1 break.
Involved person	Eight dummies describe the involved persons: no one, partner, children, colleagues, clients, parents, boss or other.
Place of work	Three dummies describe place of work: at work, at home or elsewhere.

Table 4.A2: Sample of DRM respondents by employment status

	unweighted		population weights	
	<i>Employed</i>	<i>Unemployed</i>	<i>Employed</i>	<i>Unemployed</i>
Age	44.88	44.67	43.61	44.48
Female (share)	0.50	0.51	0.48	0.54
Disposable income (Household)	3336.95	1442.91	3248.12	1467.74
Disposable income (Household, equival. OECD)	1930.20	875.00	1932.12	919.53
Earnings (gross labor income)	2642.94	./.	2704.29	./.
Education level (share)				
Low (ISCED 1-2)	0.09	0.24	0.09	0.22
Middle (ISCED 3-4)	0.57	0.63	0.59	0.66
High (ISCED 5-6)	0.34	0.13	0.32	0.12
Marital status (share)				
Single	0.24	0.35	0.25	0.38
Married	0.60	0.34	0.57	0.35
Divorced	0.14	0.29	0.15	0.25
Widowed	0.02	0.03	0.03	0.03
Number of Person in Household	2.71	2.49	2.62	2.36
Number of Children in Household	0.67	0.63	0.64	0.59
Weekly working hours	36.58	./.	37.38	./.
Tenure	12.00	./.	11.26	./.
Occupational Position (share)				
Worker	0.18	./.	0.20	./.
Self-employed	0.10	./.	0.10	./.
Employee	0.65	./.	0.64	./.
Civil Servant	0.07	./.	0.07	./.
DRM day (share)				
Sunday	0.10	0.11	0.11	0.12
Monday	0.24	0.24	0.25	0.23
Tuesday	0.21	0.25	0.19	0.22
Wednesday	0.18	0.20	0.17	0.22
Thursday	0.14	0.13	0.14	0.15
Friday	0.11	0.06	0.11	0.06
Saturday	0.02	0.01	0.02	0.01
Number of episodes per DRM day	11.88	12.17	11.45	12.21
Number of observations (= DRM interviews)	3384	356	./.	./.

Source: SOEP-IS 2012-2015.

Note: ./.

Table 4.A3: Positive affect and negative affect by employment status

Status	Postive affect	Negative affect	P-index	P-index (without work)	N
Employed	2.780	0.636	0.913	0.948	3383
Unemployed	2.954	0.611	0.942	0.942	315
Difference: E vs. UE	p<0.02 **	p<0.61	p<0.00 ***	p<0.37	3698

Source: SOEP-IS 2012-2015, own calculations.

Note: Positive affect was generated from the averages from happy, satisfaction, enthusiasm (scale 1-7). The negative affect was generated from averages for anger, frustration, mourning, worries, and stress (scale 1-7). For each person in each year, only three episodes contain this information (see Section 4.3). The t-tests for mean equivalence of employed and unemployed are reported in the bottom line.

## **Chapter 5**

### **Comparison Income and Multidimensional Well-being**

## 5.1 Introduction

Higher household income translates into higher levels of subjective well-being (SWB). At the same time, individuals are part of a social context in which not only household income counts for SWB, but also the income of relevant peers: comparison income. It is much less clear whether higher comparison income improves or impairs SWB. The prominent relative income hypothesis suggests that comparison income induces a relative status decline that affects SWB negatively (for a comprehensive review, see: Clark, Frijters, and Shields 2008). Other theoretical concepts suggest opposing or concurrent impact channels of comparison income. For instance, a positive effect is attributed to the information from raising comparison income on own income expectations (Hirschman and Rothschild 1973) or to within peer-group altruism (Kingdon and Knight 2007). Furthermore, neighbor's income might also affect SWB either through public good provision and positive neighborhood externalities, which might also be counteracted thru the costs of living in the neighborhood on SWB negatively (Clark, Kristensen, and Westergård-Nielsen 2009, Brodeur and Flèche 2019). Another counteracting comparison effect is the changing relevance of negative status effect and positive information effect over the life cycle (FitzRoy et al. 2014). This selection of overlapping and opposing impact channels of comparison income on SWB yields, so far, ambiguous empirical results that are highly sensitive to the assumptions on the comparison group of peers as well as on the empirical methods applied (Brown, Gray, and Roberts 2015). This study contributes to two understudied aspects of this empirical literature that attempts to understand how others' income affects SWB: (1.) Employment status has a not negligible impact on SWB, which is, in the empirical literature, either not in focus - as only the employed share of the population is studied, or the distinction by employment status is relatively shallow. We broaden this view here, as labor market studies on SWB suggest that employment status and the embedded identity utility have a considerable influence on SWB (Hetschko, Knabe, and Schöb 2021). (2.) Further, SWB is a multidimensional concept that encompasses evaluative and hedonic components (Frijters 2021). So far, it is often assumed that any type of SWB measure shows the same reaction on comparison income. We examine this assumption is empirically justified.

Empirical studies on SWB rest on a set of assumptions on how individuals perceive their social context. Following Akerlof and Kranton's (2000) identity utility concept, we assume that people perceive specific peers as relevant: those who share their social category. One example of a specific social category is the individual role in the labor market (Schöb 2013). Hence, typical comparison groups considered are colleagues in the same company or occupation,

specific neighbors or friends (Clark and Senik 2010, Goerke and Pannenberg 2015). Nevertheless, the broadest used proxy for comparison income is the average income of a specific geographical region. Such geographical comparison incomes range from the average income of whole nations, of federal states, of counties to local ZIP-code regions, or even the comparison income of a few neighbors living around (Luttmer 2005, Clark, Kristensen, and Westergård-Nielsen 2009, Brodeur and Flèche 2019). The other strand of empirical literature describes comparison groups by utilizing demographic similarities. Such social proximity, based comparison incomes are typically calculated or linked from incomes of the same gender, educational attainment, or age persons (Ferrer-i-Carbonell 2005, Senik 2008, Davis and Wu 2014). Employment status rarely plays a major role. The idea to use social identity as a measure for social proximity is, so far, only applied to racial assignments in South Africa (Kingdon and Knight 2007). This is surprising as employment status is also a fundamental ingredient for social identity. Working-age persons are confronted with prescriptions like “one should work” and “one should make ones’ own living” and non-compliers, like those in involuntary unemployment or receiving in-work benefit recipients, have reduced life satisfaction (Hetschko, Schöb, and Wolf 2020). A remarkable example of overcoming the detrimental SWB effects of unemployment is the retirement transition. Changing from unemployed as the social category *working-age* towards the social category *retirement* removes a social burden from the unemployed. All things equal, the newly retired formerly unemployed gain in terms of SWB (Hetschko, Knabe, and Schöb 2014). Stressing the role of employment status in the context of comparison income yields two questions: (1.) How does the accounting for employment status affect the comparison income to SWB association? (2.) Does the comparison income effect differ depending on the social category *working age*, *retirement transition*, and *retirement*?

The comparison income literature is dominated by results concerning evaluative SWB. We broaden this view by including hedonic SWB measures in addition to an evaluative life satisfaction measure. Papers considering evaluative and hedonic SWB together tend towards similar patterns for both SWB measures (Deaton and Stone 2013, Ifcher, Zarghamee, and Graham 2018). This is somewhat surprising, as the SWB literature on labor markets show differing patterns for both SWB dimensions on life events like unemployment or to (own) income (Knabe et al. 2010, Wolf, Metzging, and Lucas 2019, Hoang and Knabe 2020). In this respect, the overarching question is whether we can confirm that hedonic and evaluative SWB are congruent for comparison income.

We use the German Ageing Survey (DEAS) individual panel data from 1996 to 2017. DEAS allows the incorporation of unobserved heterogeneity – especially on individual personality traits or perceptions of own past income position by individual fixed effects (Ferreri-Carbonell and Frijters 2004). With its representativeness for those individuals over 40 living in households in Germany, it also meets the requirements of having a sufficiently large number of transitions from working life to retirement over the observation period. Evaluative well-being is measured by the satisfaction with life scale (SWLS). For hedonic well-being, we use items from the aggregate Positive Affect (PA) scale for positive experiences in the past few weeks and a Negative Affect (NA) scale for negative hedonic experiences. We also go one step further and disaggregate the composite PA and NA scales to shed light on the distinct hedonic sentiments so that we learn that the associations between comparison income and the particular hedonic sentiments are multi-layered.

The remainder of the paper is organized as follows: Section 5.2 presents the related literature in more detail. Section 5.3 presents the data and the methodology applied. The implications of controlling for employment status and the social categories of *employed*, *retirement transition*, and *retirement* are presented in Subsection 5.4.1., Subsection 5.4.2 differentiates the comparison income coefficients for twenty hedonic SWB sentiments separately. Section 5.5 discusses the results and concludes.

## **5.2 Related literature**

There are quite a few theoretical ideas regarding the potential linkage of the comparison income to SWB. Very prominent is the relative income hypothesis that has at least 100 years of historical background. In a current version described in a neoclassical utility framework by Clark, Frijters, and Shields (2008), comparison income is a source of negative status externalities. The higher others' income is, the lower becomes the own relative status that yields utility. Consequently, SWB is reduced by the increasing income of others given own income level. A positive impact of comparison income is depicted by the signal that comparison income has for own financial well-being (Hirschman and Rothschild 1973). Hence, such a signal effect would lead to a positive association of comparison income as it can reduce dissatisfying uncertainty. Especially among economies in transition with high uncertainty about the future, this information effect plays a significant role (Senik 2004, 2008). Less theoretically derived but highly relevant in practical work are comparison incomes always capture additional characteristics from the surrounding area or neighborhood. Controlling for neighborhood and



regional characteristics on different spatial levels yields different results. Very disaggregated street-level controls (Knies 2012) or very small grids of a neighborhood (Clark, Kristensen, and Westergård-Nielsen 2009) find positive correlations between comparison income and SWB, whereas bigger regions or states show rather negative associations (Luttmer 2005). It is empirically challenging – and not yet resolved – to separate such externalities from comparison income effects as regional externalities on different aggregation levels affect SWB simultaneously. Local public goods and positive externalities from wealthy neighborhoods and negative externalities on the state or nation-wide level (Brodeur and Flèche 2019). Further, higher comparison income is likely to result in higher housing and living costs, reducing SWB (Ifcher, Zarghamee, and Graham 2018). Moreover, all the impact channels outlined here overlap and counteract each other so that the final coefficients, at least in the existing survey studies, likely represent an overlap of different effects.

It should be emphasized that the estimation methods applied also produce divergent results. OLS cross-section estimations and random effects panel data models (with Mundlak-transformation) yield more often significant and similar results while the inclusion of individual fixed effects differs from the former methods (Brown, Gray, and Roberts 2015). Disregarding the ordinality of the dependent SWB scale by cardinal estimation methods for the sake of interpretability, however, is seen as justifiable in the light of findings suggesting that it does not alter the results (Ferrer-i-Carbonell and Frijters 2004, van den Berg and Ferrer-i-Carbonell 2007, Ifcher, Zarghamee, and Graham 2018). Overall, the justification for the inclusion of individual fixed effects is compelling as unobserved heterogeneity shape SWB and comparison income alike. Preferences for a specific neighborhood (Knies 2012) or intrinsically happier respondents (Luttmer 2005) would otherwise bias the estimations.

The selection of a suitable reference income is the crucial issue for regressions of SWB on comparison income. Using the average income of a well-defined geographic region around the subject of interest is very common (Luttmer 2005, Clark, Kristensen, and Westergård-Nielsen 2009, Knies 2012). Such spatial comparison incomes are imputed from external sources or generated from the source data and range from very local neighborhoods, over counties to whole states. The selection of the appropriate proximity of the spatial comparison income seems crucial for the comparison income effect's strength and size. Consequently, some papers find positive effects on well-being (e.g., Kingdon and Knight 2007) and other negative correlations (e.g., Blanchflower and Oswald 2004). Furthermore, insignificant coefficients and coefficients

depending on the proximity of the area around the individual are found (Deaton and Stone 2013, Brodeur and Flèche 2019).

The other widely used method to proxy comparison income is based on socio-demographic characteristics. For this purpose, it is assumed that people who are similar to the target person (e.g., same gender, similar age, same occupation) serve as a reference group (e.g., Ferrer-i-Carbonell 2005, Senik 2008). Their cell average incomes are defined as the comparison income. A particular case is Mincer-type wage equations, which incorporate various characteristics to estimate the target person's predicted income (Clark and Oswald 1996, Senik 2004, Chang 2012). In a two-step process, the predicted income given the individual characteristics is used as comparison income. Again, the results are ambiguous regarding the sign and size of the comparison income coefficients.

Consideration of whom the respondents compare to suggests that these are particular people with whom the respondents interact more frequently. Among employees, these are co-workers, family, and friends, with those comparing more to colleagues than to friends exhibiting more well-being (Clark and Senik 2010). For employees, the reference income and especially the upwards comparisons of reference incomes are important factors for well-being (Goerke and Pannenberg 2015). However, such evidence results from employees' samples only so that this subgroup's findings cannot be more widely generalized.

The identity utility theory suggests individuals choose<sup>41</sup> their external reference point based on their social category (Akerlof and Kranton 2000). Hence, every person has an assignment of his/her social category. These categories come along with prescribed behaviors and norms. Deviations from the prescribed behavior are costly for the individuals (e.g., in terms of SWB). A typical example is the '*working age*' category for a man linked to the identity as 'male breadwinners' while deviating from the prescription to work due to involuntary unemployment (e.g., Schöb 2013). Other labor economics applications show that explaining the SWB effects of (subsidized) employment is incomplete without taking the target worker's social category into account (Hetschko, Schöb, and Wolf 2020, Hetschko, Knabe, and Schöb 2021). For comparison income, the identity utility concept has previously been applied in the context of ethnicity and race. Kingdon and Knight (2007) study comparison income effects in South-Africa and find that the effect differs depending on whether the comparison group consists of neighbors in small communities or of persons of the same ethnicity. While the former spatial comparison group shows a positive association, the latter within social category comparison is

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<sup>41</sup> It is not a fully deliberate process.

negative. The authors suspect that the relative income hypothesis's negative consequences (negative status externalities) arise only among persons of the same race, respectively, the own social category. Another approach is to compare workers of two different social categories like workers and retirees. Boodoo, Gomez, and Gunderson (2014) studied such effects. The average retiree shows a less pronounced negative comparison effect. However, this result is challenged by a finding on ageing, which suggests that comparison income becomes more pronounced negative for older adults, which are retirees by definition, due to the vanishing of the information effect (FitzRoy et al. 2014). Such group comparisons disregard that the social category's switch has an SWB effect itself. For retirement transition, the effect depends on the previous employment status (Hetschko, Knabe, and Schöb 2014, Nikolova and Graham 2014, Hetschko, Knabe, and Schöb 2019). Consequently, one needs to control retirement (transition) and comparison income alike to avoid biased estimates from omission.

Subjective well-being is multidimensional (Frijters 2021). Life satisfaction or similar evaluative measures of SWB have largely been studied as a target variable for comparison income. This might fall short as life satisfaction and hedonic well-being as outcome variables in the labor market context are not fully concurrent. The evidence thickens that evaluative and hedonic well-being respond differently to changes in employment status. It is exemplified by unemployment that causes a massive drop in life satisfaction while measures of affect are prone to substitution effects in time use which is even capable of making a dissatisfying unemployment episode a positive hedonic experience (Knabe et al. 2010, Wolf, Metzger, and Lucas 2019, Hoang and Knabe 2020). The rare evidence for comparison income and both hedonic and evaluative well-being points to similar associations with comparison income. Like the described finding above, Deaton and Stone (2013) find that spatial comparison income has a positive association with SWB that weakens the bigger the geographical units become. This holds for the evaluative Cantril's Ladder scale and for a dichotomous hedonic measure. Ifcher, Zarghamee, and Graham (2018) also use evaluative well-being, hedonic measures, and a broad set of health indicators along with each other. Similarly, they find that spatial proximity affects the sign of the comparison coefficients, too. Small ZIP-code areas of around 7,500 'neighbors' are positively correlated with Cantril's Ladder, whereas Metropolitan Statistical Areas (MSA, with approx. 850,000 'neighbors') are negatively associated. Again, this holds for a selection of hedonic measures of yesterday's experience of enjoyment, happiness, and sadness. However, stress and worries hit only on the MSA level with a (weaker) positive association. In general, the current evidence points to an alignment of hedonic SWB with evaluative measures on their

association with comparison income. We append the literature with an analysis of twenty distinct hedonic experiences from the PANAS scale.

## 5.3 Data and Methodology

### 5.3.1 German Ageing Survey

We utilize the German Ageing Survey (DEAS), a representative panel study for the German residential population 40 years and older (Engstler and Schmiade 2013, Klaus et al. 2017). The longitudinal perspective, rich information on evaluative life satisfaction, hedonic well-being, and income make it a suitable dataset. Further, it focuses on the target group of older adults who likely experience a labor market status change within the 20 years observational period.

The SWB-questions are from a drop-off questionnaire that the respondents fill in after a personal interview at home. The widely used *Satisfaction With Life Scale* (SWLS) is the evaluative outcome variable. The scale asks the respondents on five positive items<sup>42</sup> on a 5-point Likert scale about the agreement or disagreement (1 = strongly disagree; 5 = strongly agree) with evaluative statements about their lives (Pavot and Diener 1993, 2008). The average score of the items yields the SWLS ranging from 1 to 5 (highest). Such evaluative statements on SWLS are largely independent from hedonic moods (Eid and Diener 2004). A beneficial feature of SWLS compared to the widely used single-item general life satisfaction indicators is the higher test-retest reliability of SWLS (Krueger and Schkade 2008). This reduces the risk of attenuation bias for the longitudinal estimation of comparison income effects.

Hedonic well-being is measured by the Positive and Negative Affect Schedule (PANAS). It consists of two separate 10-item subscales, each asking for the frequency of experiencing distinct emotions during the past few months (1 = Very slightly or not at all; 5 = extremely often). PANAS aggregates the frequency of the ten positive emotions in the positive affect subscale (PA) that consists of *enthusiastic, excited, strong, interested, proud, alert, inspired, determined, attentive, and active*. The negative affect subscale (NA) consists of items for the experience of being *distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid*. PA and NA are generated from the average score over their item batteries. Hence, a higher PA (or NA) score indicates a high frequency of positive (or negative) feelings in the last few months (Watson, Clark, and Tellegen 1988).

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<sup>42</sup> The items are (1.) In most ways my life is close to my ideal, (2.) The conditions of my life are excellent, (3.) I am satisfied with my life, (4.) So far I have gotten the important things I want in life, and (5.) If I could live my life over, I would change almost nothing.

We consider three different employment statuses and distinguish between the *retired*, *retirement transition*, and *employed* respondents in a specific DEAS wave. *Retired* persons are all respondents who receive an old-age pension or any retirement benefits from a previous job. Hence, lifelong homemakers are excluded. Persons in *retirement transition* are either in early retirement, approaching retirement with part-time employment with zero working hours, early retirement with invalidity or occupational disability pension benefits, or early pension (former public servants). The status group *employment* comprises full-time, part-time, and marginal employed workers as well as unemployed workers. We exclude persons in occupational training, maternity leave, or workers with an irregular or secondary job.

As the main source of income, we use the monthly net disposable household income. We generate two distinct comparison incomes by taking the cell average incomes of comparable peers. Comparison income 1 follows roughly the concept of Brown, Gray, and Roberts (2015) and defines the comparison income as income of persons of the same age category (40-55; 56-64; 65-73; 74-94), the educational attainment (ISCED 0-2; ISCED 3-4; ISCED 5-6) and gender (male; female). Comparison income 2 is the cell average of the individuals of the same DEAS wave (1996, 2002, 2008, 2011, 2014, 2017), a four-category urban-to-rural typology of the place of residence by the German federal institute for spatial development, the BBSR, (urban, suburban, rather rural, rural) and employment status (retiree, retirement transition, worker). Hence, comparison income 2 is generated under the assumption that comparison realistically appears in temporal, spatial, and social proximity. Further, we follow the standard assumptions that income and comparison income are concave functions of SWB and use both variables in their logarithmic transformation (Stevenson and Wolfers 2013). To address the local effects of the living environment, we introduce federal state (“Bundesland”) fixed effects and control for urban-rural typology from the BBSR. As socio-demographic controls, we include a standard set of SWB-covariates like age, age squared, marital status, number of children, number of close contacts outside the household, leisure and sleeping time (172–actual working hours), and self-reported number of physical diseases. The missing values cleaned working sample consists of 8,503 respondents who answer at least two survey waves 1996, 2002, 2008, 2011, 2014 and 2017. This yields an unbalanced panel dataset with  $N = 18,045$  observations for analysis.

### 5.3.2 Estimation equation

To examine the role of comparison income by the following estimating equations:

$$SWB_{it}^{SWLS,PA,NA} = \beta_1 \ln(y_{it}) + \beta_2 \ln(\overline{y_r^{1,2}}) + \mathbf{X}'\beta + \mathbf{S}'\gamma + \alpha_i + \tau_t + \varepsilon_{it} \quad (1)$$

We regress the different SWB measures (SWLS, PA, NA) on household income  $y$  and comparison income 1  $\overline{y_r^1}$  and comparison income 2  $\overline{y_r^2}$  separately.  $\overline{y_r^{1,2}}$  are the two comparison incomes described above. We condition on a vector of socio-demographic characteristics  $\mathbf{X}$  and a vector of spatial fixed effects  $\mathbf{S}$ . Further, we carry out within-person estimations by the inclusion of individual fixed effects  $\alpha_i$  and condition also on  $\tau_t$  wave-specific fixed effects.  $\varepsilon_{it}$  is the idiosyncratic error term.

## 5.4 Results

### 5.4.1 Comparison income and multidimensional SWB

This subsection reports the estimation results for both comparison income definitions. Table 5.1 shows the comparison income 1 coefficients defined by the target person's age, education, and gender. Table 5.2 presents comparison income 2 generated by the temporal, spatial, and employment status. Both tables build up equally. The outcome variables are Satisfaction with Life (columns 1-3), Positive Affect (columns 4-6), and Negative Affect (columns 7-9) reduced form estimations as described in equation (3.1). The baseline estimation is without controlling for employment status (columns 1, 4, 7), followed by the same estimation but with the employment status controls (columns 2, 5, 8). The obtained baseline coefficients of those estimations are employed workers. In the third step, the employment status is interacted with household income and comparison income (columns 3, 6, 9) to examine separate income coefficients by employment status.

Considering the association of comparison income with evaluative SWLS in column (1) shows that it is negatively correlated for both comparison income coefficients (-0.172,  $p < 0.1$  in Table 5.1 and -0.149,  $p < 0.05$  in Table 5.2). Given household income, which is positively associated with SWLS, an increase of the average comparison income comes with reduced SWLS. Such evidence is interpreted in favor of the relative income hypothesis (i.e., negative status externalities) or at least with the dominance of the relative income effect over the other potential impact channels that have a positive impact (Ferrer-i-Carbonell 2005, Knies 2012, Ifcher, Zarghamee, and Graham 2018).

In column 2, we add the employment status controls and comparison income coefficients change sign: the negative association of (1.) vanishes and the comparison income coefficient

turns positive and becomes statistically insignificant (Table 5.1 and Table 5.2). Remarkably, comparison income seems not to be robust against controlling for individual employment status. Own household income remains largely unaffected and stays as expected positive and significant. The unemployment, retirement, and retirement transition dummy indicators report the change relative to the employed workers. The *retirement transition* dummy remains insignificant, *retirement* increases the SWLS slightly (+0.09,  $p < 0.01$  in Table 5.1 and +0.14,  $p < 0.01$  in Table 5.2). Especially for the unemployed workers, we find a highly significant negative coefficient (-0.14,  $p < 0.01$  in Table 5.1 and -0.13,  $p < 0.01$  in Table 5.2), which is regularly reported in the literature (Hetschko, Knabe, and Schöb 2014).

In the third step (column 3 in Table 5.1 and Table 5.2), we interact the employment status indicators with both; household income and comparison income. We thereby follow the procedure of Ifcher, Zarghamee, and Graham (2018, table 5) to estimate jointly whether income and comparisons income are equal for employment status subgroups. The findings in both tables show that household income is significantly positively associated with SWLS. Nonetheless, the coefficients are quantitatively different: The strongest income coefficient is observed for people in the transition phase between working life and retirement. Retirees, in turn, draw the least satisfaction gains from an additional log point of income. Accordingly, employees who assign themselves to the working life category have a middle position with an average coefficient of about 0.12 SWLS points ( $p < 0.01$ ). Comparison income, in contrast, does not yield such a clear hierarchy. With only one coefficient above the 10% significance level for comparison income, we refrain from offering an interpretation. The variation in the panel is not large enough to get significant coefficients.

Table 5.1: Comparison income and multidimensional SWB: Comparison Income 1

Dependent variable =	SWLS	SWLS	SWLS	PA	PA	PA	NA	NA	NA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Household income (ln)	0.107*** (0.0206)	0.103*** (0.0208)		0.0329** (0.0148)	0.0374** (0.0150)		0.0160 (0.0141)	0.0107 (0.0143)	
Comparison income (ln)	-0.172* (0.0957)	0.0564 (0.107)		-0.164** (0.0724)	0.0202 (0.0813)		0.128* (0.0695)	-0.0305 (0.0778)	
Retirement × Household income (ln)			0.0631** (0.0254)			0.0234 (0.0183)			0.0381** (0.0178)
Retirement transition × Household income (ln)			0.236*** (0.0517)			0.0814** (0.0391)			0.0108 (0.0398)
Worker × Household income (ln)			0.129*** (0.0271)			0.0465** (0.0191)			-0.0166 (0.0187)
Retirement × Comparison income (ln)			0.0920 (0.115)			0.0619 (0.0865)			-0.0651 (0.0844)
Retirement transition × Comparison income (ln)			0.288* (0.166)			0.0165 (0.126)			-0.116 (0.116)
Worker × Comparison income (ln)			-0.114 (0.120)			-0.0522 (0.0923)			0.0734 (0.0912)
Retirement (Baseline: Worker)		0.0886*** (0.0277)	0.0702** (0.0286)		0.0990*** (0.0213)	0.0912*** (0.0217)		-0.0863*** (0.0201)	-0.0792*** (0.0209)
Retirement transition (Baseline: Worker)		0.000597 (0.0371)	-0.0195 (0.0393)		0.0547** (0.0262)	0.0515* (0.0292)		-0.0369 (0.0270)	-0.0236 (0.0289)
Unemployed (Baseline: Worker)		-0.135*** (0.0446)	-0.126*** (0.0452)		-0.0293 (0.0348)	-0.0271 (0.0352)		-0.00524 (0.0304)	-0.0195 (0.0314)
Individual fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sozio-demographic & health controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
State fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Urban / rural controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Constant	4.024*** (0.156)	3.975*** (0.156)	3.982*** (0.156)	3.682*** (0.122)	3.640*** (0.128)	3.647*** (0.128)	1.995*** (0.103)	2.030*** (0.107)	2.029*** (0.105)
Number of observations =	18,045	18,045	18,045	18,045	18,045	18,045	18,045	18,045	18,045
Overall R <sup>2</sup> =	0.026	0.030	0.033	0.023	0.026	0.027	0.035	0.038	0.039
Number of respondents =	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503

Source: DEAS 1996-2017, own calculations.

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level.



Table 5.2: Comparison income and multidimensional SWB: Comparison Income 2

Dependent variable =	SWLS	SWLS	SWLS	PA	PA	PA	NA	NA	NA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Household income (ln)	0.110*** (0.0207)	0.103*** (0.0208)		0.0380** (0.0149)	0.0374** (0.0150)		0.0150 (0.0141)	0.0111 (0.0143)	
Comparison income (ln)	-0.149** (0.0609)	0.146 (0.122)		-0.187*** (0.0447)	0.0439 (0.0915)		0.0703 (0.0446)	-0.310*** (0.0912)	
Retirement × Household income (ln)			0.0680*** (0.0251)			0.0260 (0.0181)			0.0338* (0.0176)
Retirement transition × Household income (ln)			0.288*** (0.0524)			0.101*** (0.0388)			0.00224 (0.0391)
Worker × Household income (ln)			0.117*** (0.0266)			0.0416** (0.0188)			-0.00936 (0.0185)
Retirement × Comparison income (ln)			0.102 (0.174)			0.0607 (0.133)			-0.319** (0.131)
Retirement transition × Comparison income (ln)			-0.0813 (0.193)			-0.112 (0.143)			-0.372*** (0.143)
Worker × Comparison income (ln)			0.173 (0.123)			0.0577 (0.0920)			-0.303*** (0.0923)
Retirement (Baseline: Worker)		0.135*** (0.0502)	0.136*** (0.0522)		0.113*** (0.0379)	0.119*** (0.0391)		-0.192*** (0.0374)	-0.195*** (0.0387)
Retirement transition (Baseline: Worker)		0.0494 (0.0557)	0.0350 (0.0576)		0.0693* (0.0411)	0.0501 (0.0430)		-0.141*** (0.0411)	-0.157*** (0.0425)
Unemployed (Baseline: Worker)		-0.125*** (0.0457)	-0.113** (0.0463)		-0.0264 (0.0350)	-0.0217 (0.0354)		-0.0260 (0.0302)	-0.0383 (0.0312)
Individual fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sozio-demographic & health controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
State fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Urban/ rural controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Constant	4.031*** (0.157)	3.950*** (0.159)	3.936*** (0.160)	3.692*** (0.125)	3.632*** (0.130)	3.626*** (0.130)	1.992*** (0.103)	2.088*** (0.110)	2.095*** (0.108)
Number of observations =	18,045	18,045	18,045	18,045	18,045	18,045	18,045	18,045	18,045
Overall R <sup>2</sup> =	0.027	0.030	0.032	0.024	0.026	0.027	0.035	0.039	0.040
Number of respondents =	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503	8,503

Source: DEAS 1996-2017, own calculations.

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level.

Considering the results on Positive Affect (col. 4-6) and Negative Affect (col. 7-9), we observe some similarities and differences to the SWLS results. The PA estimations are qualitatively consistent with the SWLS in terms of household income. More income is associated with higher satisfaction and more positive feelings in the preceding weeks. In contrast, the NA shows little responsiveness concerning household income. Both comparison income definitions (col. 4 in Table 5.1 and Table 5.2) show a negative association with the PA scale. The higher the comparison income becomes, the less frequent the responders experience positive emotions. Negative experiences on the NA scale mirror this, as they show a positive coefficient (col. 7 in Table 5.1 and Table 5.2). However, this result must be interpreted cautiously due to its statistical insignificance for comparison income 2. Negative emotional experiences occur more frequently with increasing comparison income. However, repeating the second step of including employment status controls for PA and NA, it holds equally well that the significant associations of comparison income move to the employment status indicators. The hedonic SWB differs on average more between the status worker or retired than between the different comparison incomes. An exception is Table 5.2, col. 8 for the NA scale. Here, we find a significant reduction of negative hedonic experiences associated with comparison income 2 and a negative coefficient for the retirement transition coefficient.

For both comparison incomes on the hedonic SWB scales (col. 9, Table 5.1 and Table 5.2), we do not find any clear trend but only the same significant coefficient on the comparison income 2 of the NA scale.

#### *5.4.2 Comparison income and disaggregated hedonic well-being*

PA and NA are aggregated outcome variables composed of ten hedonic experiences defined as positive (PA) and ten hedonic experiences defined as negative (NA). We decompose the PA and NA scales into their constituent parts and examine their association with comparison income separately for each hedonic experience. This way, we first search potential counteracting associations between the emotions and, second, we check if comparison income has an analogous relationship as to evaluative SWLS. Therefore, we regress the twenty hedonic experiences (*enthusiastic, excited, strong, interested, proud, alert, inspired, determined, attentive, active, desperate, angry, guilty, anxious, hostile, irritated, ashamed, nervous, jittery, afraid*) separately on both comparison incomes with the specification with employment status controls of column 2 in Subsection 5.4.1.

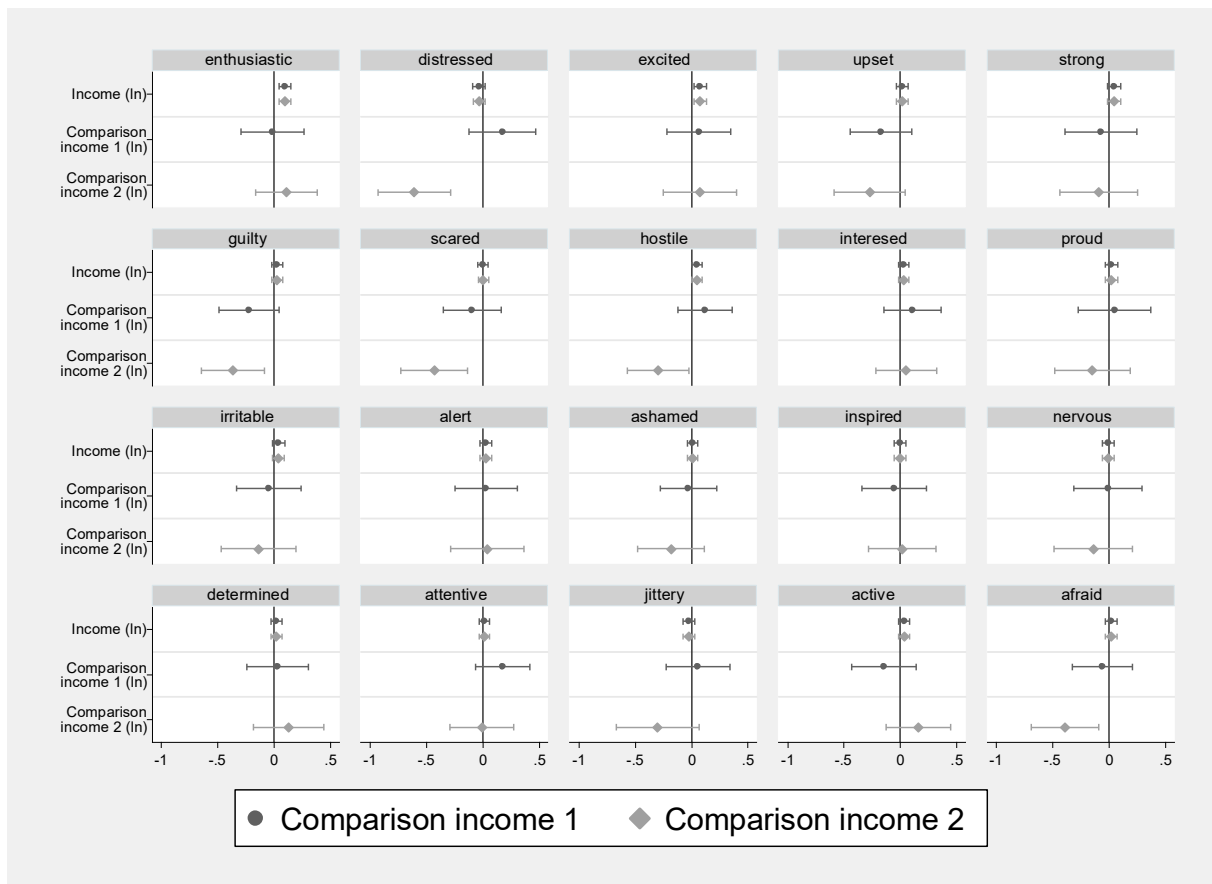
The correlation between household income and the different hedonic experiences is not very pronounced.<sup>43</sup> In general, the household income coefficients are rather small and only the regressions on *enthusiastic* and *excited* find positive correlations to income. The frequency of experiencing these two hedonic emotions increases with rising household income. Hence, it's plausible that those two strong emotions drive PA's positive correlation with own income. It is striking that the confidence intervals of own income are very small for all emotions, which means that the statistical uncertainty is low compared to the same regression's comparison income. The analysis comparing the two comparison income definitions shows a broadly similar picture for most emotions. In no case are both comparison income coefficients statistically significant and have opposite signs at the same time.

Comparison income 2 shows significant associations only with the negative emotions *distressed*, *guilty*, *scared*, *hostile*, and *afraid*. All these associations are negative, meaning that increasing comparison income comes with a lower frequency of negative emotional experiences. However, for comparison income 1, the same tendency is only found for *guilty*.

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<sup>43</sup> Statistical significance is only given insofar as the 95% confidence interval of the point estimates do not intersect the vertical zero correlation line.

Figure 5.1: Income and comparison income coefficients for twenty hedonic experiences



Source: DEAS 1996-2017, own calculations.

The graph shows separately the point estimates for household income (in ln) and comparison income (in ln) from regressions on the twenty PANAS hedonic experiences. The dark gray dots are estimates from the regressions with comparison income 1, and the light gray diamonds are estimates from regressions with comparison income 2. The respective 95% confidence intervals are shown as lines attached to the point estimates.

## 5.5 Concluding Discussion

We show that the role of employment status for comparison income goes beyond defining a reference group of similar individuals. Employment status also has a moderating role. Hence, neglecting the control variable employment status may falsely suggest that there is a (negative) association between SWB and comparison income that, in fact, comes from the respondent's social category. Consistent with Hetschko, Knabe, and Schöb (2014, 2019) for retirement and with Hetschko, Schöb, and Wolf (2020) for (un-)employment, we find within-person SWB changes due to status changes over time. Simultaneously, income comparison coefficients bereave their negative sign and become insignificant when including appropriate employment status controls. This has previously unconsidered implications because the existing empirical literature so far concentrates on constructing reference groups to gain suitable comparison

incomes and on the role of estimation techniques (Brown, Gray, and Roberts 2015). Ifcher, Zarghamee, and Graham (2018) also obey employment status, but by a rather weak definition, they use the question of whether the person worked in the last seven days, which does not affect the social category.<sup>44</sup> They report that the unemployed overall have a stronger association with comparison income. FitzRoy et al. (2014) expect to see a more negative comparison effect due to the complete vanishing of information advantages from comparison income. Boodoo, Gomez, and Gunderson (2014), in contrast, find more pronounced comparison effects for the employed compared to the retired. We find no evidence for both ideas. Neither the employed nor the retired differ in terms of comparison income. Both groups' interactions with comparison income show no significant differences given controls for their employment status. In principle, this might be due to low case numbers; however, at least bigger differences would have been found here. A plausible explanation is that income comparison is a more general human feature that does not differentiate between different social categories.

The comparative perspective on the association between hedonic and evaluative SWB with comparison income suggests that life satisfaction and positive hedonic experiences behave similarly in terms of comparison income. This not only holds for comparison income but also for own income. With employment status controls, the frequency of negative emotions is decreasing when comparison income increases. Overall, this suggests that hedonic and evaluative SWB align when it comes to comparison income which is different from labor market studies that show divergent reactions on both indicators for employment status (Wolf, Metzing, and Lucas 2019). However, for comparison income, such alignment is also found by Ifcher, Zarghamee, and Graham (2018). Deaton and Stone (2013) conjecture that hedonic well-being better reflects the relative income hypothesis than evaluative well-being. We do not find any support for this conjecture.

As aggregate positive and negative hedonic well-being encompasses a set of different feelings, the different relationships for each emotion with comparison income might differ or may counteract other emotions simultaneously. We show that a few negative emotions (like *guilty* and *scared*) define the overall relationship to comparison income. For positive emotions, however, we do not find any significant correlation with comparison income on their own, which suggests that there might rather be an underlying hedonic association that drives the significant findings on the positive affect scale. Hence, for comparison income, examinations

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<sup>44</sup> No working during the last 7 days might be due to illness, vacations, and other reasons which not directly affect the social identity in the 'working-age' social category.

of positive and negative hedonic SWB should be made separately and not with aggregate affect measures like the U-index, which are at risk of leaving important affective states out (Kahneman and Krueger 2006).

This leads to recommendations for future research to consider the hedonic relevance of specific emotions for comparison income. Envy and greed would be particularly useful in this context since both are repeatedly cited in the narrative justification of the relative income hypothesis and adorn many papers' titles.

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- Wolf, Tobias (2020): *Welfare while working: How does the life satisfaction approach help to explain job search behavior?*, School of Business & Economics Discussion Paper No. 2020/14.
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## English short summary

This dissertation contributes to the economics of well-being. In addition to the introduction, the thesis comprises four chapters with self-contained research papers that contribute to the literature through empirical analyses of complex data sets. Across chapters, three sets of research questions are addressed.

The first research focus considers the impact of ‘social’ determinants on subjective well-being (SWB). Embedded in the identity utility theory on labor markets and relative income theory, this thesis carries out panel data analyses and quasi-experimental methods to show how SWB is affected by social factors such as norms and comparison income. Specifically, it examines the impact of in-work welfare benefits on life satisfaction (Chapter 2). This thesis examines two further major determinants of SWB by studying unemployment (Chapter 4) and comparison income (Chapter 5).

The second research focus takes findings on such social and non-monetary factors and investigates whether SWB causes behavior, too. This thesis examines whether the stigmatization of in-work benefit recipients (“welfare stigma”) affects their on-the-job search and durations of transfer dependency (Chapter 3) to complement monetary incentives explaining labor market behavior.

The third research focus addresses issues arising from the use of different SWB measures. Specifically, hedonic well-being and evaluative well-being are examined in direct comparison by studying the consequences of unemployment (Chapter 4) and comparison income (Chapter 5) on both measures side by side.

In detail, Chapter 2 examines changes in life satisfaction during transitions between different employment statuses (‘unemployment’, ‘regular employment’, and ‘employment with in-work benefits’) using difference-in-differences approaches. Utilizing the Panel Labor Market and Social Security (PASS) from 2007-2018, we find evidence supporting the hypothesis that, *ceteris paribus*, an increase in life satisfaction compared to unemployment occurs for workers becoming reemployed with in-work benefits exceeding the accompanying income growth. However, such latent advantages from work are not sufficient to match, *ceteris paribus*, the life satisfaction level of regular employees. In particular, we identify the deviation from a social norm stating that workers should make their living independently from welfare



transfer as a non-monetary cause for the compromised life satisfaction of in-work benefit employees.

Chapter 3 uses PASS linked with administrative data from the integrated employment biographies (PASS-ADIAB) to examine whether and how life satisfaction affects on-the-job search and duration of in-work benefit episodes. For the first hypothesis, stating that reduced life satisfaction increases the probability of job search among employees, we find a negative correlation only for marginally employed workers. We find no evidence for the second hypothesis, stating that the time elapsed in supplementary in-work benefits is also negatively associated with life satisfaction.

Chapter 4 examines the hedonic well-being of employed and unemployed workers using the Innovation Sample of the Socio-Economic Panel (SOEP-IS). For this purpose, a longitudinal, survey-optimized version of the Day Reconstruction Method (DRM) 2012-2015 is used to aggregate daily hedonic well-being into one measure – the ‘P-index’. Using this German representative panel data set and controlling for time-invariant heterogeneity, the chapter shows that overall hedonic well-being is barely affected by the employment status ‘unemployment’. However, this time-weighted well-being is influenced by the underlying time use and its subjective assessment. We find that work episodes of employed are among the activities with the highest shares of workers reporting unpleasant experiences. Experienced meaningfulness during work does not fully compensate for such unpleasant experiences.

Chapter 5 examines how comparison income affects subjective well-being. Comparison income is the average income of relevant others. Given own income, the chapter investigates how changes in comparison income affect both hedonic and evaluative well-being in comparison. The study is based on panel data from the German Ageing Survey (DEAS) 1996-2017. It investigates this association under the consideration of the employment statuses ‘Employed’, ‘Retirement Transition’, and ‘Retirement’ to find evidence on the direction of the comparison income coefficient. It turns out that the relationship between hedonic well-being on the one hand and evaluative well-being on the other hand and comparison income align. Accounting for employment statuses, on the other hand, can alter the direction of the comparison income effect.

## Kurzzusammenfassung

Die vorliegende Dissertation ist im Bereich der volkswirtschaftlichen Erforschung des subjektiven Wohlbefindens angesiedelt. Neben der Einleitung umfasst die Arbeit vier Kapitel mit Forschungshypothesen, die anhand empirischer Analysen komplexer Datensätze Beiträge zur Fachliteratur leisten. Kapitelübergreifend befasst sich die Arbeit mit drei Fragekomplexen.

Der erste Forschungsschwerpunkt betrachtet die Auswirkungen von sozialen Einflussfaktoren auf das subjektive Wohlbefinden. Eingebettet in das theoretische arbeitsmarktökonomische Identitätsnutzenkonzept und der Relativeinkommenstheorie wird anhand von Paneldatenanalysen und quasi-experimentellen Forschungsmethoden aufgezeigt, wie das subjektive Wohlbefinden durch soziale Normen und das Einkommen anderer beeinflusst wird. Spezifisch wird untersucht, welche Auswirkungen eine Beschäftigung mit ergänzendem Grundsicherungsbezug auf die subjektive Lebenszufriedenheit hat (Kapitel 2). Auch Arbeitslosigkeit (Kapitel 4) und Vergleichseinkommen (Kapitel 5) werden als zentrale Einflussfaktoren auf das subjektive Wohlbefinden hin untersucht.

Der zweite Forschungsschwerpunkt nimmt diese Befunde auf und untersucht, ob subjektives Wohlbefinden nicht nur Konsequenz von Einkommen und sozialen oder nicht-monetären Faktoren ist, sondern auch Ursache für Verhalten sein kann. In Ergänzung zur Betrachtung von monetären Anreizsystemen untersucht diese Arbeit, ob sich die Stigmatisierung („welfare stigma“) von Grundsicherungsbeziehern auf deren Arbeitssuche und Verweildauer im Transferbezug auswirkt (Kapitel 3).

Der dritte Forschungsschwerpunkt befasst sich mit der methodologischen Frage nach den Unterschieden zwischen den Maßen des subjektiven Wohlbefindens. Hedonisches und evaluatorisches Wohlbefinden werden verglichen, indem die Auswirkungen von Arbeitslosigkeit (Kapitel 4) und Vergleichseinkommen (Kapitel 5) auf beide Maße im direkten Vergleich betrachtet werden.

Im Einzelnen untersucht Kapitel 2 Lebenszufriedenheitsänderungen bei Übergängen zwischen verschiedenen Beschäftigungsstati (Arbeitslosigkeit, regulärer Beschäftigung und Beschäftigung mit ergänzendem Transferbezug) mittels eines Differenzen-in-Differenzen-Ansatzes. Als Datengrundlage dient das Panel Arbeitsmarkt und Soziale Sicherung (PASS) der Jahre 2007–2018. Es findet sich Evidenz für die Hypothese, dass bei geförderter Beschäftigung im Vergleich zur Arbeitslosigkeit *ceteris paribus* eine Erhöhung der Lebenszufriedenheit durch die Wiederherstellung von latenten Vorteilen des Arbeitens stattfindet. Diese Vorteile sind

allerdings nicht hinreichend, um *ceteris paribus* die subjektive Lebenszufriedenheit regulärer Beschäftigter zu erreichen. Insbesondere die Abweichung von einer sozialen Norm, welche besagt, dass Beschäftigte unabhängig von staatlichen Transferzahlungen ihren Lebensunterhalt bestreiten sollten, wird als ursächlich für Zufriedenheitsunterschiede identifiziert.

In Kapitel 3 wird anhand des PASS in Verknüpfung mit administrativen Daten aus den integrierten Erwerbsbiografien (PASS-ADIAB) untersucht, ob und wie die Wohlbefinden sich auf die Arbeitssuche und die Verweildauer im ergänzenden Transferbezug von Beschäftigten auswirkt. Für die erste Hypothese, wonach eine geringere Lebenszufriedenheit die Wahrscheinlichkeit der Arbeitssuche erhöht, kann mittels Paneldatenschätzungen lediglich für geringfügig Beschäftigte eine negative Korrelation nachgewiesen werden. Für die zweite Arbeitshypothese, wonach die Dauer im ergänzenden Transferbezug ebenfalls negativ mit der Lebenszufriedenheit assoziiert ist, findet sich keine Evidenz.

Kapitel 4 untersucht das hedonische Wohlbefinden von Arbeitslosen im Vergleich zu Beschäftigten mittels des Innovation Samples des sozio-ökonomischen Panels (SOEP-IS). Hierzu wird eine längsschnittliche, Survey-optimierte Fassung der Day Reconstruction Method (DRM) zur Aggregation von hedonischem subjektivem Wohlbefinden an bis zu vier individuellen Tagen der Jahre 2012–2015 verwendet. Das Kapitel kann mit diesem repräsentativen Paneldatensatz und unter Kontrolle von zeit-invarianter Heterogenität aufzeigen, dass das hedonische Wohlbefinden durch Arbeitslosigkeit kaum beeinflusst wird. Dieses aggregiert, zeitgewichtete Maß wird durch Arbeitsepisoden beeinträchtigt. Auch erlebte Sinnhaftigkeit während der Arbeit kann nicht kompensieren, dass Arbeiten zu den Aktivitäten gehört, die mit relativ hoher Wahrscheinlichkeit als unangenehm empfunden wird.

Kapitel 5 untersucht, wie das Vergleichseinkommen das subjektive Wohlbefinden beeinflusst. Das Vergleichseinkommen ist das Einkommen von relevanten Anderen. Es wird untersucht, wie bei konstantem eigenem Einkommen Änderungen des Vergleichseinkommens auf hedonisches und evaluatisches Wohlbefinden wirken. Datengrundlage ist der Deutsche Alterssurvey (DEAS) 1996–2017. Die Assoziation wird mittels Paneldatenanalysen dahingehend untersucht, ob die Beschäftigungsstati ‚Beschäftigt‘, ‚Rentenübergang‘ und ‚Ruhestand‘ die Wirkrichtung des Vergleichseinkommens beeinflussen. Es zeigt sich, dass der Zusammenhang zwischen einerseits hedonischem und andererseits evaluatorischem Wohlbefinden und Vergleichseinkommen sich nicht unterscheidet. Die Einbeziehung der Beschäftigungsstati hingegen prägt die Wirkrichtung des Vergleichseinkommens.

## Vorveröffentlichungen

Die folgende Liste enthält alle Vorveröffentlichungen. Darunter sind auch Versionen der Kapitel, die zum Teil stark überarbeitet wurden, bevor sie Eingang in die vorliegende Dissertation fanden. Bei Kapitel 2 wurde zudem der Titel gegenüber früheren Vorabveröffentlichung modifiziert. Kapitel 1 und Kapitel 5 wurden nicht vorab veröffentlicht.

### **Kapitel 2: Income support, employment transitions and well-being**

(mit Clemens Hetschko und Ronnie Schöb)

- Hetschko, Clemens, Ronnie Schöb, and Tobias Wolf (2020): "Income support, employment transitions and well-being", *Labour Economics* 66, DOI: 10.1016/j.labeco.2020.101887.
- Hetschko, Clemens, Ronnie Schöb, and Tobias Wolf (2016): *Income Support, (Un-) Employment and Well-Being*, CESifo Working Papers No. 6016, July.
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### **Kapitel 3: Welfare while working: How does the life satisfaction approach help to explain job search behavior?**

- Wolf, Tobias (2020): *Welfare while working: How does the life satisfaction approach help to explain job search behavior?*, Freie Universität Berlin, School of Business & Economics Discussion Paper, No. 2020/14, August, DOI: 10.17169/refubium-27878.

### **Kapitel 4: Experienced well-being and Labor Market Status: the role of pleasure and meaning**

(mit Maria Metzging und Richard E. Lucas)

- Metzging, Maria (2019): *Essays on Inequality: Income Distribution, (Just) Taxation and Well-being*, Dissertation, Freie Universität Berlin: 2019, DOI: 10.17169/refubium-2697.
- Wolf, Tobias, Maria Metzging, and Richard E Lucas (2019): *Experienced Well-Being and Labor Market Status: The Role of Pleasure and Meaning*, SOEPpapers on Multidisciplinary Panel Data Research, No. 1043, July.

## **Formale Erklärungen**

### **Erklärung gem. §4 Abs. 2 Promotionsordnung**

Hiermit erkläre ich, dass ich mich noch keinem Promotionsverfahren unterzogen oder um Zulassung zu einem solchen beworben habe und die Dissertation in der gleichen oder einer anderen Fassung bzw. Überarbeitung einer anderen Fakultät, einem Prüfungsausschuss oder einem Fachvertreter an einer anderen Hochschule nicht bereits zur Überprüfung vorgelegen hat.

Berlin, Juni 2021

Tobias Wolf

### **Erklärung nach §10 (3) Promotionsordnung**

Hiermit erkläre ich, dass ich für die Dissertation folgende Hilfsmittel und Hilfen verwendet habe: die genannte Datensätze (Scientific Use Files), statistische Software (Stata), Literaturverwaltung (Mendeley) und die wissenschaftliche Fachliteratur wie in der Bibliografie aufgeführt. Auf dieser Grundlage habe ich die Arbeit selbstständig verfasst.

Berlin, Juni 2021

Tobias Wolf