

Facing the Faceless – On the Determinants and Effectiveness of Social Capital in the Labour Market

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“Business is a combination of war and sports.”

André Maureis

This fundamental insight commonly attributed to the French author Emile Herzog (1885-1967), writing under the pseudonym André Maureis, describes the nature of economics as a competitive and merciless business. Yet, probably not intended by Maureis, this quotation perfectly fits to the state of writing a dissertation – a task not smaller than “to make the wonderful commonplace [...], to find pattern hidden in apparent chaos” (Simon, 1996: 1).¹ Several struggles accompanied me on the way to finish this thesis, leaving me, on some days, exhausted like after running a marathon or being at war with data restrictions, econometric problems or doubts in the appropriateness of persuasive power of theoretical arguments. In the end, however, having tackled at least most of these problems, euphoria like after sports (or a victory of my favorite football club) might describe my feelings best. Nevertheless, this was only possible due to the unstinting support of several people who helped me with valuable advice and emotional support during this period.

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¹ In my very first footnote of this thesis I would like to quote Upper (1974), who provided brilliant, concise, yet thorough, insight in writing an academic paper, with a special focus on potential problems.

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1 Introduction

1.1 Motivation

The importance of an effective human resource management is well-documented in the economic literature, yet not understood in its entirety (Guest, 2011). Existing research has repeatedly found a clear relationship between human resource practices and various dimensions of organisational performance, e.g. productivity or financial performance (see e.g. Huselid, 1995; Becker, Gerhart, 1996; Guest, 2002; Jiang et al., 2012). Recruitment, that is the attraction and selection of qualified employees, is one of the major challenges of firms. As part of the human resource management, recruitment is responsible for the procurement of human capital and its success “depends in part on the quality and quantity of new employees identified and attracted through the recruitment” (Barber, 1998: 1). On the opposite side, traditional economic search models (e.g. Stigler, 1962, see chapter 2.1) assume that employees search for vacant positions that maximise their utility as a combination of monetary and non-monetary aspects of a job offer. An important determinant of the success of the recruitment process is the degree to which employer and employee fit together. Caplan (1987: 248) defined the organisational need for a sufficiently high employer-employee fit as follows:

Organizations wish to select persons who will best meet the demands of the job, adapt to training and changes in job demands, and remain loyal and committed to the organization. Prospective employees want to find organizations which make use of their particular abilities and meet their specific needs.

This definition stresses how both employers and employees strive for the best available match. In the recruitment literature, the degree of job matching is usually investigated in two dimensions, person-job (P-J) fit and person-organisation (P-O) fit (Carless, 2005). While person-job fit describes the degree to which an individual’s skills and abilities match the respective job requirements (Edwards, 1991), person-organisation fit refers to the degree to which an individual fits to a given organisational culture (O’Reilly et al., 1991). When the optimal match has been found, firms are able to maximise their profits and employees their utility. In a world with perfect information, an all-knowing and entirely rational actor (the so-called *homo oeconomicus*) is able to find the perfect match within no time.

In practice, rationality of economic actors is bounded (Simon, 1955) and both employers and employees do not dispose of perfect information on the respective other market side but lack

relevant information about each other. Hiring decisions, respectively the decision to accept a given job offer, have to be made at the risk of a poor employer-employee fit. On the demand side of the labour market, employers cannot observe or foresee the applicants' abilities and motivation (hidden information)² or performance and shirking behaviour (hidden action). Applicants, on the supply side, generally lack trustworthy information with regards to promotion perspectives, behaviour of supervisors and co-workers, and corporate culture. Ben-Porath (1980) concluded that "faceless" individuals and firms meet in the market, yet, more information on the respective other's "face" could be helpful to avoid potential mismatch. Deficient congruence of characteristics or needs or abilities might result in lower job satisfaction, weaker performance (Pervin, 1968), and, consequently, higher voluntary and involuntary turnover. As in Akerlof's "market for lemons" (Akerlof, 1970), mutual information asymmetries lead to imperfect labour market equilibria as employers who cannot observe applicants' productivity are disposed to pay average market wages. As a result, on the one hand, high performers could profit from higher wages if they conveyed their productivity in a reliable manner. On the other hand, firms could generate higher rents if they were able to attract and carefully select high performers from the pool of applicants. Thus, search for further information is beneficial for both labour market actors.

To overcome these mutual information asymmetries, labour market participants from both market sides could utilise their social capital in the form of personal contacts to fill vacancies or find new jobs. In analogy to the concept of human capital as the embodiment of knowledge in an individual, Coleman (1988) defined social capital as the "structure of relations between actors and among actors". Social capital – like physical and human capital – is expected to improve individual outcomes, in this case job search. Personal contacts could therefore serve as a superior means in the job search or recruitment process for both sides of the labour market compared to other search channels (e.g. printed or online adverts, employment agencies). Recruitment channels are conventionally divided into two main groups: formal and informal. Formal recruitment mainly contains government or private employment agencies and adverts in newspapers (Rees, 1966) and – with increasing importance – internet advertising. Referrals of new employees by friends, relatives, or acquaintances are unambiguously categorised as informal. Social capital might be helpful if personal ties are more likely to convey reliable information about job or firm characteristics (Wanous, 1978).

² An alternative term for this kind of information asymmetry is "hidden characteristics". However, Kräkel (2015) stated that different terms for ex-ante information asymmetries are used in the literature.

Furthermore, job incumbents might spread information about job vacancies to selected members of their network in order to maintain their reputation at their workplace (Ullman, 1966). Hence, theory implies that job referrals increase matching quality which is linked to post-hire outcomes (Pervin, 1968).

1.2 Research Focus, Research Questions, and Contribution to the Literature

Job search can be described as the process of identifying job options, gathering additional information on these options, and, thus, selecting the “best” alternative that provides the highest level of utility for the individual. Social capital could affect the job search and job finding process at different stages, as depicted in Chart 1. The process begins with the current employment status, which means that the individual might be employed or unemployed or might have recently finished any kind of formal education and considers searching for the first job in the working career. The decision to search for a new job could be driven by financial needs (e.g. in case of unemployed or job starters), the prospect of earning higher wages in another position, dissatisfaction with the current position or other individual reasons like relocation. When the individual has decided to search for a job, which may be done either actively or passively, job search activities have to be selected. In case of active job search, an individual might utilise several channels, formal or informal, in order to increase the job finding probability. Passive search, in turn, implies that the individual does not actively utilise any of these channels but unintendedly finds an attractive job offer, e.g. because it has been proposed by a friend or acquaintance. Once search channels have been selected, finding a job can be regarded as the first outcome of job search. The probability of finding a job through a certain search channel might differ between channels. Finally, the channel the respective job has been found through could affect post-hire outcomes, such as wages, job satisfaction, tenure/future turnover, and job security.

Social capital, in this scenario, is likely to affect how individuals search and find a job. It is assumed that individuals who dispose of more and/or more valuable social ties are more likely to both search and find a new job through their ties. Social capital, in this sense, determines the effectiveness of social ties in the job search process. Since social capital describes how an individual interacts with others, individual personality traits are likely to determine the amount of social capital accumulated. For example, extraverts or more agreeable individuals could dispose of more social ties which could serve helpful in the job search process. Furthermore, job search, job finding, and post-hire outcomes are likely to be affected by individual demographic, job-specific, and regional characteristics. First, how an individual

searches for a new job and through which channel this job is found, is likely to differ between individuals. For example, older individuals might dispose of more valuable social ties accumulated during their career in comparison to younger job seekers. Second, post-hire outcomes are likely to be determined by demographic (age, education), job-specific (firm size, branch, occupation), and regional factors (unemployment rate).

The scope of this thesis is mainly limited to the three last stages of the job finding process: job search, job finding, and post-hire outcomes. Most analyses in this thesis focus on the last two steps in this model, namely how finding a job through a certain channel affects post-hire outcomes, controlling for several demographic, job-related, and regional characteristics. Yet, since finding a job through a certain channel can already be interpreted as some kind of search success (pre-hire outcome), additional analyses connect job search activities with pre-hire outcomes (finding a job) and post-hire outcomes. Moreover, as depicted in Chart 1, the choice of job search activities might differ between individuals due to several control variables. If finding a job through a certain channel is non-random, estimates of determinants of post-hire outcomes might be biased. Hence, a two-stage approach is applied which incorporates both steps (determinants of finding a job through a given channel and post-hire outcomes after finding a job through a given channel) in one model. Furthermore, personality traits have been identified as a source of social capital and, therefore, personality traits are introduced in a model investigating both determinants of finding a job through a given channel and determinants of post-hire outcomes. Finally, social capital is approximated by activities in which social capital, in different forms, might be accumulated and, thus, the relationship between social capital and post-hire outcomes is investigated.

The two first steps of this model are only partially considered in this thesis. While the decision to search for a new job is not investigated, it is differentiated whether an individual has been searching actively or passively. In addition, the current employment status, i.e. the employment status before the newly found job, is at least partially considered by past wages and past job satisfaction, a differentiation between job starters and experienced job changers, and by interim unemployment between the two jobs.

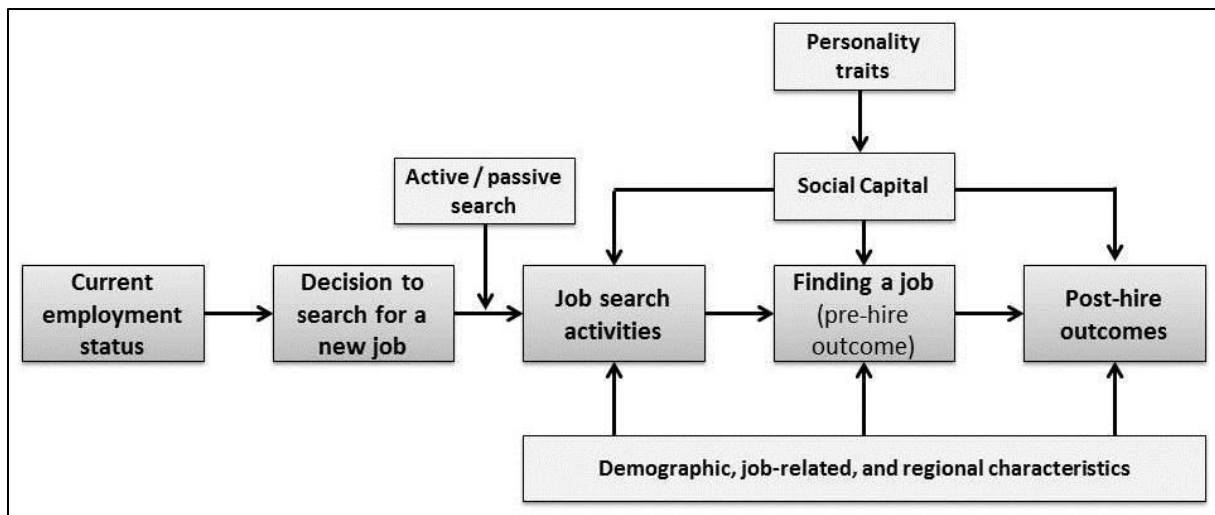


Chart 1: The role of social capital in the job search and job finding process

(Source: own representation)

Albeit empirical research has already addressed the relation between post-hire outcomes and search channels respectively the channel the job has been found through,³ there are certain gaps in the literature this dissertation aims to fill. As a contribution to fill these research gaps, the following five main research questions are addressed in this thesis:

1. Which factors determine whether an individual has been searching through social ties or why an individual has found the current job through this channel?

So far, few studies have analysed determinants of source choice or job finding through different channels. Thomsen and Wittich (2010) investigated determinants of source usage on German job seekers, however, their analyses are limited to unemployed job seekers (off-the-job search). How an individual is searching for a new job is likely to be determined by factors that lie in the individual itself (e.g. demographic characteristics) or by factors of the respective job (e.g. branch or firm size). For example, younger individuals might dispose of fewer valuable ties while older workers have been able to form ties in their work environment that might be helpful in finding a job. However, if selection into sources is non-random, findings on post-hire outcomes might be biased, e.g. if demographic characteristics determine the amount of social capital. As Mouw (2003) argued, individuals with a larger network should be more likely to find a job via social ties, yet, this could be caused by age instead of better networking. Therefore, the answer to this research question sets the stage for all following

³ See chapter 2.5 for a review of theoretical concepts and especially chapter 4.2 for an overview of the empirical literature.

questions. Furthermore, the knowledge of selection into source usage helps to understand whether estimated coefficients display causal or correlational relationships.

2. Do jobs found via different channels differ in terms of post-hire outcomes? Do the labour market legislation and the importance of the collective bargaining mechanism in Germany affect this relationship?⁴

Several studies have investigated whether social ties are related to monetary and non-monetary post-hire outcomes. In his monograph “Getting a Job: A Study of Contacts and Careers” (first edition published in 1974) Granovetter (1995) provided ample evidence that social ties are beneficial in the job search process. Furthermore, he was able to confirm theoretical arguments developed in his seminal paper “The Strength of Weak Ties” (Granovetter, 1973) that ties to mere acquaintances, i.e. people to whom one is not closely connected, are more helpful than connections to family members or close friends. Granovetter’s work laid the cornerstone for a whole stream of the economic and sociological literature. More recent studies, though, have found rather mixed findings on the effectiveness of social ties as a job search channel (see e.g. Antoninis, 2006; Delattre, Sabatier, 2007; Bramoullé, Saint-Paul, 2010; Pellizzari, 2010).

Most studies suffer from two shortcomings that leave important questions unanswered: First, current research is mainly based on small samples of one or few firms, hence focussing on hiring strategies of specific firms. However, these studies fail to investigate this topic for the whole labour market. Single firms, though, might differ in terms of their hiring strategies. In an empirical investigation of the Model of Cultural Fit (Mendonca, Kanungo, 1994), Aycan et al. (1999) showed that human resource practices used by firms are shaped by the specific corporate culture. Hence, in order to elucidate whether social ties are generally an important asset in the search process, a study should utilise data from multiple firms and various kinds of employees.

Second, most studies are conducted in countries with less strict labour legislation. Granovetter’s study, for example, investigated the effectiveness of social ties in the U.S. labour market, which is commonly perceived as less rigid and more flexible in comparison to European labour markets (Nickell, 1997). Kitschelt and Streeck (2003) criticised the lack of flexibility in German politics and explicitly mentioned the labour market as a target for

⁴ Note that potential selection effects are not considered (see question 3 for potential selection effects).

reforms. Although several reforms have been implemented (e.g. the so-called Hartz reforms), Kemmerling and Bruttel (2006) still saw institutional inertia and resistance. A study on the German labour market is meant to investigate if recruitment sources matter in an environment of collective wage agreements and wage posting instead of wage bargaining. If firms are not able or not willing to differentiate between employees recruited via different channels, the wage effect of finding a job via social ties should be zero. Yet, non-monetary benefits are still possible or even more important (in the absence of monetary benefits) when individuals decide to accept a job they found via social ties. In addition to this, Korpi (2001) argued that social ties might be less important in labour markets with stronger public institutions like employment agencies to which a large fraction of job openings is reported. The institutional background, especially in comparison to studies of social ties in the U.S. labour market, could be an important moderator of the relationship between social capital and post-hire outcomes.

3. Can differences in personality traits explain both source selection (finding a job through a certain channel) and post-hire outcomes?

There appears to exist a broad consensus that career success does not only depend on demographic characteristics or other factors that can be measured objectively but also on non-cognitive skills, such as motivation or perseverance (Heckman, Rubinstein, 2001). Due to restrictions in the available data, most studies interpret personality differences as unobserved heterogeneity. Boyce (2010) showed that personality traits account for up to 20 percent of this unobserved heterogeneity in well-being regressions which implies that incorporating personality traits into econometric analyses can improve regression results. The enigmatic nature of personality has been conceptualised by Costa and McCrae (1985) in their well-known Five Factor Model. They identified five main dimensions of personality, namely agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience, which have been confirmed in multiple studies. In the last decade, many representative individual and household surveys (e.g. the German SOEP or the Australian HILDA) have included personality measures into their questionnaires which made it possible for researchers to include personality measures into their analyses.

Apart from econometric reasons to include personality traits, there are theoretical considerations why personality might be an interesting dimension of individual differences in the context of job search. As already hypothesised by Pervin (1968), personality could be a determinant of employer-employee fit. Individuals are likely to sort into jobs that match their character traits, e.g. sales representatives are more likely to be extraverts than introverts (Ham

et al., 2009b). Current research has repeatedly found correlations between personality traits and post-hire outcomes (Heineck, Anger, 2010; Cobb-Clark, Tan, 2011; Fietze, 2011; Heineck, 2011), implying that certain character traits could be beneficial in the labour market. However, personality traits could also determine how job seekers search for a new job – in this case which channels are utilised in the search process. Individuals who are scoring high in dimensions that are important for social interaction could be more likely to search and find a job via social ties. In this thesis, a comprehensive model is developed in which personality traits are regarded as a determinant of source choice in the recruitment process and as a determinant of post-hire outcomes. To the best of my knowledge, this is the first attempt to combine personality research with research on job search via social ties.

4. Do unemployed job seekers use social capital in a different way than employed job seekers? Do unemployed job seekers benefit from job search via social ties?

While early job search models treated all job seekers as homogeneous (Mortensen, 1970), other models (e.g. Burdett, 1978) distinguished on- and off-the-job search; job seekers who search while they are still employed and job seekers who are unemployed. In the context of job search via social ties, this distinction could have important implications since employed job seekers could be able to generate valuable ties in their work environment while unemployed job seekers (especially in the case long-term unemployment) might lack such ties (Bramoullé, Saint-Paul, 2010). On the other hand, unemployed can spend more of their time on job search, especially via formal channels. As a result, the relationship between job search via social ties and post-hire outcomes might be affected by the employment status.

Apart from post-hire outcomes, job search channels might differ in terms of pre-hire outcomes, namely in the probability of finding a new job. Stigma effects of unemployment have been well-documented in the literature (Vishwanath, 1989; Van den Berg, van Ours, 1994; Biewen, Steffes, 2010), causing prolonged unemployment spells. Information asymmetries are more severe in case of unemployed job seekers, in particular if employers interpret unemployment duration as a proxy for unobservable characteristics, such as motivation or human capital depreciation. Social ties, in turn, could be helpful in the job search process to alleviate information asymmetries when referrers are able to provide reliable information on the unobserved characteristics of the job seeker. Therefore, information on search effort while being unemployed can be used to investigate patterns of off-the-job search and to identify which search channels actually utilised by job seekers are helpful in finding a job.

5. How does social capital, generated in different types of leisure time activities, relate to post-hire outcomes?

Social capital is the aggregate of all social ties that an individual disposes of (Bourdieu, 1986) and which can be utilised for different purposes. Due to the complex nature of social networks which are object to constant change and almost impossible to measure in their entirety (Wuchty, 2009), the empirical literature has to rely on proxies, e.g. a general measure of trust (La Porta et al., 1997; Glaeser et al., 2000). Since social ties are formed between individuals through mutual exchange and time spent together, leisure time activities appear to be a strong indicator for the amount of social capital accessible by the individual. Yet, activities differ in their potential to generate beneficial ties. Apparently, exchange with close friends could be less fruitful in comparison to other activities that bring together people with different backgrounds and access to further networks. Based on this observation that weak social ties, in comparison to strong or close ties, are particularly helpful in the labour market, Granovetter (1973) has coined the expression of the “strength of weak ties”. Hence, leisure time activities can be interpreted as the individual’s potential network and as a proxy for network size and network quality. It is assumed that a larger network with more valuable ties from outside the circle of close friends or relatives is more helpful in the labour market in terms of monetary and non-monetary outcomes.

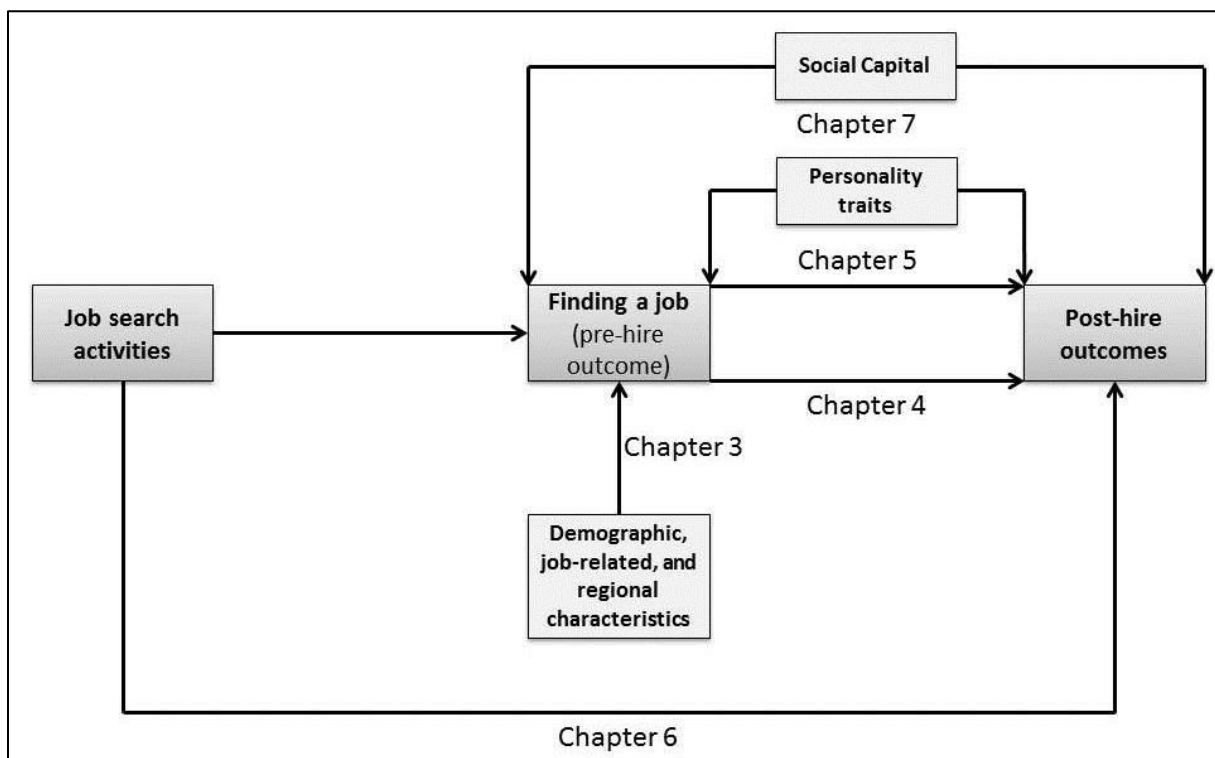


Chart 2: Thesis structure and investigated relationships

(Source: own representation)

1.3 Thesis Structure

All in all, this dissertation aims at elucidate both the determinants of job search via different search channels and the relationship of recruitment channels and post-hire outcomes. First, economic theories as well as theories from social and behavioural sciences are analysed in the light of job search via different search channels – with a special focus on social capital. Utilising data from the Socio-Economic Panel (SOEP), a large longitudinal survey representative for the German adult population, enables a thorough analysis of job search via personal ties. Therefore, this dissertation is structured as follows, visualised in Chart 2:

Chapter 2 positions this study in the economic search and matching model literature. Towards this end, models of job search (Stigler, 1962; Mortensen, 1970) and employer-employee matching (Mortensen, 1988) under incomplete information are presented. Furthermore, this chapter draws on social capital theory and network theories to explain the relation between social ties and job search effectiveness.

Chapter 3 analyses the determinants of finding a job through a given channel. It is investigated if certain demographic or job-related variables affect job finding. The findings of this chapter are essential for the understanding of this field of research. If source choice is related to specific individual properties, coefficients are likely to be biased if this selection is not considered. Thus, this chapter is meaningful for the interpretation of all further findings.

Chapter 4 comprises the empirical investigation of post-hire outcomes for employees who found their jobs via various channels. Starting wages in the new job, job satisfaction and turnover are used as dependent variables in this section. By using both monetary and non-monetary outcomes as dependent variables it is possible to trace whether personal contacts enable individuals to find better paid jobs or to increase job satisfaction (which is likely to be related to turnover).

In **chapter 5**, the previous analyses are augmented by the inclusion of personality traits. Personality is regarded as an important factor in determining individual behaviour and might affect job search (in this case source choice) and/or behaviour on the job – which both might affect post-hire outcomes. A two-stage approach suggested by Bourguignon et al. (2007) is applied here in order to investigate whether personality or other factors could be a driving force into non-random source selection. So far, personality traits have not been analysed in the context of job search via social capital.

Chapter 6 aims at exploiting the more detailed data on unemployed job seekers in the SOEP. For unemployed job seekers, the dataset does not only include information on how the current job was found, but also on which search channels have been utilised during the unemployment spell. Hence, the relevance of the actually utilised search channels on finding a job can be analysed.

Chapter 7 goes beyond job search and investigates how social capital affects career success in general. Social capital is measured as leisure time activities, such as voluntary work or meeting friends, which are meaningful in creating and maintaining social ties.

Chapter 8 summarises the main findings of this dissertation and discusses practical implications of these findings. Furthermore, limitations of this thesis are discussed and recommendations for future research are made.

2 Theoretical Considerations and Related Literature

In economics, as the science of dealing efficiently with limited resources (e.g. time or financial resources), decision making is one of the most thoroughly analysed, yet controversially discussed aspects of individual behaviour. In general, behaviour can be described as “conscious or unconscious selection of particular actions which are all physically possible to the actor” (Simon, 1997: 3). Economic actors aim to reach a decision that is effective in realising the desired outcome and efficient as regards to resource usage. Therefore, the analysis of how economic actors decide on a certain problem and how the decision making process can be improved is a key objective of economic research.

Basically, a decision can be characterised as “a choice between two or more options or acts, each of which will produce one of several outcomes” (Resnik, 2008: 6). Such choice usually constitutes a trade-off between options, as multiple options cannot be realised due to constraints in time and resources or alternatives are mutually exclusive. Hence, problem specification by carefully identifying potential options is a crucial prerequisite in decision making. Thus, decisions can be separated into two steps: First, alternatives have to be identified; second, one of these alternatives has to be selected.

Theories on how this process works are dependent on the underlying conceptualisation of human behaviour. Classic approaches are founded on the traditional economic doctrine which draws on the concept of the decision maker as *homo oeconomicus* who:

- disposes of complete information at no cost,
- only maximises his own expected utility,
- disposes of infinite computing abilities,
- and, thus, acts fully rational.

In this world, decision makers possess all relevant information and infinite computing capacities to process this information. Decision makers dispose of the full set of alternatives among which the best alternative is chosen in no time. In this understanding, economics is purely logic which could be best solved in mathematical form (Hayek, 1945). However, this concept leaves no space for search activities to enhance information that are subject of this dissertation. Furthermore, this approach has limited explanatory power as regards to dissatisfaction with a certain decision. If *ex-ante* all information is available to buyers and sellers, bad decisions cannot arise *ceteris paribus* because unsatisfactory transactions do not take place. Hence, theoretical models that attempt to explain the search process should draw

on a more realistic image of human behaviour that limits human capacity to act entirely efficiently and rationally. All in all, the concept of unlimited individual capacity of collecting and processing all information in no time is fairly unrealistic.

In his collection of essays *Models of Man*, Simon (1957) proposed a more realistic conceptualisation of the economic actor by introducing the term “bounded rationality”. Rationality is bounded as “the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems” (Simon, 1957: 198). According to this approach, decision makers intend to act rationally, however, rationality is limited due to constraints in cognitive capabilities and resources (Simon, 1997). Later research contributed to this concept, yielding three approaches describing the limits of rationality: optimisation under constraints, cognitive illusions, and ecological rationality (Todd, Gigerenzer, 2003). Models that incorporate the first view of bounded rationality assume that individuals do not dispose of complete information and that information search is, in fact, costly. Therefore, search is conducted under financial and temporal constraints while still sticking to the concept of optimisation. The second type of bounded rationality is based on psychological explanations for non-optimising human behaviour which can be called irrationalities. This approach interprets systematic errors of individual decision making as the main drivers for limits in rationality.⁵ However, Simon (1990) stated that these two directions of limited rationality are not mutually exclusive but complementary as a pair of “scissors whose blades are the structure of task environments and the computational capabilities of the actor” (Simon, 1990: 18). Therefore, Todd and Gigerenzer (2003) interpreted bounded rationality as a combination of cognitive limitations (biases, irrationalities) in a world that sets external limitations for the decision maker (search costs, computing capacity). Simon (1959: 272) summarised this concept of incomplete information as follows:

The decision maker's information about his environment is much less than approximation to the real environment. The term “approximation” implies that the subjective world of the decision maker resembles the external environment closely, but lacks, perhaps, some fineness of detail. In actual fact the perceived world is

⁵ Irrationality might occur in both stages of a decision: in identifying alternatives as well as in choosing the utility-maximising alternative. See for instance Payne (1976), Olshavsky (1979), and Potter and Beach (1994) for empirical evidence on how individuals ex-ante reduce the number of alternatives, as hypothesised in image theory (Beach, Mitchell, 1987). See e.g. Kahneman (2003) for a summary of several decision making biases and Camerer (1997) for an overview of biases in game theory.

fantastically different from the real world. The differences involve both omissions and distortions, and arise in both perception and inference.

Simon (1955) therefore introduced the concept of “satisficing”, which implies that individuals do not strive to maximise their utility or income but to make a decision which generates a satisficing level of the targeted outcome. In this decision model, individuals are not able to foresee all future options (as in a model with complete information) and options are available sequentially. Therefore, individuals have to decide whether to choose a given option or to wait for other (potentially better) options while bearing costs of not making a decision, e.g. foregone earnings or additional search costs. Hence, individuals do not optimise their outcomes under the restrictions of search costs but try to identify an option which generates at least a satisficing level of outcome. Yet, this does not exclude that other (unknown) options might have provided higher outcomes.

All theoretical models that are explained in this chapter are explicitly based on considerations of bounded rationality, mainly in the sense of optimisation under constraints. However, further cognitive biases are discussed as well.

Recruitment, respectively the acceptance of a certain job offer, constitutes a typical decision making process in which alternatives have to be identified and, thereafter, the best applicant or job has to be selected. The employer’s decision which applicant to hire comprises two steps an organisation takes in order to find and employ new hires. First, applicants have to be addressed and the firm generates a pool of potential employees. Afterwards, firms screen this pool of applicants to identify the best employee for the respective job (Marsden, Campbell, 1990). Employees, in turn, have to gather information on vacancies or new positions and choose between job offers received from employers. Information asymmetries cause problems in this process since firms and job seekers do not dispose of all necessary information which makes it difficult to find the best employee or the best job.

This chapter theoretically investigates why job search as a decision process is a non-trivial economic problem and how this problem might be alleviated by social capital. The structure of this chapter follows the logic of the decision process by describing economic search theories in chapter 2.1 and, sequentially, matching theory in chapter 2.2. The following chapters deal with the concept of social capital (2.3) and social networks (2.4) which is transferred to the job search process in chapter 2.5, combining search, matching, and social capital theories. These concepts provide a general fundament for this dissertation by

explaining the search process in the labour market with particular focus on different search channels. Theoretical concepts that are relevant in a specific chapter (e.g. personality traits) are described within the respective chapter. Chapter 2.6 summarises the main findings of this chapter and provides an outlook about the empirical investigations in the following chapters.

2.1 Search Theory

The origins of search theory lie in the explanation of search behaviour in commodity markets. Neoclassical models of commodity markets are based on the assumption of perfect information which leads to the existence of exactly one equilibrium market price for homogeneous commodities. In reality, we observe different prices for the same commodity in competitive markets. Apart from geographical barriers (i.e. distance to markets), information deficits can explain such price dispersions. In his path-breaking work, Stigler (1961) emphasised the importance of information search. In commodity markets, customers do not dispose of perfect information about prices of every seller. Sellers, themselves, are not able to obtain information about every competitor's price. Ben-Porath (1980) described both market participants as "faceless", which emphasises the aspect that both buyers and sellers belong to a pool of firms respectively individuals and that they cannot be distinguished from the respective other market side. Thus, lacking information on the supply side of the market explains price differences between sellers.

In Stigler's (1961) search model, buyers receive a new price offer drawn randomly from a given price function $f(p)$ when they decide to invest search effort. Subsequently, the customer has to decide whether to accept the price offer or to canvass other sellers in hope for a better price. Extended search enables buyers to find a better price; however, it is not without cost. First, opportunity costs arise as search is time-consuming and consequently detains individuals from engaging in other activities. Second, the absence of a certain commodity can expose additional monetary or non-monetary costs respectively disutility. Therefore, buyers invest in search activities as long as marginal returns from search exceed marginal costs. The optimum amount of search is found when marginal returns equal marginal costs. Due to diminishing returns of information and increasing marginal search costs, complete information is not desirable. Furthermore, the search for information has both an intensive and extensive margin (Rees, 1966). Searching at the intensive margin aims at getting more information about an existing quotation from a seller. Extensification is associated with search for a quotation from another seller. Intensification is therefore reasonable when products are

heterogeneous to a large extent to evaluate the specific characteristics of single commodity. For homogeneous products extensification is required in order to find a lower price.

A similar logic can be applied to labour markets, where employers are searching for the best job, in this case the highest wage.⁶ In a world of perfect information, all job offers would arrive at the same time and the job seeker could simply choose the alternative with the highest wage offer. In reality, though, receiving a job offer requires search effort (finding potential employers, passing the selection process) which generates search costs (e.g. forgone earnings) or psychological costs of unemployment might arise, for instance depression, psychosomatic symptoms, or lack of self-esteem (Paul, Moser, 2009; Farré et al., 2015). Furthermore, search effort limits the number of job offers the job seeker receives in a given period as time is limited and can only be allocated to a finite number of search activities. Based on these considerations regarding customers' behaviour on commodity markets, Stigler (1962) transferred the analysis of information search on labour markets. Under the assumption of sequential arrival of job offers and positive search costs, individuals try to maximise their own discounted lifetime earnings. As a result, individuals do not search until the best job offer is found but until the costs of further search overcompensate the gains from finding a better paid job. Albeit Stigler's approach abstains from classic economic theory by introducing search cost, he still sticks to the idea of utility maximisation – under the constraint of costly information search. However, maximising lifetime earnings is an extremely complex task which is likely to outstrip the computing capabilities of individuals.

Simon (1955) refrained from this concept of utility maximisation and explicitly modelled bounded rationality in his search model by introducing the notion of “satisficing”. His basic idea was that individuals receive information during the search process sequentially instead of simultaneously. As a result, searchers are not able to compare and value all alternatives but each period they have to decide whether to accept or to decline a job offer – without knowing if a better offer might be received in the next period. Job searchers have to consider a satisficing level of utility at which they accept a job offer. Hence, this model abstains from the idea of optimising under constraints, because “real-world optimization, with or without computers, is impossible [and] the real economic actor is in fact a satisficer, a person who

⁶ In reality, job attributes are multi-dimensional. Apart from wages, job seekers have to acquire information on several aspects of potential employers such as working conditions, promotion perspectives, and skill requirements. For simplicity it is assumed that all these attributes can be measured in monetary equivalents.

accepts “good enough” alternatives, not because less is preferred to more but because there is no choice” (Simon, 1996: 28-29).

In a simplified search model, in which all job offers only differ as to wages, job searchers only know about the distribution of all job offers. However, they cannot foresee the sequence of job offers they receive in the future periods. Consequently, applicants set an ex-ante aspiration level, a wage which evokes indifference between accepting and rejecting the job offer. If the wage offer is below the aspiration level, the job seeker does not accept the job; if the wage is above the aspiration level, the job seeker accepts the job offer. Thus, the sequence of incoming job offers determines post-hire outcomes. Furthermore, factors that determine the ex-ante aspiration level (market wages, individual characteristics) have to be considered and the aspiration level cannot be regarded as constant. When the unemployment spell lasts longer, the individual will reduce the minimum wage as human capital has to be depreciated and costs of unemployment (foregone earnings, psychological costs) increase.

Table 1: Abbreviations and descriptions of the Simon (1955) model

Abbreviation	Description
A	Set of all potential behavioural alternatives
\hat{A}	Set of behavioural alternatives considered by the individual ($\hat{A} \subset A$)
S	Set of future outcomes
V(s)	Utility function of single outcomes s
$P_a(s)$	Probability that s will occur if alternative $a \in A$ is chosen

Source: own presentation according to Simon (1955)

The model (see all abbreviations in Table 1) explicitly incorporates that individuals consider a set of behavioural alternatives (\hat{A}) smaller than the full set available (A). Omission of alternatives might be a result of lacking computing abilities or irrationalities of the individual who is not able or willing to assess all available alternatives. Search for further alternatives is costly which leads to a conscious omission of alternatives by limiting search effort. Furthermore, alternatives might be excluded from consideration due to errors in perception. Therefore, individuals are not able to maximise their future outcomes as described in the search models above. Apart from these limited capabilities, Simon introduced a dynamic view of rational choice. As the individual’s ability to foresee future alternatives (job offers) is limited, the sequence and time structure of incoming offers is relevant for the final decision. Hence, individuals do not try to maximise their discounted lifetime income by accepting a specific job offer but to find the job that offers a satisficing level of income, job satisfaction,

and other relevant factors. In comparison to Stigler's model, individuals are likely to be worse off because the satisficing level is usually below the maximum.⁷

In line with this argumentation, Mortensen (1970) set up a model of job search in which an unemployed worker is seeking for a job (visualised in Chart 3).⁸ In the simplest model, job seekers do not know about the exact wage which is offered by every firm. Instead, job offers are randomly drawn from a known wage distribution (McCall, 1970), in this case the wage frequency distribution $f(W)$. $E(W)$ represents the weighted means of all job offers. The variable K comprises all attributes and skills inherent in the worker. Employers' wage offers are determined by the minimum skill requirement $W(K)$. The higher the required skill level, the higher the wage offers by firms. Since firms do not hire employees that do not meet the firm's skill requirements, the job seeker can only hope to receive a wage offer below $W^*(K^*)$, with K^* being the individual skill level. Before entering the labour market, the job seeker has to set their reservation wage (W_R). This wage is determined by the amount of unemployment benefits and foregone earnings, as well as the time-preference (discount factor) of the unemployed and can be interpreted as the satisficing level of wage (or utility). With regard to Chart 3, job seekers do not accept a wage offer that lies left of W_R .

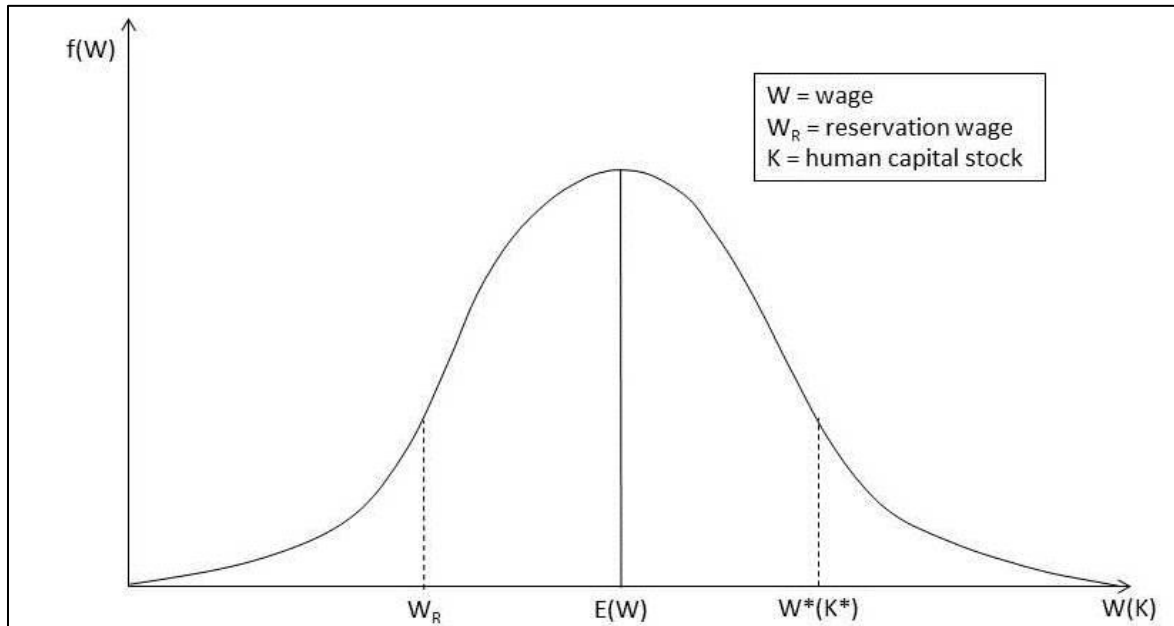


Chart 3: Wage distribution in the search model

(Source: own presentation according to Ehrenberg, Smith, 2012: 503)

⁷ Caplin et al. (2011) found empirical support for the Simon model in an experimental setting. Participants were asked to choose the highest results of eight mathematic tasks (additions and subtractions) with and without a time limit. Their findings clearly show that most participants search sequentially and act as satisficers. Thus, the sequence of given options determines search outcomes.

⁸ The notation follows Ehrenberg and Smith (2012).

In this model, searching for further information means to sequentially draw a random sample of the population of vacancies. For simplicity it is assumed that workers can only receive one offer in each period of time. If the offered wage rate exceeds the reservation wage, the job seeker will accept the offer and stop searching. Conversely, if an offer does not exceed the job seeker's minimum expectations, he will reject the offer and continue searching. Hence, a job seeker who chooses a high reservation wage is likely to find a better paid job, maybe at the cost of longer unemployment spell. Again, the optimal amount of search for each labour market participant is found when marginal benefits of search equal marginal search costs.

Although not originally intended by the authors, a dynamic interpretation of this model can explain why employees leave a company. In case the job seekers find a job below their maximum skill level $W^*(K^*)$ or accumulate more human capital (K), given the firm is not able to provide other jobs, the employee can only earn higher wages by leaving the firm. However, this requires the possibility of on-the-job search which is not implemented in this model.

Later works (e.g. Burdett, 1978; Gottschalk, Maloney, 1985; Simon, 1993) aimed at solving this shortcoming by incorporating on-the-job search. Job-to-job changes with no interim unemployment could be a relevant factor influencing wages or other labour market outcomes. This can only occur if employees search while they are still working in their current job. In the basic model, workers dispose of two mutually exclusive options: (1) to look for a job without working or (2) to work without searching. Burdett (1978) added a third alternative (3) of searching while being employed. Costs of on-the-job search might differ from unemployed search due to higher valuation of leisure time or a higher amount of foregone earnings ($c_1 =$ off-the-job, $c_2 =$ on-the-job). All searchers want to maximise net discounted lifetime earnings at a given point in time (t) by choosing one of the three options which can be formalised as:

$$\psi(w, t) = \max\{\mu_{1t}(w, u, c_1), \mu_{2t}(w), \mu_{3t}(w, c_2)\} \quad (2.1)$$

where w denotes the prospected or current wage and u reflects the unemployment benefits. Chart 4 shows the utility functions of the three options. For any given wage offer the optimal labour market strategy is:

- Option 1 (searching without working) if $w < z$
- Option 2 (working without searching) if $w \geq y$
- Option 3 (working and searching) if $z \leq w < y$

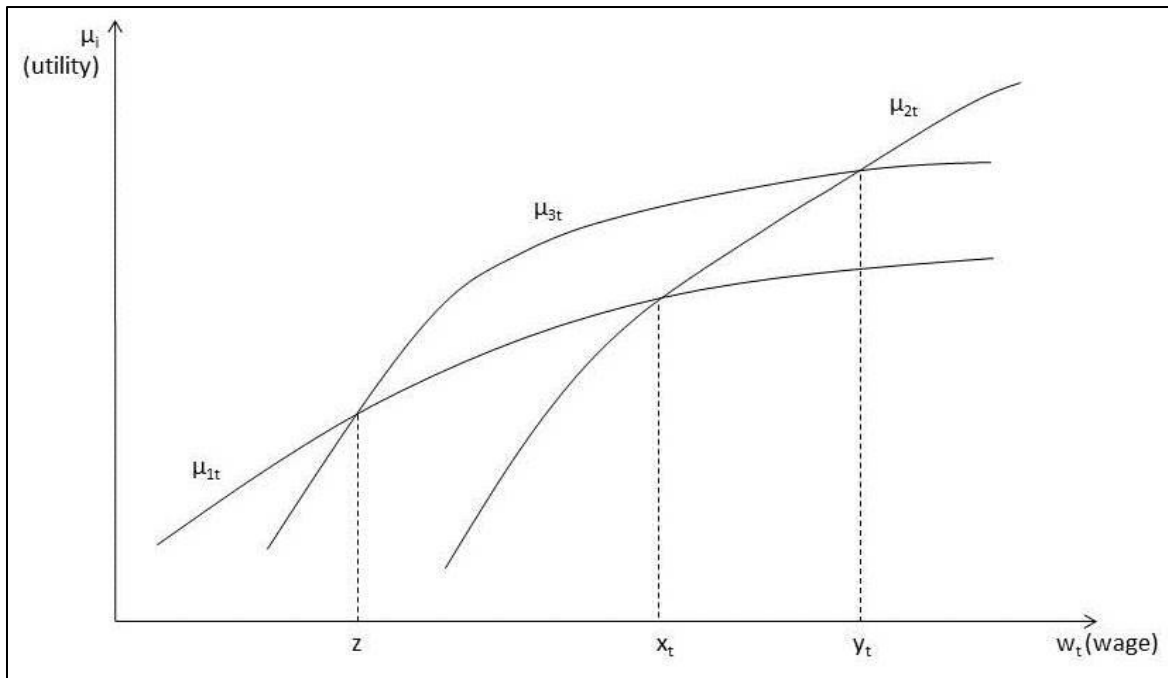


Chart 4: Decision to search on or off-the-job

(Source: own presentation according to Burdett, 1978: 215)

This model cannot be directly connected to job search via different search channels; however, the intuition of this model is important for the search via different channels (see chapter 2.5). An important aspect of this model is that different search costs are explicitly modelled. In practice, search costs might not only differ between on and off-the-job search but also between jobs and, especially, between hierarchy levels (which are related to wages). Therefore, the model explains differences in search behaviour depending on the wage level which can also be applied job search via social capital.

2.2 Matching Theory

Matching theory tries to explain the formation of a relationship between a complementary pair of individuals. Each relationship (hereafter called match) is attributed a certain value according to the quality of the match, for instance individual productivity in a specific job (Jovanovic, 1979b). Thus, matching theory explains why some relations are maintained and others are separated. This theory focuses on the situation when partners are already matched, which places the matching subsequently after the end of the search process.

Mortensen (1988) regarded two kinds of matching as comparable: marriage and employment. Both relationships are entered voluntarily and generate benefits for both agents since they can exploit opportunities they would not have separately. The quality of a match is determined by the degree both partners fit to each other. Each subject disposes of a bundle of “traits” – demography, biography, personality – which determines the matching quality. Since the

degree of fit differs for every potential pair of individuals, an assignment problem derives. Gale and Shapley (1962) were the first to present a simple matching model for the marriage market in which a number of n men and n women are paired. Individuals rank each other in accordance to their preferences. Then each individual can decide whether to enter a match or to stay single. A relationship is considered stable when both individuals do not want to split up in order to realise a better match. Hence, both members of a partnership have to be compensated for their forgone utility of remaining single or their outside options. In the notation by Mortensen (1988) the total surplus of entering a relationship is defined as:

$$s_{ij} = f_{ij} + m_{ij} - f_{i0} - m_{i0} \quad (2.2)$$

whereas s_{ij} stands for the total utility gained by entering the match, f_{ij} respectively m_{ij} stand for the utility of females and males, f_{i0} and m_{i0} reflect the opportunity costs. Hence, the model implies that every match generates a surplus that would not derive if both partners were separated.

To allow for heterogeneity of both employers and employees, Crawford and Knoer (1981) set up a model for a number of m workers and n firms (indexed $i = 1, \dots, m$ and $j = 1, \dots, n$). For each potential firm-worker pair there is a vector of work-related outcome variables such as job satisfaction (a_{ij}), productivity (b_{ij}), and salary (s_{ij}). Under the assumption of substitutionability of job satisfaction and salary, the individually rational decision of job seekers is defined as follows:

$$a_{ij} + s_{ij} \geq a_{f(i,j)} + s_{f(i,j)} \quad (a_{ij(i)} \geq 0 \text{ and } s_{ij(i)} \geq 0) \quad (2.3)$$

Job seekers accept a job offer (or are not willing to leave the firm) if the monetary and non-monetary benefits are at least as high as any other salary and satisfaction combinations in the market. The firm's rational decision can be described by:

$$b_{ij} - s_{ij} \geq b_{g(j)i} - s_{g(j)i} \quad (b_{g(j)i} \geq 0 \text{ and } s_{g(j)i} \geq 0) \quad (2.4)$$

which means that employees are employed or kept when the marginal benefit of this employee is larger than the benefit of any other employee in this position. Under the constraint of imperfect information it becomes obvious that this equilibrium cannot be found easily. In their model, Crawford and Knoer (1981) described a salary adjustment process in which the market equilibrium is found.

Although both models differ as regards to the degree of heterogeneity and the adjustment process, in both approaches a Pareto efficient allocation exists in which the generated surplus is maximised. On entering the new partnership, a bargaining problem accrues as the generated

surplus has to be divided between the matching parties. How this surplus is shared between the two parties is not part of the model. However, a stable equilibrium requires a division in which each party gains more or equal compared to the best alternative match (Mortensen, 1988). Whereas the division of surplus might be rather difficult in the marriage example, the surplus associated to a labour market matching can be shared more easily as employers' (productivity) and employees' (wage) surpluses can be valued monetarily. Assuming that wages are related to individual productivity, an increase in matching quality is likely to increase wages. Hence, being able to signalise high matching quality is likely to be beneficial for both employers and employees.⁹

A growing yet already large stream of the literature analyses the relationship between P-O fit¹⁰ and various organisational outcomes. Kristof-Brown et al. (2005) provided a meta-analysis of 172 studies which investigate the relation between P-O fit and pre-entry (e.g. job acceptance) and post-entry (e.g. performance, satisfaction). Their results indicate a strong and meaningful correlation between P-O fit and both pre- and post-entry outcomes. These findings imply the importance of P-O fit for organisations to maintain a productive workforce and to secure their competitiveness.

Though, finding a mutually beneficial partner to match with is less trivial than described above. As both employer and employee do not dispose of complete information, ex-ante matching quality cannot be assessed. Hence, unsatisfactory matches are likely to occur which lead to turnover. Regardless of the exact distribution of matching quality it is obvious that a certain proportion of applications would not lead to the best available match. Hence, expected average matching quality is below the matching quality of the best available match. As employers adjust their wage setting strategy to this volatility in the expected matching quality, offered wages are below the highest possible wage which would be adequate the employee fitting best. As a result, procurement of further information to reduce information asymmetries could be beneficial for employees and employers in order to find the best available matching partner. This rationale connects search models and matching models as search effort is likely to increase matching quality.

⁹ See Pissarides (1994) for a bargaining model in which the matching surplus is shared between employer and employee.

¹⁰ Kristof (1996: 3) defined supplementary and complementary fit as two related aspects of P-O fit. Supplementary fit can be understood as a congruence of individual and organizational characteristics (personality, values/norms, corporate culture). Supplementary fit occurs when, on the one hand, "an organization satisfies the individuals' needs, desires, or preferences" and, on the other hand, the "individual has the abilities required to meet organizational demands".

2.3 Theory of Social Capital

Economic theory typically assumes that individuals act totally egoistically in order to maximise their own utility. This conceptualisation is most famously referred to as Adam Smith's "invisible hand", which ensures that purely egoistic behaviour of each participant in the market maximises overall welfare. In contrast to this classic economic doctrine, sociology is concerned with the interaction between individuals. As we can observe in reality, people do not typically act selfishly in every situation. Social ties between individuals are able to explain such phenomena as cooperation without utility gains, fairness concerns, or even altruistic behaviour.¹¹ Personal relationships between individuals which are generally marked by mutual trust and a norm of reciprocity constitute an indispensable factor to facilitate economic transactions and reduce costs of market activities (Diekmann, 2004). Yet, Esser (2008: 23) argued that "social capital is a special case of capital" which is elucidated in this chapter.

2.3.1 Terminology and Concepts of Social Capital

The term "social capital" is introduced by Hanifan (1916) and describes a set of contacts to people outside the family. Apart from satisfying social needs, Hanifan interpreted social capital in the form of social interaction as a source to improve living conditions of all members of the respective community. In the article, Hanifan explained how "a rural community [...] developed social capital and then used this capital in the general improvement of its recreational, intellectual, moral and economic conditions" (Hanifan, 1916: 131). Thus, the article represents the first consideration of a possible connection between social capital, formed by social intercourse, and economic outcomes. Although not explicitly drawing on "social capital", Hayek (1945) stressed the importance of social exchange in a world of bounded rationality and information asymmetries. In the real world, all information is not public to everyone but each economic actor disposes of a unique set of information. Cooperation enables actors to share useful information in order to reduce uncertainty in the planning and decision process.

In the 1980ies, Bourdieu and Coleman independently reinvented the concept of social capital by introducing the concept systematically making them the founding theorists of social capital theory.¹² Both authors hint explicitly at the individual economic outcomes of social capital

¹¹ Altruism can be defined as a costly action for the good of someone else, which often, yet not necessarily, happens within social relations (Kolm, 2006). Utility functions may include social preferences, i.e. the degree to which a decision maker cares "about the material resources allocated to others" (Fehr, Schmidt, 2006: 638). However, altruistic behaviour is especially strong towards family members (Curry et al., 2013).

¹² See Häuberer (2011) for a detailed analysis of social capital concepts since the eighties.

which Campbell et al. (1986) termed the “network as resource argument”. Bourdieu (1986: 248-249) defined the construct as follows:

Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintances and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a ‘credential’ which entitles them to credit, in the various senses of the word.

This definition states that social capital provides both individual as well as collective benefits, which determines the uniqueness of this form of capital. On the one hand, social ties enable actors to reach a variety of helpful network members. On the other hand, network performance is contingent on the behaviour of all network members and its inherent structure. Therefore, Esser (2008) distinguished two kinds of social capital: Relational capital is understood as the individual resources of an actor, whereas, system capital draws on the importance of social capital on the society level for establishing trust, social control and morality.¹³ However, as this dissertation aims at investigating individual outcomes of social capital on the disaggregated level, the underlying analyses will focus on relational capital.

In “Foundations of Social Theory” which is viewed as a “major contribution to sociology” (Gibbs, 1990: 625), Coleman (1990) emphasised the importance of social capital as a productive asset of an individual, which enables individuals to utilise resources that are in control of other individuals. Social capital is mainly formed by mutual obligations and expectations to reciprocate in the future, establishing a dense network of obligations which the individual can utilise as a resource. As a result, the quality of social capital is highly dependent on the degree of trust within the network. If individual A regards the probability of a reciprocal action from individual B as rather small (A does not trust B), A will not be willing to provide any assistance in advance. Therefore, mutual trust is essential for creating social capital.

¹³ Trust, which is frequently used as a measure for social capital on the aggregate level, has been identified as an essential determinant of political and economic performance of a country. For instance, La Porta et al. (1997) reported a positive correlation between an aggregate measure of trust and government efficiency, civic participation, and performance of large organisations. Additionally, Knack and Keefer (1997) found a positive correlation between an trust and economic performance of 29 countries. See Uslaner (2008) for a critical discussion of the meaning of trust on the society level. See Offe and Fuchs (2001) for an overview of the development of social capital in Germany.

Lin (1999) explicitly based his concept of social capital on the Marxian “capital” terminology. Understanding capital as an investment to gain future returns, he defined social capital as an “investment in social relations with expected returns” (Lin, 1999: 30). Lin (2001) proposed four explanations for the positive impact of social capital on individual outcomes, which are systemised in Table 2. First, social capital is likely to facilitate the access of network members to information through mutual exchange which reduces information costs (transactions costs; see below). Second, social ties are likely to exert influence on other agents to act in favour of the individual because non-cooperative behaviour might be sanctioned by other network members. This influence might be especially meaningful if the agent is a key actor in a certain situation, e.g. a decision maker whose decision significantly impacts the individual. Third, an individual’s network serves as a resource not only for himself/herself but also for other agents. In the sense of Burt’s structural holes (see chapter 2.4), the individual is bridging the gap between an organisation and its individuals and, therefore, represents a meaningful asset for that organisation. Fourth, network members are likely to share demographic characteristics, common interests, and a mutual understanding (McPherson et al., 2001). Hence, similar individuals should be able to provide emotional support which affects mental health and well-being of network members. Additionally, being visible as a member of a certain network constitutes recognition and, thus, guarantees access to network resources. All four arguments are able to explain why individual social capital is beneficial for actors. Additionally, it becomes clear that these mechanisms cannot be explained by existing concepts of physical or human capital, which highlights the need for the social capital concept (Lin, 2001).

Table 2: Explanations of social capital benefits

	Information flow	Influence on agents	Social credential	Identity and recognition
Definition	Improved access to information in imperfect markets with information costs	Influence on the behaviour of key agents (decision makers) in favour of the network members	The individual is able to provide access to this network for the organisation and its agents	Emotional support (mental health) and public acknowledgement of the individual’s access to network resources
Example	Search for transaction partner, e.g. employer/employee	Influencing the decision of recruiters or supervisors	Employing a manager to have access to other network members (politicians, other managers)	Social exchange between network members that share similar interests

Source: own representation based on Lin (2001: 20)

Drawing on the idea of social capital as a form of investment, Glaeser et al. (2002) suggested a theoretical model in which social capital is an object of rational investment decisions. Individuals invest in their social capital – mainly by joining associations with other

individuals – which creates multiple benefits, but investment is causing opportunity costs in the form of forgone earnings or valuation of leisure time. Hence, an optimisation problem derives in which an individual has to decide on the efficient amount of social capital investment. Moreover, existing relations have to be maintained by further investments in the stock of human capital as social capital is object to depreciation. If the individual leaves the network or is excluded from it, these ties are cut and the individual is not able to utilise these relations any more. Hence, the authors stated that a strong parallel to human capital theory (Becker, 1964) exists as individuals lose their firm-specific human capital when they (have to) leave the firm.

Wolleb (2008) drew on Lin's idea of information flow and transaction cost theory to explain economic benefits of social capital. Transaction costs as “costs of using the price mechanism” (Coase, 1937: 390) are present in any exchange on the market. As actors on the market do not dispose of complete information, they have to face a trade-off between completeness of contract and increasing contracting costs. Transaction costs are usually distinguished as ex-ante and ex-post costs (Williamson, 1985). Ex-ante, transaction partners have to be identified and the contract has to be concluded. Ex-post, contracting partners have to monitor each other and contracts might need adjustment to unforeseen events. Hence, transaction costs arise due to (potentially) opportunistic behaviour and uncertainty. Transaction costs harm economic exchange in two ways: First, mutually beneficial transactions do not take place if transaction costs exceed transaction benefits. Second, high transaction costs lead to incomplete contracts which leave space for opportunistic behaviour (Tirole, 1988). Social capital creates bonds between individuals by generating mutual trust (Guiso et al., 2004) through which information exchange is possible and reciprocal behaviour is supported. On the contrary, non-cooperative behaviour is likely to be sanctioned in social networks as all network members will be unwilling to cooperate in the future leading to a loss in social capital.¹⁴ As a result, “[s]ocial capital plays a role in this trade-off reducing the costs and risks of transactions, increasing the opportunities for trade and leading to greater economic efficiency” (Wolleb, 2008: 375).

¹⁴ A similar logic is described by the concept of relational contracts (MacLeod, Malcomson, 1989). Such contracts are self-enforcing when the future benefits of maintaining a certain relationship are larger than any short-term gains from breach of contract (Baker et al., 2002).

2.3.2 Measuring Social Capital

A major problem of testing these theoretical arguments empirically is the difficulty of measuring social capital as “social capital is rather tacit and relational” (OECD, 2001: 43).¹⁵ However, the empirical literature has suggested multiple measures that aim to conceptualise certain aspects of social capital. One frequently used approach is to use a general measure of trust which is part of large household and individual datasets, such as the German SOEP or the British BHPS survey. Participants are asked to what degree they agree with the statement “On the whole one can trust people” (SOEP). As discussed above, this might be a reliable measure for macro-economic analyses. Glaeser et al. (2002) heavily criticised the usage of this measure for individual social capital. In an earlier study, the authors found that participants who reported as higher level general trust did not reveal higher trust in standard trust games. Furthermore, they doubted that trust and social capital are conceptually the same as one-sided trust does not create any further opportunities but has to be repaid. Hence, trust appears more likely to be an aggregate measure of a certain community.

A membership in organisations (e.g. social, cultural, or political engagement, sport clubs etc.) surely establishes social ties and appears to be a more reliable measure for social capital. Members of such organisations certainly share common features (homophily) and are likely to exchange information that might be helpful in finding a better paid job. However, a considerable shortcoming of this approach is that solely the potential amount of ties is regarded, not the ties actually used. Members within a group are not equally connected to each other so that group membership can only be regarded as a proxy for the available amount of social capital.

Lin (2008) differentiated accessible and mobilised social capital. Accessible capital describes the inventory of existing social ties. An individual constantly disposes of a certain stock of ties which might be altered by investment into the capital stock and depreciation. Mobilised capital is the specific tie or multiple ties which are actually used in favour of a certain activity. For example, an individual disposes of a large social network but for job search only a small fraction of this network is utilised. Lin argued that processes initiated or facilitated by social capital might be better described by mobilised capital, since the mobilised tie can be observed. However, this might not work in every case if social capital works in “invisible”

¹⁵ Durlauf (2002: F477) argued that “in the light of the vagueness of the concept, [...] the use of observational data to identify substantive forms of social capital is unlikely to be successful”. He suggested the utilisation of economic experiments to overcome shortcomings of field data.

ways (Lin, 2008: 53), which implies that individuals might not mobilise a tie in active job search, nevertheless, a certain tie might be responsible for initiating a job change. In this dissertation, mobilised social capital will be investigated. Additionally, chapter 7 investigates the effect of activities which are able to create or maintain accessible social capital.

Narayan and Cassidy (2001) applied a multi-dimensional approach to measure social capital in rural Ghana and Uganda. Their measures can be systemised as depicted in Chart 5. On the community (or group) level, general group characteristics (size, heterogeneity, frequency of participation), group norms and a general feeling of togetherness describe social capital. On the other hand, important determinants of social capital can be measured on the individual level. The degree of sociability and individual trust in people and organisations are meaningful for establishing social ties, whereas neighbourhood connections and volunteering are measures for existing social ties.

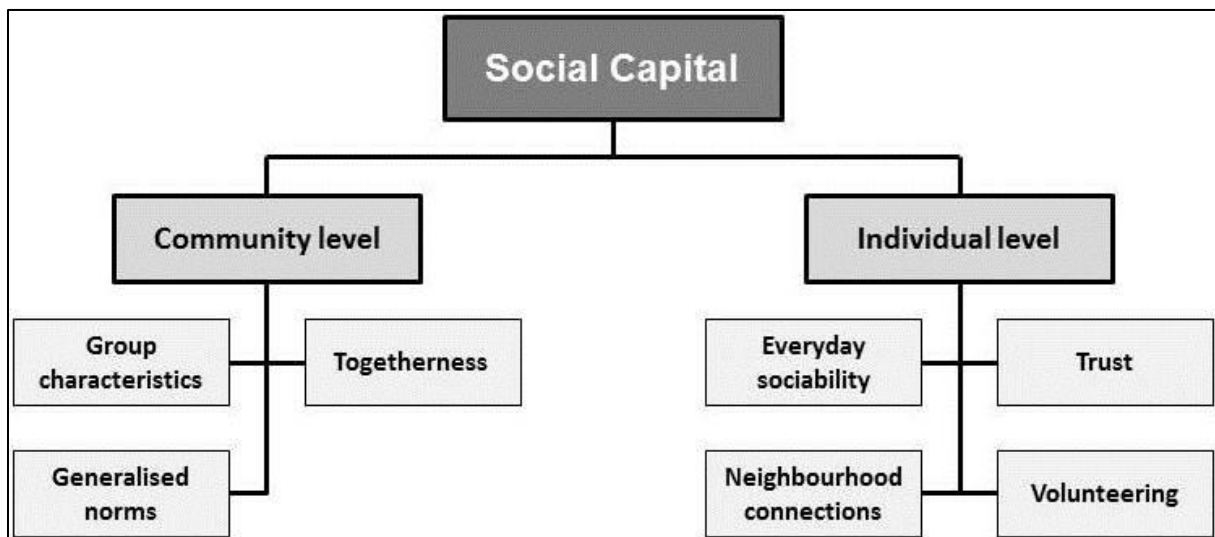


Chart 5: Measures of social capital

(Source: own presentation based on Narayan, Cassidy, 2001: 67)

All these approaches, although distinct in the conceptualisation of social capital and their focus on either the society or the individual level, have in common that social capital represents a dimension of individual capital which is not adequately described by physical or human capital. Social capital, both on the individual and on the community level, is formed by members of the respective community. Therefore, in the following chapter network theory is used to explain the formation of social capital by focussing on social ties of network members.

2.4 Theory of Social Networks

Social capital theory is closely related to another stream of the sociological literature, namely network theory. As expressed in Bourdieu's definition of social capital, social capital is constituted by relationships between individuals. Individuals – or nodes – form a social network if they are connected by one or more relations (Marin, Wellman, 2011). Network theory mainly aims to describe different kinds of networks and to analyse the channels through which network members (nodes) are affected. Hence, network approaches are able to investigate the black box of social capital by emphasising the importance of each single tie. In this chapter, two distinct, yet related approaches to social networks are described: Granovetter's theory of tie strength and Burt's theory of structural holes.

In the seventies, the American sociologist Mark Granovetter used network theory to describe how network ties are helpful in the job search process. Granovetter (1973) especially identified tie strength as a key factor for the value of a relationship as a source of information. Intuitively, he defined tie strength as a combination of:

- amount of time spend together,
- emotional intensity,
- intimacy, and
- reciprocal behaviour.

Obviously, these dimensions of an interpersonal relation tend to be highly correlated. Thus, a high score in these four categories indicates a strong tie between individuals. Close relations provide strong incentives to help each other and to spread valuable information among one's peers. Apparently, partners or close friends are much more willing to support the members of their network to whom they obtain strong ties. Furthermore, strong interpersonal ties concur with a larger amount of time spent together in which information can be exchanged regularly. In contrast to this, Granovetter's "strength of weak ties"-hypothesis postulates that weak ties are more likely to provide appropriate information. Individuals that conduct an active exchange usually share a large number of their friends and acquaintances. Thence, network members have solely access to a very limited pool of information. Redundancies due to a large number of strong ties restrict the value social networks. Weak ties are therefore much more likely to provide information that are not already known to the other network members.

In his thorough theoretical analysis, Burt (1992) introduced the term "structural holes" to describe the connection between non-redundant contacts. Chart 6 depicts how the idea of

structural holes and tie strength are related. The individual of interest is represented by the “YOU” square. Within his cluster he holds strong ties to the other members indicated by solid lines. These individuals all dispose of the same level of information. Moreover, the “YOU” individual has a unique pattern of ties to other network clusters. Dashed lines indicate weak ties between “YOU” and individuals A respectively B. Structural holes connect members that do not belong to the same cluster and therefore do not have any direct relation. As the chart visualises, individuals A and C are now indirectly connected through a structural hole. According to this logic, even individuals A and B are related to each other by a structural hole. The model describes nearly the same as the “strength of weak tie”-argument. Most valuable information are spread through weak ties. “YOU” are in the best position, cluster members C and D in the second best as their knowledge derives from a strong tie to “YOU”. However, Burt expressed one relevant distinct difference between the models. In his model, the causal reason for the information benefits is not the tie strength itself but the structural hole spanned between two individuals. Thus, following Burt, tie strength is a correlate, not the cause. Maintaining exclusively strong ties can also be benefiting if they enable to establish structural holes. Individuals, therefore, benefit from weak ties of others. Esser (2008) termed this kind of social capital ‘positional capital’ which can be increased optimising one’s network position by eliminating redundant ties and forming non-redundant ties.

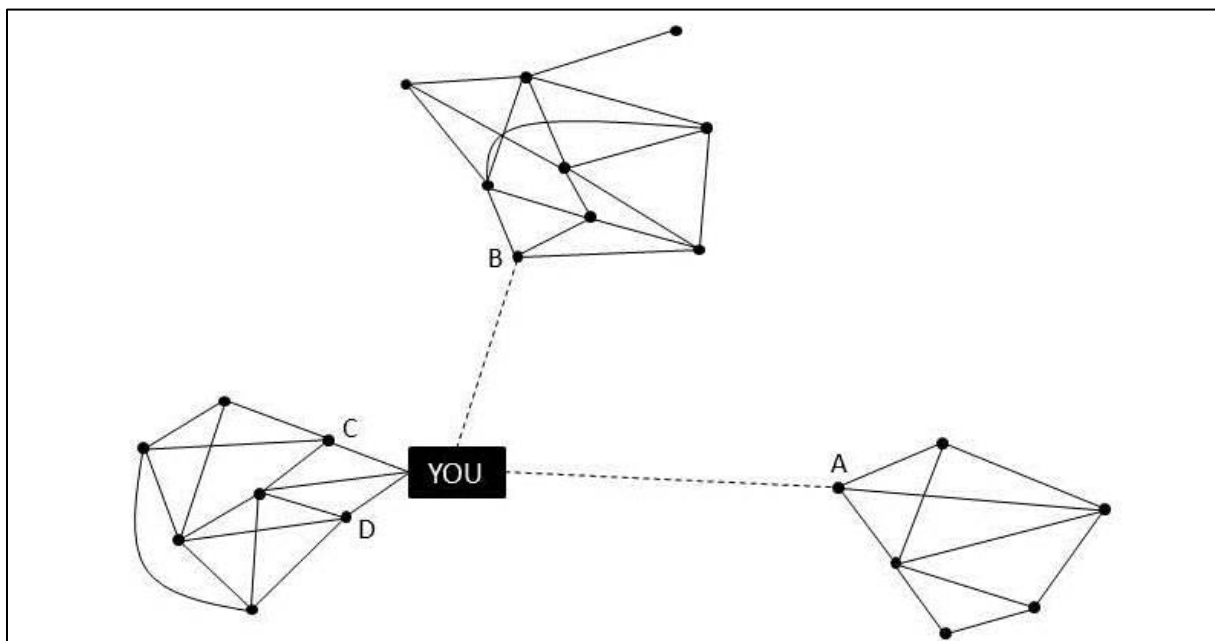


Chart 6: Structural holes in social networks

(Source: own presentation according to Burt, 1992: 27)

Nevertheless, both models are able to describe how information is spread within a network. These general considerations with regard to social capital suggest that contacts matter in many

aspects of life. The following part of the chapter combines both job search and social capital theory to investigate the use of personnel contacts in the job search process.

2.5 Social Capital and Job Search

Apart from being on or off-the-job, all job search models described in chapter 2.1 described that job search is a homogeneous process. This view appears rather simplified as individuals might differ in their access to information, meaning that some individuals might receive information that is not open to others. Even if all information was accessible for every searcher, search costs as well as search outcomes might differ between individuals that utilise a certain information source. Holzer (1988) set up a search model that allows for search channels to vary both in costs and productivity for any individual.¹⁶ In the equilibrium, discounted marginal returns of each separate search channel equal its marginal costs. From this point of view, different strategies in the job search are driven by job seeker's efficiency prospects. A certain search channel is not more efficient due to its nature but due to characteristics of the individual searching for a job. This holds particularly true for job search via social capital. Not every individual disposes of social ties that are able to provide help in finding a job. Furthermore, individual characteristics like human capital or personality traits might affect costs and outcomes of using a certain search channel. Productivity of search varies by the size and quality of the network through which individuals try to find a new job.

Differences in the effectiveness of recruitment channels can be measured at two points in time: First, the duration and costs of search through one particular channel can be considered. For instance, better access to information on vacancies might increase the probability to find a job. These effects are called pre-hire outcomes because they arise before the working relationship begins. In this context, Breugh et al. (2003) found that job seekers who applied directly or were referred by personal contacts were more likely to find a job and Tazelaar (1990) detected that network size had a negative effect on unemployment duration in Germany. On the employer's side, direct search costs (measured hours of searching, interviewing, screening) were lower if new hires were referred by unions, relatives or friends (Bishop, 1993). Whether job search via social ties (or other channels) is related to unemployment duration is investigated in chapter 6.

¹⁶ The model is based on Weitzman (1979), who introduced a general search model in which utility maximising individuals have to choose between alternative sources (e.g. a production technology).

However, the main focus of this thesis lies on post-hire outcomes which emerge after the conclusion of the working contract. Post-hire outcomes can be separated into monetary and non-monetary outcomes. The first category comprises wages and all other kinds of work-income, such as bonuses and fringe benefits as they have a monetary value for the employee. Non-monetary outcomes cannot be valued monetarily, for example job satisfaction or (subjective) job security. Furthermore, turnover propensity is an appropriate measure to evaluate search channel effectiveness, but it cannot be clearly assigned to one of these categories. On the one hand, the propensity to leave the company is determined by the perceived (dis-)satisfaction, on the other hand, turnover has monetary costs for employers and employees.

The analysis of post-hire outcomes does not include costs of search channels, as these costs occur before the contract is concluded. Therefore, this dissertation does not aim at measuring the efficiency of search channels – as this would require a complex cost-benefit comparison which is rather impossible in the context of job search. Hence, the term effectiveness is preferred and applied to describe the comparison of post-hire outcomes. Post-hire outcomes of job search, in this thesis, focus on increases in monetary and non-monetary outcomes of job search in case of a job change. Therefore, on-the-job search with the purpose to renegotiate wages at the current employer are not considered in this thesis.¹⁷ In their detailed literature review, Zottoli and Wanous (2000) named different hypothesis, all of which contribute to explain higher effectiveness of informal recruitment channels. These arguments can be divided into two major groups: information benefits and self-selection effects, which are described in the two following chapters. Further arguments that derive from the search and matching models described in the previous chapters are presented in chapter 2.5.3.

2.5.1 Information Benefits

Direct source effects, as they are called in this dissertation, are inherent properties of search channels that are able to provide job searchers or employers with more or better information about a job respectively the applicant. As pointed out in the description of search theories, job seekers are confronted with heterogeneous firms and are lacking meaningful information on non-monetary aspects such as working conditions, fairness of supervisors or co-workers, promotion prospects, and matching of personal interests or required qualifications.¹⁸ Thus, search for further information about a job (intensification) might be efficient to reduce

¹⁷ See Cahuc et al. (2006) for a game-theoretic bargaining model of this kind of on-the-job search.

¹⁸ These aspects determine the degree of P-J respectively P-O fit.

uncertainties and costs of resignation or dismissals. However, as noted above, acquisition of additional information is costly and – what is even more crucial – difficult to attain. Employers who suffer from vacancy costs are presumably not willing to divulge information that might discourage possible employees. As a result, information about working conditions conveyed by employers is usually not suitable to create a trustworthy image of the unobservable characteristics of a firm. Consequently, search costs at the intensive margin are high and mismatches are likely to occur.

Rees (1966) argued that friends or acquaintances are more likely to convey accurate information about job or firm characteristics, which Wanous (1978) termed **Realistic Job Previews** (RJP). The person who recommends a new employer is well informed about the firm he/she works for and the provided information are much more reliable – especially if he is a prospective co-worker. Less specific and trustworthy information can be provided by supervisors and, more obvious, by recruiters in the human resources department of a firm (Breugh, Starke, 2000). Simons et al. (1970) argued that the perception of similarity between source and receiver of a message – in this case belonging to the same side of the labour market – enhances persuasive credibility of the source of information. As information provided by prospective co-workers appears more trustworthy for potential applicants, they themselves can decide more accurately whether to apply for the job or not. Hence, applicants are more likely to self-select into jobs which meet both their skills and abilities better. If, for example, job satisfaction is determined by the perceived gap between desired and actual firm and job characteristics, more accurate ex-ante information will lead to a higher reported job satisfaction. Assuming that workers' abilities and the matching quality affect wages, one could expect higher wages for those who found their jobs through informal sources. Thus, the empirical results should reveal a direct positive effect of informal channels on wages and job satisfaction.

Ullman (1966) emphasised the **pre-screening** effect of job search via social capital. First of all, referrers are able to screen potential job candidates at lower costs as incentives to hide certain information from a friend or relative are smaller, which reduces information asymmetries. Secondly, referrers carefully assess the fit of the potential applicant and the organisation as well as the job in order to maintain their own reputation. Frequent recommendations of low-quality applicants are likely to harm the reputation of the referrer

within the firm.¹⁹ Consequently, referrers do not spread information about job vacancies throughout their whole network but address high-quality workers personally. If this is the case, referrals are expected to promote high-quality workers and not just to place friends or family members into jobs. Pre-screening of potential applicants could therefore explain higher starting wages of new entrants. If employers anticipate the higher quality of applicants selected by their employees, higher wages for those hired via referrals are rational. Furthermore, new entrants of the firm could be more satisfied with working conditions if the referrer considers the preferences and abilities of the particular applicant.

Further conclusions can be drawn from the search models in chapter 2.1. Especially the Burdett (1978) model makes important suggestions for job search via social capital as it explains why some individuals search for a new job and if this search is conducted on or off-the-job – and why others do not search at all. The last aspect might be especially important for individuals who find their jobs via social capital. Individuals whose expected gains from searching a new job are smaller than their search cost might benefit especially from job search via social capital if search costs are reduced. Hence, social capital might be a promising means in the job search process for the low wage sector.

Another argument is based the observation that social ties establish between individuals which are somewhat similar to each other (Lazersfeld, Merton, 1954), which is called homophily. McPherson et al. (2001) described that similarity with respect to demographic characteristics or attitudes²⁰ is a core determinant in establishing ties between individuals. Furthermore, a higher degree of similarity decreases the probability that a certain tie is dissolved. Hence, referred individuals of one's social network are more likely to dispose of similar demographic characteristics, skills, and beliefs. First, such similarity might be beneficial for the job searcher as uncertainty regarding the future job might be reduced. Knowing that a person similar to oneself is currently working in a certain job and being referred by this person reveals a high probability of a good match. Second, similarity might affect the probability of getting the respective job. Bagues and Perez-Villadoniga (2012)

¹⁹ Winter (1997) discussed the reputation calculus of the referrer by modelling a trade-off between reputation loss and gratitude gains (gratitude expressed by the referred person). In certain cases, maintaining one's own reputation might be valued less than referring a person which generates a huge gratitude gain. For instance, parents could gain an enormous gratitude gain if they find a job for their unemployed children.

²⁰ Empirical evidence regarding homophilous tendencies in networks has been provided for several dimensions, such as race (Mouw, Entwisle, 2006), gender (McPherson, Smith-Lovin, 1986), age (Feld, 1982), and attitudes (Huston, Lvinger, 1978). Schaefer (2012) developed a dynamic model of network homogeneity and provided empirical evidence for a process of homogenisation through non-reciprocity.

found that job interviewers prefer applicants who dispose of skills or demographic characteristics similar to themselves.²¹ Hence, similarity to a network member who is already working in the respective organisation implies that the applicant might be similar to the job interviewer. Third, working with a similar person might increase productivity as working routines between the referrer and the referred employee are likely to be similar. As a result, employers perform better which might be linked to higher wages.²²

Montgomery (1991) introduced a theoretical model with heterogeneous workers which analyses information benefits from the firm's point of view. In the initial situation, firms realise zero profits as high and low ability employees cannot be distinguished ex-ante due to information asymmetries. Under the assumption that social ties between job incumbents and job seekers lead to referrals of more high-quality applicants, search for employees via social ties is beneficial for firms in the next period. Firms anticipate this higher expected quality of applicants and are willing to pay higher wages to attract job seekers via referral hiring. Additionally, Mortensen and Vishwanath (1994) introduced a model in which homogeneous workers benefit from referrals as they receive more job offers. Assuming that employees are only willing to change jobs when the future wage is higher than the current, more job offers are likely to increase wages.

2.5.2 Selection Effects

In contrast to this deliberate selection process, potential unconscious selection into sources due to **Individual Differences** appears plausible as well. Schwab (1982) argued that employees recruited by various channels might belong to different populations of applicants. According to this hypothesis, recruiting sources will yield applicants that differ systematically in job-relevant characteristics. For example, younger workers could be more likely to find their jobs via formal channels due to lower levels of social capital accumulated during their lifetime (Breugh, Mann, 1984). If this is the case, lower wages of formal recruitments are not a result of source-specific effects, but of age differences as younger employees are generally associated with lower wages (e.g. due to seniority wages or a lower level of human capital). Furthermore, this age effect can also explain higher turnover rates caused by formal

²¹ Similarity between incumbents and new hires can also be explained by the attraction-selection-attrition (ASA) framework (Schneider, 1987). New members of an organisation are selected based on preferences of the incumbent members of the organisation.

²² See Spagnolo (1999) for a game theoretic approach to explain productivity gains through the establishment of social ties between co-workers of an organisation. However, this might be reviewed more critically as similarity might not be favoured in an organisation. Higher similarity within an organisation might reduce the number of different ideas and opinions (Burt, 2004) which counteracts the idea of diversity management.

recruitments since younger employees are generally associated to higher turnover, also called job shopping (Johnson, 1978). Therefore, the empirical results should convey no significant impact of recruitment channel usage on wages, if demographic, firm-, and job-specific variables are implemented as controls. The same logic holds true for the source effect on job satisfaction. If older job seekers utilise their contacts more frequently, an increase in job satisfaction can be explained by age effects (e.g. experience).

However, empirical evidence that supports this hypothesis is very scarce. Breugh (1981) found no differences concerning demographic factors such as age, sex, years of education, and tenure in his case study. Taylor and Schmidt (1983) explicitly investigated the individual difference hypothesis including additional variables like weight, height or shift preference. The authors only found significant results for workers that were rehired by their former employer, whereas differences in demographic factors between other recruitment sources were not statistically significant. According to Breugh and Mann (1984) using a rather small sample of 98 social service employees the RJP hypothesis received more support than the Individual Differences hypothesis.

Considering productivity differences, Kirnan et al. (1989) detected that informal recruiting sources yielded applicants who were better performers (measured as annual sales) than formal sources in a sample of life insurance agents. However, quality differences were most apparent within the pool of applicants which the authors interpreted as a support for the pre-screening effects of informal means. Besides inflated measures of quality of applicants, differences captured by post-hire outcomes diminish between recruitment channels.

Investigating a sample of 476 applicants for nursing positions of which 234 were finally hired, Williams et al. (1993) found out that referrals and rehires attracted applicants with greater working experience and pre-hire knowledge. Pre-screening could account for these differences. However, these nurses did not perform better than their colleagues hired by other sources and had higher turnover rates after one year. Hence, it is concluded that individual differences between applicants are more important than conveying realistic information.

However, as the short summary of these studies implies, these analyses suffer from considerable shortcomings. First, most studies focussed only on a small population of applicants; hence, inconclusive results might derive from sample size problems. Second, these studies solely included a small set of control variables that are likely to be connected to source choice, mainly demographic variables. The analyses in this dissertation will comprise

additional variables, such as job-related factors and variables that describe search behaviour. Third, not all models distinguished formal recruitment channels, which might be misleading as not all formal channels might have the same determinants of usage. Thus, a detailed and thorough analysis of this field appears to be necessary.

2.5.3 Search Models and Their Application to Job Search

In the previous chapter, information benefits have been presented as a convincing argument why personal contacts could have a positive effect on post-hire outcomes. In this chapter, these arguments are connected to the search and matching models (chapter 2.1 and 2.2). First, implications of the Simon (1955), Mortensen (1970), and Burdett (1978) search models are discussed. Second, a model proposed by Fontaine (2007) is explained which draws on matching theory to explain wage differences that derive from job search via different search channels.

Based on the concept of bounded rationality, Simon (1955) described the job searcher as a satisficer rather than a maximiser. A key variable in his approach is the number of alternatives considered by the individual. The more alternatives are available to the job searcher, the higher is his wage because he can select the highest wage offer among the given alternatives. Two opposing arguments are able to explain the effect of social ties on wages. On the one hand, individuals might get knowledge about additional job offers through social ties which they otherwise would now have considered. Therefore, social capital increases the amount of considered alternatives (Δ). Based on the assumption that job characteristics (e.g. wages, job satisfaction) are drawn randomly one can conclude that more considered alternatives increase post-hire outcomes. However, the opposite effect can be considered as well. Disposing of well-informed personal contacts could seduce individuals to rely mostly on the job offers received through this channel. Search via social ties could lead to a reduction in search effort via formal channels. As a result, social capital could reduce the amount of considered alternatives leading to lower post-hire outcomes.

Information procurement in the Simon model does not only include search for job vacancies (job alternatives, Δ) but also for more knowledge on the relationship between the chosen alternative and the future outcomes (S) of a certain alternative. This implies that not all outcomes of a job alternative are certain, e.g. promotion perspectives or job satisfaction. Hence, extensification increases the number of available alternatives, whereas intensification increases the knowledge about a certain job offer.

Furthermore, as described above, the Simon model explicitly includes an alternative approach towards rationality. As a result of limited rationality, individuals do not maximise their expected utility but quit search if they find a satisficing level of utility. With regard to job search, the reservation wage and a strived level of job satisfaction are two major satisficing levels. However, the level of satisfaction is not a fixed value but a dynamic and individual decision of when to stop further search effort. Apart from demographic characteristics (e.g. age, gender, work history etc.) and individual personality, social capital might determine the satisficing level of wage and prospected job satisfaction. Individuals who use their personal contacts in order to find a new job might raise their satisficing level because they believe it is easier to find a well-paid job via personal contacts. Empirical evidence for this assumption is found by Caliendo et al. (2011) who detect a positive relationship between the size of an individual's social network (which can be interpreted as a proxy for the network value) and reservation wages. Thus, it can be assumed that a satisficing level of post-hire outcomes could be affected by network characteristics that also determine job search via social capital.

In search model proposed by Mortensen (1970), insecurity exists mainly in terms of wage offers. A firm is willing to employ any job seeker who matches their minimum skill standards and is willing to pay the job seeker according to his skill level. Hence, the information problem is only relevant for the job seeker who tries to find the best offer according to his skill level. In the basic model, job (and wage) offers are random and job seekers are likely to find an average wage, implying that they are paid below their actual skill level. However, searching for further job offers is costly and success is not guaranteed, therefore, at some point job seekers accept a job offer below the best available combination $W^*(K^*)$. Personal contacts could in this context help to increase the likelihood to find a job closer to the optimum. At least personal contacts should limit the probability to find a job at the lower end of the wage offer distribution. Hence, the expected average wage offer increases and these information benefits could result in higher wages. In Chart 7 it is visualised how personal contacts could be able to exclude low wage offers (left of W_{SC}) which leads to a higher expected average wage offer $E(W_{SC})$. In average the job seeker is likely to find a better paid job as the average (expected) wage offer is higher.

Another argument addresses the frequency of job offers per period. It is assumed that all job seekers are homogeneous regarding their skill level and their search effort via formal channels. Per period, job seekers receive one wage offer and accept the offer when the offered wage exceeds the reservation wage. Hence, in this world without social ties, all individuals

receive job offers at the same rate (one per period) and therefore, earn the same wages. However, individuals differ as to the amount of social ties they hold to other individuals. If search via social ties is largely for free (as it might occur at occasions of general social exchange), these job seekers receive additional wage offers per period. More draws from the wage function are likely to result in more wage offers that are above the reservation wage. Therefore, the job seeker has more options to choose from which is likely to increase wages in average due to social ties.

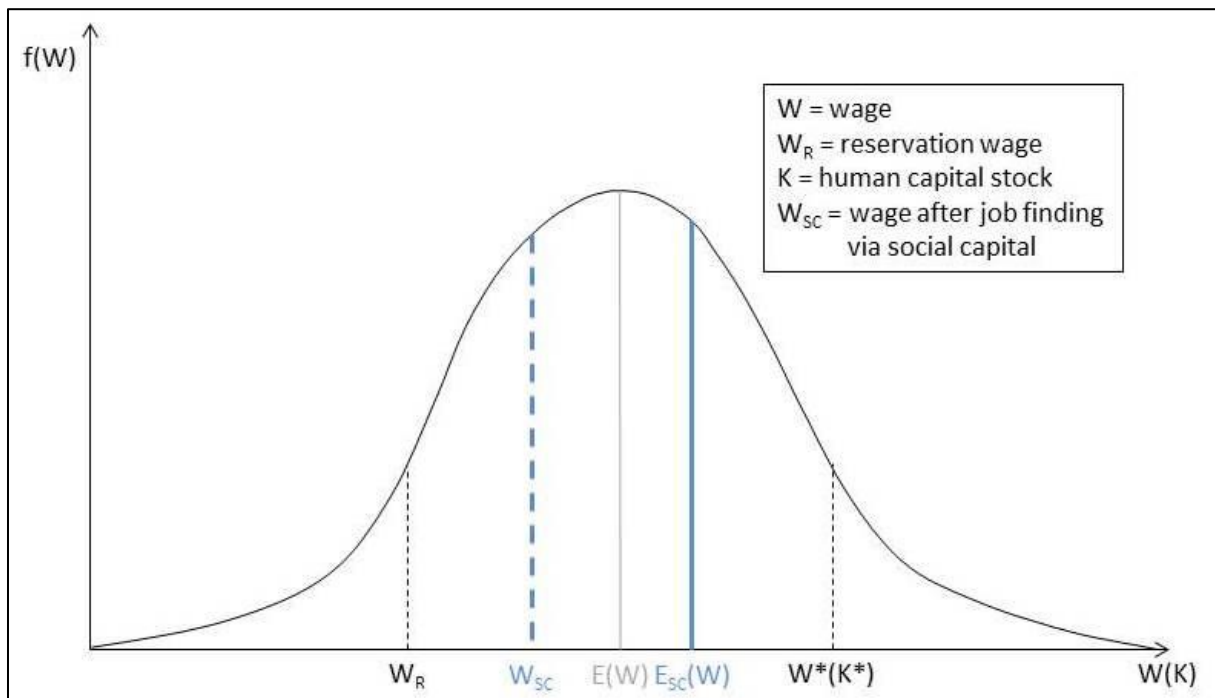


Chart 7: Wage distribution in the search model

(Source: own presentation based on Ehrenberg, Smith, 2012: 503)

In another model, Mortensen and Vishwanath (1994) assumed that offers arriving via social networks are drawn from a different wage distribution than wage offers found through other channels. Hence, search via social ties leads, in average, to higher wages in the employee-employer equilibrium.

The Burdett (1978) model is designed to explain differences in on and off-the-job search but its intuition can also be applied to job search via different channels. As the model in Chart 3 implies, finding a higher wage offer requires more search effort. Hence, jobs in higher positions are probably more difficult to find. However, one can assume that this increase in search costs is under-proportional compared to the respective increase in wage. Furthermore, foregone earnings are higher for individuals that earn more which increases search costs off-the-job in case they quit their jobs for the job search. Hence, *ceteris paribus*, on-the-job

search is most likely efficient for individuals with high income. In line with this, Calvó-Armengol and Jackson (2004) argued that employed job seekers only accept a new job offer when it is better in comparison to the current job while unemployed job seekers might accept a job offer at a lower wage (or worse off in terms of other non-monetary factors) to escape from unemployment. This selection effect has to be taken into account when post-hire outcomes of job search are estimated.

As described in chapter 2.5.1, information benefits might be able to increase matching quality and, thus, employee productivity and wages. Staiger (1990) introduced a matching model in which job seekers use formal and informal channels to find a job. Whereas jobs found through formal channels are experience goods, jobs found via informal channels are inspection goods.²³ Hence, informal channels provide ex-ante information of matching quality for the job seeker. In perfectly competitive markets workers are paid equal to their expected matching quality which explains wage differentials between job search channels.

Fontaine (2008) provided a theoretical framework for employer-employee matching with endogenous wages and social ties. In this model, wage dispersion derives from variance in the number unemployed network members. Networks are regarded as closed groups which provide (information) benefits solely for members of the network (social closure).²⁴ Job vacancies are more likely to be known to employed network members; therefore, individuals in a network with less unemployed members receive more job offers. More job offers create outside options of job seekers which lead to higher wages. Hence, wage dispersion can be (partially) explained by diverse unemployment rates within networks. Besides, the framework allows a dynamic perspective. If network members find a job, they become a valuable source of information for the other still unemployed members of the network. Therefore, the matching function is increasing convex as matching probability increases for every network member when other network members find a job. Thus, this approach can explain both wage dispersion and differences in unemployment rates between networks.

²³ The quality of experience goods cannot be estimated ex-ante but only ex-post after the purchase or consumption of the good. On the contrary, search increases the knowledge about inspection goods before purchase (Nelson, 1970). Matching models treat jobs either as experience goods (Jovanovic, 1979b) or as inspection goods (Burdett, 1978).

²⁴ The theory of social closure can be traced back to Max Weber's concept of open and closed relations. Murphy (1988: 8) defined social closure as a "a process of subordination whereby one group monopolizes advantages by closing off opportunities to another group of outsiders beneath it which it defines as inferior and ineligible". See Coleman (1988: S106) for a visualization of a network with and without social closure.

Horváth (2014) drew on the homophily approach to describe positive effect of social ties in a matching model with heterogeneous workers and jobs. In this model, job incumbents refer network members regardless of the matching quality. If the degree of homophily in a network is sufficiently high, incumbents refer job seekers that are likely to be similar to themselves. As a result, the matching quality increases under the assumption that incumbents show a better matching quality compared to randomly drawn applicants. In this case, pre-screening (see chapter 2.5.1) does not take place; yet, similarity between referrer and referred person prevents reputation losses due to referrals of non-fitting job seekers.

2.6 Summary and Outlook

All theoretical concepts on the relationship between social capital and labour market success draw on wages or job satisfaction as direct individual outcomes of job search. In this thesis, future turnover is used as an additional measure for matching quality on the individual level. If individuals and firms have found a match with an (at least) satisficing quality, it is less likely that this match is dissolved. Although turnover does not necessarily mean that an individual is worse off, because an even better job might have been found, changing the employer is likely to delay future promotions or might be associated to search costs or costs of finding a new apartment. Furthermore, every job involves human capital investments through learning on-the-job which can be interpreted as firm or job-specific human capital which is lost in case of a job change (Jovanovic, 1979a). This loss of human capital should be detrimental in terms of wages. Employers, in turn, are interested in keeping qualified staff in order to share the surplus generated through firm-specific human capital. Furthermore, by keeping employees, search and vacancy costs are avoided. Therefore, a reduction in turnover probability should be positive for both employers and employees.

Wanous (1978) described a simple model of determinants of turnover which can easily be related to social capital benefits described above. According to the author, turnover is determined by individual performance (which is linked to the employers decision to keep, to dismiss or to promote an individual) and individual job satisfaction. Both factors, performance and satisfaction, can be affected by social capital and job search via social ties. Realistic job previews and pre-screening help to increase matching quality which should improve performance and satisfaction.

This chapter has outlined a large body of the literature that is related to (job) search and the matching process. These models describe how a certain job is found and why this working relationship is either maintained or dissolved. Furthermore, the literature on job search via

social capital has been delineated. Several arguments or theoretical approaches can explain why social ties are likely to serve helpful in the job search process. Apart from information benefits which reduce information asymmetries, job seekers might be pre-screened by their referrers. However, it has been argued that different search channels attract different job seekers but do not provide further benefits. Since these arguments are at least to some degree mutually exclusive, this dissertation aims at a careful and capacious analysis of the relationship between social capital job search and post-hire outcomes. Inspired by Schwab (1982), this dissertation is the first work that focusses on the selection effects in the multinomial case. The next chapter solely investigates the determinants of finding a job through the four most important search channels – an important step to introduce models that incorporate self-selection. In chapters 4 and 5, the relationship between finding a job through a given channel and post-hire outcomes is analysed. While chapter 4 can be regarded as the baseline study, chapter 5 introduces personality traits as a further independent variable. Chapter 6 focusses on outcomes of actual job search activities for unemployed job seekers. The last chapter (7) exploits data on leisure time activities as a proxy for accessible social capital as a source for labour market returns.

3 Determinants of Job Finding via Social Capital

3.1 Introduction

This chapter addresses the first question raised in the introduction and, therefore, investigates the determinants of finding a job through a certain search channel.²⁵ The literature has provided ample yet contradictory evidence on the relation between social capital and labour market success. While early studies found positive wage effects of social ties (e.g. Boxman et al., 1991; Granovetter, 1995), more recent evidence detected rather negative correlations between finding a job via informal means and wages (e.g. Delattre, Sabatier, 2007; Bentollila et al., 2010).²⁶ However, so far, most studies have ignored potential selection effects as suggested by Schwab (1982). Thomsen and Wittich (2010) provided the only existing evidence on the determinants of job search via different channels, yet, their analyses focused on unemployed job seekers without on-the-job search (see chapter 3.2 for a discussion of their article). Obviously, the usage of recruitment channels (and the channel the job has been found through) is unlikely to be entirely random but determined by individual characteristics as well as external influences, such as the business circle. For example, individuals might direct their search effort towards certain channels according to their social capital (Mouw, 2003) which might depend on demographic characteristics, such as age or education. Furthermore, job-related characteristics like branch or occupation might affect channel usage if job characteristics determine where and how job adverts are published or how companies or workers commonly search for a job in this sector. If demographic or job-related characteristics are able to explain job finding through a given source, it is quite likely that returns of recruitment channels – with a special focus on social capital – might be biased. Learning about this potential bias helps to understand the foundations of individual differences and is likely to prove helpful in the interpretation of post-hire outcomes in chapter 4. Furthermore, if selection into sources matters, it is possible to apply an econometric approach to incorporate this selection effect into the estimation strategy. Therefore, this chapter sets the basis for the other chapters of this dissertation.

This chapter is organised as follows: First, theoretical arguments are presented which might explain source selection based on individual characteristics. Thus, hypotheses are formulated

²⁵ The reader should keep in mind, that searching for a job through different (multiple) search activities and finding a job through one specific channel are conceptually different. Theoretical arguments, however, can be applied to both stages of the job search process. Therefore, source usage and job finding are mainly understood as synonyms in this chapter while keeping in mind the distinction made in Chart 1 in the introduction.

²⁶ See the literature review in chapter 4.2 for a thorough summary of the empirical literature.

that describe the potential relationship between specific socio-demographic or job-related aspects and recruitment channel choice (3.2). In chapter 3.3, the underlying data and the estimation strategy are described. The empirical evidence is presented in chapter 3.4 and is discussed in chapter 3.5. Chapter 3.6 concludes.

3.2 Related Literature and Hypotheses

Search theoretical models (see chapter 2.1) describe how individuals search for additional job offers (extensive) and/or more information about existing offers (intensive). Due to bounded rationality and costs of search, individuals have to adjust their search effort to gain the desired information. Holzer (1988) described job search via different channels as a rational optimisation process in which individuals maximise their expected discounted lifetime earnings. Individuals select search channels according to their expected profitability which is likely to differ between job seekers. Individuals who dispose of a large network with valuable ties are more likely to search through their network and, thus, to find a new job through this channel. Hence, concepts which describe the formation of social capital are used to explain which individuals are more likely to search and find jobs via personal contacts.

Few studies have empirically investigated differences between individuals who found their jobs via different channels. As summarised in chapter 2.5.2, Breaugh (1981), Taylor and Schmidt (1983), and Breaugh and Mann (1984) found only weak evidence for selectivity into search channels; yet, these early studies suffer from small sample sizes and a small set of variables it is controlled for. The only existing²⁷ evidence based on a large sample and several potential determinants of source choice is presented by Thomsen and Wittich (2010). The authors analysed the search behaviour of (mainly unemployed) job seekers in Germany based on SOEP data. Estimating a multinomial logit model, the authors found evidence that both demographic characteristics as well as job properties were able to explain differences in both using a certain channel to find a job (while being unemployed) as well as finding a job through a specific channel. Gender and age (three age groups) as well as working hours, company size, and occupational autonomy were core determinants for finding a job via a certain channel. Immigrant status, years of education, and regional economic data were not related to recruitment sources.

²⁷ Try (2005) investigated the use of search channels by Swedish university graduates between 1995 and 2000 but not how the respective job was found. Osberg (1993) focussed on the use of employment agencies in Canada and found that the usage of employment agencies varied with the business cycle.

This study differs from Thomsen and Wittich (2010) in three main points. First, the data includes also job-to-job transitions not only unemployed job seekers. As argued in chapter 2.1, employed job seekers might dispose more valuable social ties to colleagues. Second, three additional waves of the SOEP data are included. This might be especially relevant for job search via internet because the data shows a large increase of internet job search over time. Third, some variables are measured differently, especially age (see chapter 3.3.1) and non-linear relations are considered. Thus, this analysis aims at increasing the existing knowledge about determinants of job search channel usage.

Furthermore, Thomsen and Wittich (2010) did not provide any theoretical foundation why certain individual, job related, or regional characteristics could affect search channel usage. Therefore, this chapter builds on the theoretical models described in chapter 2 in order to derive single hypotheses regarding the relationship between the determinants and channel choice. Towards this end, this chapter draws on search theory, social capital and network theories to explain why certain individuals are more likely to find a job via social ties and others not. Hypotheses concerning demographic characteristics (3.2.1), individual labour market experience and search behaviour (3.2.2), firm- respectively job-specific characteristics (3.2.3), and regional factors (3.2.4) are conducted from social capital theories and existing empirical evidence. If possible, detailed source-specific distinctions are made. More general hypotheses distinguishing formal and informal means are set up, if no ex-ante considerations imply different effects between various formal sources.

3.2.1 Demographic Characteristics

Gender differences in recruitment channel usage could derive from differences in the quantity and quality of network ties. Based on the homophily concept, Mortensen and Vishwanath (1994) argued that lower labour market participation rates of females result in fewer contacts to employed network members if networks mainly consist of job seekers of the same sex. If networks are largely homogeneous, females might be disadvantaged regarding the quality of their ties as female labour force participation is usually lower.²⁸ Ties to full-time workers are more likely to convey information on job vacancies. Thus, females rely more heavily on formal means compared to males. Focussing on gender differences, Huffman and Torres (2001) and Straits (1998) found evidence for a significantly lower use of informal means by females. This can be summarised to:

²⁸ In 2011, female labour market participation was lower than male participation (58.5 respectively 70.1, EU-27) and females were more likely to work part-time in all EU countries (European Commission, 2013).

H1 (gender): Males are more likely to find a job via social ties than females.

Age is likely to be another important determinant of source choice. Glaeser et al. (2002) interpreted the formation of social capital as an optimal individual investment decision. During their lifetime, individuals invest in valuable relations and disinvest in relations which are not promising any more. Hence, within a longer investment period – measured as age – individuals are likely to generate more social capital than younger individuals. In old age, however, investments in social capital appear less profitable as the amortisation period becomes shorter. Furthermore, according to the homophily idea, networks mainly contain members of the same age cohort. As labour force participation decreases with age (European Commission, 2013), older job seekers dispose of less valuable ties. This inverted u-shaped relation between social capital and age is confirmed by evidence provided by Glaeser et al. (2002). On the other hand, younger individuals are more likely to search for a new job on the internet. Empirical evidence is presented by Grund (2006) who showed that those who found their jobs on the internet are roughly three years younger compared to other job seekers. This can be explained by higher access rates to the internet among younger generations and higher familiarity and knowledge in dealing with computers (Cutler et al., 2003). This leads to:

H2 (age): Middle-aged job seekers are more likely to find a job via social ties than younger or older job seekers (inverted u-shape). Young job seekers are more likely to find a job via internet than older job seekers.

The **level of formal education** is one crucial determinant of labour market success such as career prospects and wage income (Mincer, 1958, 1974). Two opposing effects of education on recruitment channel usage can be considered. On the one hand, education can serve as a signal of ability and motivation (Spence, 1973). Applicants with a low level of education or even without any education at all are not able to display their motivation and occupational skills by reliable formal certificates in the formal application process. Referrals could, therefore, serve as a promising strategy to find a job for low-skilled job seekers. The higher the level of education the better individuals are able to convey trustworthy information via formal channels. On the other hand, the homophily hypothesis suggests that highly educated job seekers are more likely to be in networks with more highly educated members. Thus, highly educated individuals are more likely to dispose of more effective ties to find a job. Furthermore, Glaeser et al. (2002) found evidence that investments in human capital coincide with investments in social capital. Therefore, the relationship between these two variables could be described as:

H3 (level of education): Job seekers with either low or high levels of education are more likely to find a job via social ties than job seekers with medium level of education (inverted u-shape).

Marriage appears to be unlikely to affect recruitment channel usage. The social connection between married partners can be described as a strong tie in terms of Granovetter (1973). Although partners should have a strong interest in providing information about vacancies or to refer their partner to their supervisors, such contacts are most likely redundant. Furthermore, employers may not believe that referrals by a spouse deliver trustworthy information about the applicants' qualifications. Even though one could assume that the partner could help to bridge a structural hole between two distinct networks (Burt, 1992), this bridging function does not become stronger through marriage. Both partners are likely to have access to each other's social ties, which is not likely to alter through marriage. Therefore, no testable hypothesis can be derived.

H4 (marital status): No testable hypothesis.

Children in the household affect everyday life in many ways. Especially young children have to be taken care of which means one older household member might have to reduce working time or even have to take a break in his/her career. Within this time of childcare, one could assume that parents spend less time for maintaining existing ties. However, this effect might not be the same for both genders.²⁹ With respect to the persisting traditional role model, women are widely responsible for childcare. As a consequence, women might have less time to invest in valuable relations. Besides, mothers are likely to spend more time with other mothers who dispose of less valuable ties themselves. Heinzler and Kimhi (2012) were able to confirm the negative networking effect of children for females, whereas, males show higher involvement in social networks. Taking these considerations into account one can state:

H5 (children in household): Fathers are more likely to find jobs via social ties than mothers.

The economic literature has provided ample evidence that **immigrants** often face considerable obstacles in the job search process (see e.g. Kahanec, Zaiceva, 2009). Immigrants suffer from a "liability of foreignness" (LOF, Harvey et al., 2005) when they

²⁹ To account for the assumed heterogeneity in the effect of children in the household, gender and children in household are interacted (see chapter 3.4.3).

search for a job in their host countries due to a lack of legitimacy (Fang et al., 2013).³⁰ Loury (1977) argued out that immigrants are less successful in the labour market because of lacking social capital. Immigrants have to establish social ties to other individuals in their host country which takes time and might be hindered by language and cultural barriers. However, immigrants are likely to have difficulties applying via formal means as well because formal channels usually require (written) language skills at the level of natives. Furthermore, in a correspondence test Kaas and Manger (2012) found that a German-sounding name in the application increased the probability of a call-back by 14 percent compared to a Turkish-sounding name. Disadvantages are more pronounced for immigrants who completed their education in their home countries (Aldashev et al., 2012). This implies that employers do not trust foreign education certificates. As a result, immigrants might benefit even stronger from the information provided through social networks (chapter 2.5.1) to overcome information asymmetries. Moreover, Frijters et al. (2005) found evidence that immigrants in the UK utilise informal channels more frequently than natives. Overall, it is therefore concluded:

H6 (immigrant): Immigrants are more likely to find a job via social ties than natives.

3.2.2 Unemployment History and Search Behaviour

Employment status and history are likely to affect how individuals search for a job. According to search theory (see chapter 2.1), unemployment enables job seekers to invest more time in gathering useful information and to wait for attractive job offers. As job search is time consuming, extensive information procurement about vacancies by visiting public employment agencies or online and newspaper retrieval is mainly possible for unemployed. As a result of the so-called Hartz reforms³¹, unemployed can be sanctioned if they deny job offers provided by the employment offices. The fear of cuts in their unemployment benefits might force job seekers to accept jobs suggested by the employment office which increases the likelihood of finding a job via employment offices. Employed seekers, in turn, are more likely to search via informal means. This search channel is even more promising as current workers have better contacts within the working population (Russell, 1999) and, therefore,

³⁰ LOF is a well-researched concept on the organisational level (Insch, Miller, 2005) which Harvey et al. (2005) transferred to individuals with migrant background who are stigmatised, e.g. based on gender, race or ethnicity.

³¹ See Jacobi and Kluve (2006) for a description and discussion of the Hartz reforms.

these contacts are better informed about job offers.³² Furthermore, search via informal means is less time consuming so that it can be hypothesised:

H7 (unemployed): Unemployed individuals are less likely to find a job via social ties than employed job seekers.

Whereas the previous hypothesis solely dealt with the incidence of unemployment during the job search process, the **duration of overall unemployment experience** might be a relevant factor as well. First, longer unemployment spells are likely to aggravate the effects of social capital mentioned above. The longer an unemployment spell lasts the more social ties to employed network members will be cut and the more homogeneous a network becomes. Gallie et al. (2003) found evidence for a “vicious circle” between unemployment, poverty, and social isolation which is likely to increase negative effects of unemployment spells over time. Hence, it can be concluded:

H8 (unemployment experience): Individuals with longer overall unemployment spells are less likely to find a job via social ties.

The SOEP data differentiates **active** from passive **job search**. If job seekers are actively searching for a job, they presumably invest more time and effort in finding a new job. Active job seekers are more likely to utilise formal search channels as these channels provide information independent from other individuals. Information via social ties is more likely to be provided randomly and not necessarily when needed by the job seeker. Therefore, individuals who aim to find a job as soon as possible might not wait until they receive information from their peers but browse other channels. In turn, individuals who are not actively searching are more likely to find a job via social networks (because e.g. reading newspaper adverts requires at least some degree of active search). This aspect is probably correlated to on-the-job search as current workers are more likely to get informal information without active search (see chapter 3.4.3 for an analysis of the interaction between these two variables). Thus, for this aspect of search behaviour it is concluded:

H9 (active search): Individuals searching actively for a new job use are less likely to find a job via social ties.

³² See Bramoullé and Saint-Paul (2010) for a model of employed and unemployed job seekers who try to find a job search via social ties. In their model, a social tie is more likely to establish between two employed individuals than between two individuals of which one is unemployed.

3.2.3 Firm and Job-specific Characteristics

The third group of determinants of search behaviour are firm-specific characteristics that predominantly affect the way firms search for employees. One powerful factor could be the **branch** of the firm. Firms in branches which require a high degree of social competence or connections might rely more often on informal means to fill a vacancy. This consideration applies to most corporations in the service or trade sector where interaction between staff and customers is more likely to happen and such exchange is vital for corporate success. Furthermore, fluctuation in branches might be higher than in others so that employees have to react quickly and more frequently to fill sudden vacancies. As formal search channels require much more time (e.g. insertion of an advert) these firms could decide to search through the social ties of their employees. Again, this applies to the service sector – especially to the food and restaurant industry. However, six branches under investigation do not fully describe the characteristics of a particular job. A firm that originally belongs to the service branch also employs non-service workers, for example different types of clerical workers which might lead to biased results. For the role of the branch it can be concluded:

H10 (branch): Individuals who find a job in the trade or service sector are more likely to find a job via social ties than individuals who find a job in other sectors.

Firm size is a determinant of resources available to an organisation and, thus, an important factor of corporate hiring strategies. Focussing on the recruitment processes in small firms, Carroll et al. (1999) detected that word-of-mouth and rehiring are preferred hiring methods. Small firms have no institutionalised human resource department that is able to handle a large amount of applications. In line with this, Autor (2001) argued that digitalisation lowers job seekers' costs of applications which makes it easier for job seekers to send out applications. However, an increasing number of applications might overstrain small firms with limited capacities. Moreover, costs of bad hiring decisions are more severe for smaller companies so that small firms have to decide carefully whom to hire. As a result, pre-screening of applicants via referrals which reduces both search costs as well as insecurity in hiring decisions is a promising hiring strategy for small companies. Within large companies, hiring decisions are more formalised and a large number of vacancies has to be filled which makes it more unlikely that large firms fill their vacancies via informal channels. Additionally, large firms are more visible due to media coverage or word-of-mouth. Job seekers, therefore, might actively search for a job in this specific firm via internet or newspaper adverts. This leads to:

H11 (firm size): Individuals who find a job in a small firm are more likely to find this job via social ties than job seekers who found a job in a large firm.

The next hypothesis considers the role of the job seeker's **profession** on finding a job via certain search channels.³³ As stated above, referrals might be especially helpful in occupations in which formal education certificates do not adequately describe a job seeker's skills and potential. This is likely to be the case in lower level occupations, such as elementary occupations, plant and machine workers, or service and sales workers. On the other hand, certificates of higher educational institutions serve as trustworthy signals of applicants' abilities and motivation. Referral hiring is therefore expected to be less important for higher positions. Thus, it can be concluded:

H12 (profession): Job seekers in lower level professions are more likely to find a job via social ties than job seekers in higher level professions.

The next hypothesis considers how **public** respectively private employers differ with respect to their hiring strategies. In search for employees, public institutions are forced to launch a public tender procedure. As a consequence, formal means are more likely to be used by applicants in the public sector. However, even in public organisations, social ties might be helpful to receive job-related information before the application. Nonetheless, the selection process in public organisations is less likely to be affected by social relations. Information benefits might, therefore, mainly occur on the employee side but not on the employer side. Overall, it is assumed:

H13 (public sector): Job seekers who find a job as civil servants are less likely to find this job via social ties than job seekers in the private sector.

3.2.4 Regional Determinants

Germany consists of 16 federal states³⁴ which differ in terms of economic development and cultural traditions. Such differences are likely to influence job search as they reflect economic opportunities that are available to job seekers in this region. Differences can be measured on

³³ One should keep in mind that professions do not only describe occupational activities but also comprise differences in hierarchy and social status (Greenwood, 1957) and gender differences (European Commission, 2009).

³⁴ The 16 states are (in alphabetical order) Baden-Württemberg, Bavaria, Berlin, Brandenburg, Bremen, Hamburg, Hesse, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Rhineland-Palatinate, Saarland, Saxony, Saxony-Anhalt, Schleswig-Holstein, and Thuringia.

the state level, e.g. as regional unemployment rates, regional GDP, and by region dummies. How these measures might affect finding a job via social ties is discussed in this chapter.

Job search might be considerably affected by **regional unemployment** as most job seekers try to find a job in the region they are living in. In regions with higher unemployment rates, job seekers need, in average, more search effort to find a job. This is mostly prevalent for individuals with lower levels of formal education as the supply of low-skilled labour is commonly higher. In this case, search via social ties might be a promising means to find a job in regional labour markets with high unemployment rates. In regions with low unemployment rates, a larger number of job vacancies which can be found via formal search channels is available to job seekers. Furthermore, Clark (2003) found evidence that unemployment becomes a social norm in high unemployment surroundings. Unemployed suffer less from an unemployment spell (in terms of life satisfaction) when more members of the reference group (regardless if measured at the regional, partner, or household level) are unemployed. In addition, unemployed who are most dissatisfied by being unemployed are more likely to exit unemployment. A social norm of unemployment reduces active search effort which is likely to be conducted by formal channels. Therefore, it can be said:

H14 (regional unemployment rate): Job seekers in regions with high unemployment rates are more likely to find a job via social ties than job seekers in regions with low unemployment rates.

Differences in the economic development of regions might be best explained by **regional GDP per capita**. This measure serves as a proxy for economic and social wellbeing of a region. The level of economic development provides information about the structure and quality of jobs and the productivity of the companies in this region. Therefore, the regional GDP could be related to how individuals find their jobs. In states with lower GDP, social ties might be more effective to find a job than in states with higher GDP. Less developed regions might offer less well-paid jobs so that social ties might be helpful in finding a job. Furthermore, changes in the GDP express economic up- or downturns which might be a leading indicator for unemployment. Hence, changes in the GDP are likely to have a similar impact on the usage and success of hiring channels like the unemployment rate (see above). The following hypothesis summarises these considerations:

H15 (regional GDP per capita): Job seekers in regions with higher GDP per capita are less likely to find a job via social ties than job seekers in regions with higher GDP per capita.

Apart from economic disparities between regions which are covered by the two previous measures, further regional differences might be still caused by the German division during the cold war and the reunification in 1990. Although a considerable catch-up process took place since the 1990's, the eastern part of Germany has not fully recovered from 40 years of communist regime. Eastern Germany is still marked by a lower standard of living and higher unemployment rates (Schnabel, 2015). The author reviewed ample statistics on East-West differences and concluded that – apart from observable factors – norms, behaviour and attitudes of individuals in Eastern Germany might differ from Western German individuals. Such persistent differences are likely to affect job search behaviour and employer search strategies. For example, public employment offices are much more successful in placing workers into jobs in East Germany compared to West Germany (IAB, 2011). However, it is not clear whether this effect is driven by higher unemployment rates in Eastern Germany or by other factors. Moreover, one could assume that social ties could play a more important role in Eastern Germany as part of the communist legacy.³⁵ Thus, it is concluded that:

H16 (East Germany): Job seekers in Eastern Germany are more likely to find jobs via employment offices and social ties than job seekers in Western Germany.

Table 3 contains a summary of all hypotheses postulated above. The sign indicates whether the respective determinant is positively (+) or negatively (-) related to finding a job via social ties. For some determinants, a u-shaped or inverted u-shaped relationship has been hypothesised. For children in the household, the assumed correlation has been divided between males and females which will be investigated by a gender*child in household interaction.

³⁵ Lichter et al. (2015) provided evidence for a countervailing effect. They argue that mass surveillance in the GDR has a long-lasting detrimental effect on social capital (measured as trust). However, general trust might be less important in the job search process than in other types of trust-based exchange.

Table 3: Summary of hypotheses

	Individual characteristics	Finding a job via social ties
H1:	Gender (female)	(-)
H2:	Age	(inverted u-shaped)
H3:	Level of education	(-) or (u-shaped)
H4:	Married	no testable hypothesis
H5:	Children in HH	(+) for males (-) for females
H6:	Immigrant	(+)
<u>Unemployment history and search behaviour</u>		
H7:	Unemployed (off-the-job search)	(-)
H8:	Years of unemployment	(-)
H9:	Active search	(-)
<u>Firm- and job-specific characteristics</u>		
H10:	Branch (here: trade, service)	(+)
H11:	Firm size	(-)
H12:	Job/hierarchy level	(-)
H13:	Public sector	(-)
<u>Regional determinants</u>		
H14:	Regional unemployment rate	(+)
H15:	Regional GDP per capita	(-)
H16:	East Germany	(+)

3.3 Dataset and Methodology

The dataset used for this study is derived from the German Socio-Economic Panel (SOEP)³⁶, a longitudinal survey conducted annually by the German Institute of Economic Research (DIW) since 1984 in West Germany. After the German reunification the sample was enlarged by East German adults. Meanwhile, the survey includes a sample of 11,000 households and 20,000 randomly selected representative individuals covering a wealth of retrospective information on topics such as household composition, occupational biographies, employment status, and demographic characteristics.³⁷ In this chapter, data from the years 1999 to 2011 are used to investigate the use of recruitment sources over the last twelve years. For the years before 1999, there are only few observations on job search on the internet so that these years have not been considered in the analysis. The next part of this chapter presents some general statistics that describe the structure of the data and the dependent and independent variables. Hereafter, the methodology applied in this chapter is described.

³⁶ The data used for this dissertation is taken from the 28th version from 2013.

³⁷ All necessary information about the Socio-Economic Panel can be found on the website of the German Institute for Economic Research (DIW): <http://www.diw.de/en/soep>. See Wagner et al. (2007) for an overview of the evolution of the SOEP.

3.3.1 Dataset

Dependent Variable

Most empirical studies on the use of recruitment sources distinguish between formal and informal search. However, formal channels might be rather imperfect substitutes as they might attract different kinds of job seekers (Schwab, 1982). For example, public employment agencies serve a distinct segment of the labour market characterised by low wage jobs and less educated job seekers (Osberg, 1993). Additionally, search via other sources requires a higher amount of initiative of the job seeker (Blaschke, 1987), which could lead to differences in the effectiveness of formal sources. Furthermore, differences between newspaper and internet adverts might derive from the nature of these channels. Whereas newspapers might contain mainly local or regional job offers, internet adverts are available to a virtually everyone who reads the advert. As a result, the distinction between formal and informal channels is considered as too broad, so that different kinds of formal channels are investigated in this dissertation (see below).

As this chapter deals with determinants of finding a job via a certain search channel, the information source serves as the dependent variable. In each wave of the SOEP data, respondents who answered that they changed their job in the last year were asked: “How did you find out about this job?”³⁸ Participants of the survey could choose between various kinds of public employment agencies,³⁹ private recruitment agencies, newspaper advertisements, internet advertisements, friends or relatives, returning to a former employer, and “other”. Respondents are asked to check only one of the given answers, naming the option that was responsible for finding out about the current job.

Chart 8 gives an overview of the relative importance of information sources between 1999 and 2011.⁴⁰ Finding a job via social ties is a widespread phenomenon in Germany. About one third of the employees found their new jobs via referrals.⁴¹ Newspaper adverts became less relevant over the years as the share of job seekers who found a job via newspaper adverts

³⁸ The questions were initially asked in German. The English translation is taken from the official translation which is available on the website <http://www.diw.de/de/soep>.

³⁹ Since these public employment institutions were reorganised in several reforms, all these agencies are summarised under the label “public employment agencies” and can be further divided into employment offices (“Agentur für Arbeit”), public personnel service agencies (PSA, which has the character of a temporary employment agency), and job-centres (“Jobcenter”, for those receiving welfare benefits). As the latter two only play a minor role in placing people into jobs, all three categories are summarised into one group.

⁴⁰ Chart 8 contains observations of the whole SOEP data, not only the observations used in this analysis.

⁴¹ This is merely in line with Bachmann and Baumgarten (2013) who compared the use of recruitment channels in Europe. For Germany, they found that 39 percent of unemployed job seekers used friends, relatives or trade unions in order to find a job in the years 2006-2008. Note that multiple answers were possible.

decreased from above 20 percent to 12 percent. Public employment offices are responsible for placing about 10 percent of the sample into new jobs. A notable development is the sharp increase of employees who found their jobs on the internet from less than 1 percent in 1999 to 12 percent in 2011. Private employment agencies play a minor role in retaining people into employment and are therefore not further considered. Between 10 and 15 percent answered that they were rehired by their former employer (e.g. seasonal workers working for the same employer). Other sources like job fairs, temporary work agencies, headhunting, and unsolicited walk-ins are sampled in one category (“others or does not apply”). As these information channels are largely heterogeneous, they are not under investigation. Thus, this dissertation focusses on the four most important information sources: social ties (to friends, relatives or acquaintances), internet and newspaper adverts, and employment agencies.

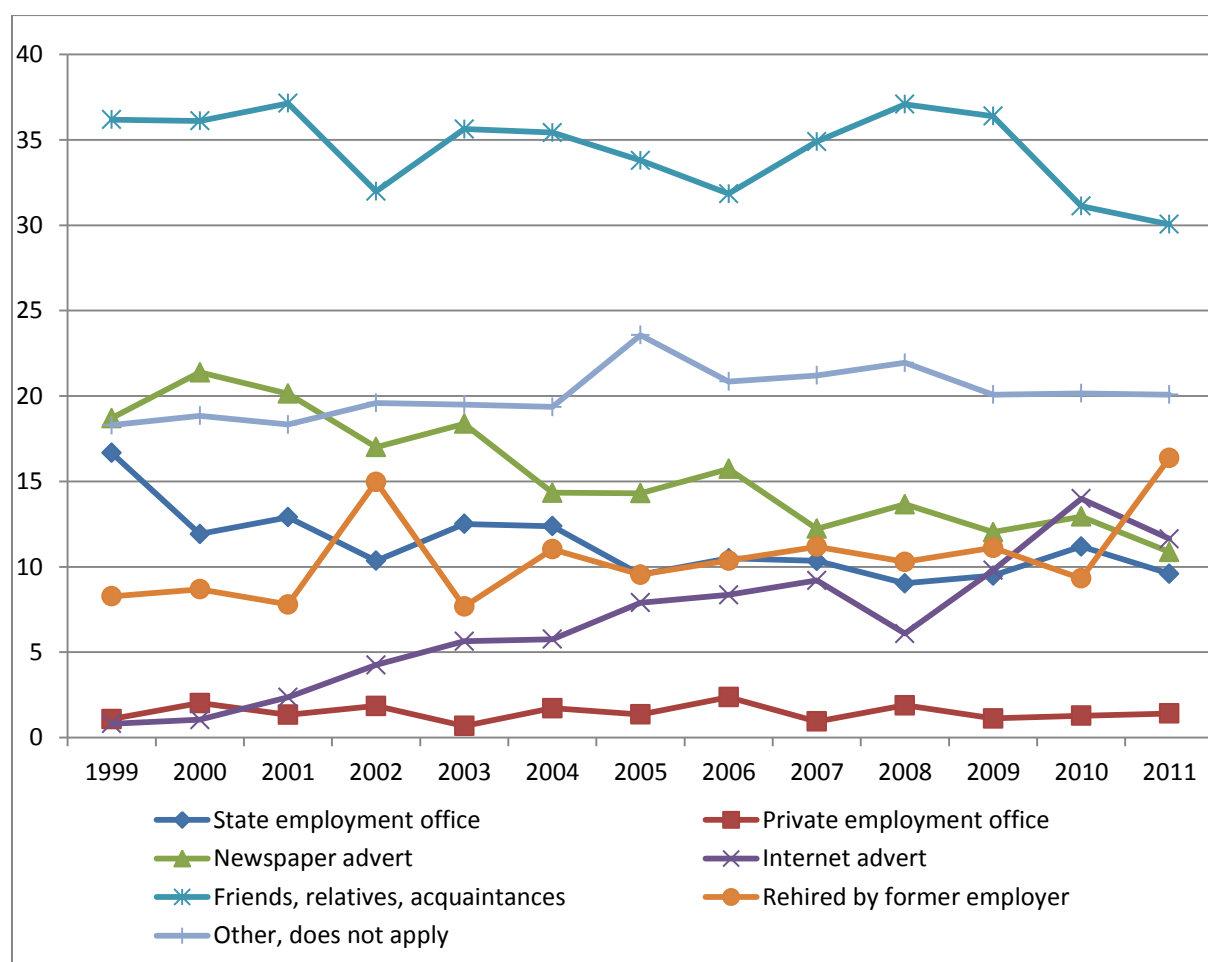


Chart 8: Use of selected recruitment sources from 1999 to 2011 (in percent)

(Source: own calculations based on SOEP data)

The data has been limited to the working population aged 18-65; self-employed workers and the agricultural sector have been excluded due to their low economic relevance. Job seekers who have found a job through a job creation scheme (Arbeitsbeschaffungsmaßnahme, 1-Euro-

Job) are not considered in this sample. Further observations had to be deleted due to missing data. This reduced the sample size to 2,798 individuals who changed their jobs and account for a total sum of 3,818 job changes (see Table 4). Hence, in average, each individual changed his or her job about 1.36 times. About 11 percent of the individuals appear just once in the data; about 10 percent changed their jobs more than five times. This indicates that job changes are rather infrequent in Germany. Individuals with more than 8 changes in the observation period have been deleted from the dataset because individuals which change their jobs that often might differ from the other job seekers in the sample. Since observations are deleted in case of missing variables or if the job change occurred through another than the sources under investigation, not every change of each individual is in the dataset. Furthermore, in order to provide conclusive results throughout this dissertation, observations have been deleted if information on earnings and job satisfaction is missing or if data on earnings and job satisfaction of the previous year is missing (see chapter 4.3 for details). As a result, the data contains only observations of job seekers who were unemployed for less than a year.

Table 4: Number of observations and job change frequency

Job changes	Observations		Individuals	
	Absolute	Percent	Absolute	Percent
1	420	11.00	420	15.01
2	1,009	26.43	859	30.70
3	916	23.99	671	23.98
4	641	16.79	421	15.05
5	418	10.95	234	8.36
6	253	6.63	123	4.40
7	109	2.85	51	1.82
8	52	1.36	19	0.68
Total	3,818	100	2,798	100

Independent Variables

The independent variables used in this analysis are – like the hypotheses in the previous chapter – divided into four categories: demographics, search behaviour, job-related variables, and regional variables. Demographics include variables typically used in multivariate analyses on the individual level, such as *gender* (dummy), *age* (in years), *years of formal education*, *marital status* (dummy), *if children are living in the household* (dummy), and *immigrant status* (not born in Germany, dummy).

Three variables describe the conditions under which job seekers searched for the current job. First, a dummy variable (*unemployed before*) indicates if the individual directly changed from

one job to another or if the individual entered the job from unemployment.⁴² Hence, this variable can be interpreted as on respectively off-the-job-search. Culminated *years of unemployment experience* is a generated variable provided in the SOEP data which summarises all unemployment spells of an individual. The third variable describes if an individual was *actively searching* for a job or if the new position “just came up”.

The position the job seeker found is described by six variables: *branch*, *firm size*, *occupation*, *public sector*, *working hours*, and fixed term (*limited*) contract. Branch includes five categories, such as industry, manufacturing, trade, finance, and service. The size of the firm the new job is found in is measured by the number of employees which is divided into four categories. An individual’s occupation is coded according to the International Standard Classification of Occupations (ISCO) provided by the International Labour Organization of the United Nations Organization. Apart from the respective tasks and the necessary education, the ICSO code contains information on hierarchy levels. For this analysis, the first digit of the code is used as a broad measure for an individual’s occupation and hierarchy. A dummy variable reflects if the new job is found in the public sector. The number of working hours is measured on a weekly basis, including potential overtime hours. Last, a variable comprises whether the new employment contract has a limited or unlimited duration.

On the regional level, the *regional unemployment rate*, the *regional gross domestic product* (per capita), and the region (*East/West*) are included as variables. The regional unemployment rate and the regional GDP are given as the yearly average in each federal state. The GDP is used as a per capita measure in order to account for the number of inhabitants in the respective state. The last dummy indicates whether an individual is residing in Eastern or Western Germany, while Berlin is classified as “East”.

An overview about the variables used in the investigation can be found in Table 5. As mentioned above, the four most commonly used recruitment sources are left in this sample. Therefore, half (54 percent) of the job changes occurred after referrals. Newspaper adverts were responsible for 26 percent of all job changes, employment offices and internet adverts were used less often (9 respectively 12 percent). The dataset comprises an equal number of male and female job changers with an average age of 37 years of which around 12 years are spent in education. 51 percent of the respondents are married and 30 percent have at least one

⁴² This dummy variable takes the value zero when the job was found without interim unemployment and 1 if the job was found after a period of unemployment. Interim unemployment has been identified by an increase in the variable measuring overall unemployment experience.

child living in their household. One fourth of the job changers were unemployed before finding a job. In average, each individual experienced 0.9 years of unemployment in their working life and more than 60 percent were actively searching for a new job.

Table 5: Dataset overview

Variable	Obs.	Mean	Std. Dev.
<u>Recruitment source</u>			
Referrals (1=yes)	3,818	0.539	0.499
Newspaper (1=yes)	3,818	0.262	0.440
Employment office (1=yes)	3,818	0.085	0.278
Internet (1=yes)	3,818	0.114	0.318
Gender (1=female)	3,818	0.505	0.500
Age	3,818	36.588	9.585
Years of education ^A	3,818	12.463	2.575
Married (1=yes)	3,818	0.512	0.500
Children in household (1=yes)	3,818	0.295	0.456
Immigrant (1=yes)	3,818	0.089	0.284
Unemployed before (1=yes)	3,818	0.230	0.421
Total years of unemployment	3,818	0.888	1.719
Actively sought (1=yes)	3,818	0.623	0.485
<u>Branch</u>			
Industry (1=yes)	3,818	0.235	0.424
Manufacturing (1=yes)	3,818	0.072	0.259
Trade (1=yes)	3,818	0.259	0.438
Finance (1=yes)	3,818	0.166	0.372
Services (1=yes)	3,818	0.268	0.443
<u>Firm size</u>			
less than 20 (1=yes)	3,818	0.379	0.485
20 to 199 (1=yes)	3,818	0.313	0.464
200 to 1999 (1=yes)	3,818	0.165	0.371
more than 2000 (1=yes)	3,818	0.143	0.350
<u>ISCO job classification</u>			
Legislators, senior officials and managers (1=yes)	3,818	0.047	0.212
Professionals (1=yes)	3,818	0.136	0.342
Technicians and associate professionals (1=yes)	3,818	0.232	0.422
Clerks (1=yes)	3,818	0.117	0.321
Service workers (1=yes)	3,818	0.153	0.360
Craft and related trade workers (1=yes)	3,818	0.150	0.357
Plant and machine operators (1=yes)	3,818	0.077	0.267
Elementary occupations (1=yes)	3,818	0.088	0.283
Public sector (1=yes)	3,818	0.138	0.345
Working hours per week	3,818	37.635	13.362
Limited contract (1=yes)	3,818	0.180	0.385
Regional unemployment rate (in %)	3,818	9.60	4.10
Regional GPD per capita (in 1,000 €)	3,818	27.070	5.988
East Germany (1=yes)	3,818	0.223	0.417

Note: A = Years of education is variable provided in the SOEP sample. 13 years of schooling reflect a high school degree, whereas no degree is interpreted as 7 years of education. 18 years refer to a university degree. For a detailed description of the generation of this variable see SOEP Group (2015).

Regarding different branches, service (27 percent), trade (26 percent), and industry (24 percent) account for most of the job changes. Less jobs are found in the finance (17 percent) and manufacturing (7 percent) sector. With reference to firm size, most job changes occurred in small firms with less than 20 employees (38 percent). Only one third of the job seekers found their jobs in companies with more than 200 employees. Less job changes happen on the highest level (5 percent), most changes are reported for technicians and associate professionals (23 percent). All other job categories account for 9 to 16 percent of the job changes. 14 Percent of the job changers are working in the public sector. In average, employees of the dataset work 38 hours per week and 18 percent of job seekers found jobs with fixed term contracts. The average (unweighted) regional unemployment rate is 9.60 percent and the average (unweighted) GDP per capita is 27,000 euros. 22 percent of the job changers are residing in East Germany.⁴³

3.3.2 Methodology

The analysis of the determinants of search channels is conducted in two steps. First, employment offices, newspaper and internet adverts are summarised as formal channels. On the contrary, friends and relatives used as an information source are interpreted as informal. Thus, the binary variable *FORMAL* is created which allows analysing general differences between individuals who find a job via formal (1) respectively informal (0) search channels. A logistic regression approach is utilised to estimate the relationship between individual and job characteristics as well as regional differences. The full model is specified as:

$$Pr(FORMAL_{it} = k) = \alpha + Dem'_{it} \cdot \beta + Lab'_{it} \cdot \lambda + Job'_{it} \cdot \delta + Reg'_{it} \cdot \epsilon + \theta, \quad (k = 0, 1) \quad (3.1)$$

with $k = \begin{cases} 0 & \text{no (informal; friends/relatives)} \\ 1 & \text{yes (formal; (public) employment agencies, newspaper/internet adverts)} \end{cases}$

where vector *Dem* includes demographic characteristics and vector *Lab* contains information about the individual labour market biography and search behaviour. *Job* stands for a variety of job characteristics, whereas, *Reg* comprises the three regional variables mentioned above. α is the intercept and θ is the error term. Year dummies are included.

Although this specification provides first evidence on the determinants of finding a job via formal or informal means, the aggregation of newspaper and internet adverts and employment agencies might cover meaningful differences between sources. Therefore, a multinomial

⁴³ About 21 percent of the working population live in East Germany (Destatis, 2010).

logistic regression approach is used to estimate the determinants of finding a job through one of the formal channels compared to finding a job via friends or relatives. This regression model can be described as:

$$Pr(SOURCE_{it} = k) = \alpha + Dem'_{it} \cdot \beta + Lab'_{it} \cdot \lambda + Job'_{it} \cdot \delta + Reg'_{it} \cdot \epsilon + \theta, \quad (k = 1, 2, 3, 4) \quad (3.2)$$

$$\text{with } k = \begin{cases} 1 & \text{friends/relatives} \\ 2 & \text{newspaper adverts} \\ 3 & \text{(public) employment agencies} \\ 4 & \text{internet adverts} \end{cases}$$

where SOURCE serves as the dependent variable which takes the value 1 if the job was found via social ties and 2-4 if the job was found via one of the formal channels. The vectors of the regression contain the same variables as in the binomial case described above. In all regressions standard errors are estimated as robust and clustered on the federal state level.⁴⁴

As described above, the dataset contains both branch and job classification dummies. Hypothetically, these two measures appear to be strongly related as for example service workers are expected to work mainly in the service sector. However, the ISCO job classification does not primarily focus on task specific distinctions between jobs but on skill⁴⁵ differences. As a consequence, the job categories can be interpreted to some extent as job complexity and hierarchy level. Nevertheless, in order to detect potential multicollinearity, pairwise correlations between branch and job classification dummies are shown in Table 6. All correlations are clearly below a critical value of 0.8 (Gujarati, Porter, 2009) – for only one correlation exceeds 0.41 (craft workers in the manufacturing branch).

Table 6: Pairwise correlations between job and branch dummies

	Industry	Manufacturing	Trade	Finance	Service
Legislators	0.048	-0.058	0.050	0.014	-0.070
Professionals	-0.028	-0.058	-0.202	0.071	0.199
Technicians	-0.063	-0.118	-0.083	0.071	0.154
Clerks	-0.073	-0.034	0.080	0.143	-0.103
Service workers	-0.186	-0.121	0.302	-0.148	0.077
Craft workers	0.260	0.410	-0.162	-0.124	-0.238
Plant operators	0.089	0.007	0.116	-0.104	-0.116
Elementary occupations	-0.003	-0.045	-0.016	0.067	-0.008

⁴⁴ Since only virtually no individual in the sample moved between federal states, this approach comprises also clustering on the individual level.

⁴⁵ The International Labour Organization (ILO) defines skill as “the ability to carry out the tasks and duties of a given job”. Two dimensions of skills are considered: skill level and skill specialisation.

Regional variables, however, appear to be highly correlated which could be a reasons for concern. The correlation between the dummy for Eastern Germany and the regional unemployment rate exceeds 0.80 and the other variables are correlated with an index of more than 0.60. As a result, the region dummy will be excluded from the regressions if the other two variables are included in the regressions.

Finally, the Variance Inflation Factor (VIF) is calculated in order to control if one independent variable is a linear combination of multiple other independent variables. As expected, the VIF of the East/West dummy and the regional unemployment rate are relatively high (5.09 and 5.39 respectively). The literature claims a VIF above 10 as critical, though, a value above 5 might be a reason for concern (Menard, 2001). However, O'Brien (2007) argues that the VIF has to be interpreted within its context and that, despite of relatively high VIFs, regression results might be still reliable. The VIFs of the other variables are below 5.

3.4 Empirical Evidence

3.4.1 Descriptive Statistics

Table 7 delivers a first glance on socio-demographic and search behavioural differences of employees with respect to recruitment channels. The table contains arithmetic means of the respective determinants and a t-test is conducted to reveal whether mean values are significantly different from the base category “finding a job via friends or relatives”. As the results indicate, women are more likely to find a job via newspaper adverts than via informal means. Individuals who found a job via internet adverts are younger and less likely to be married in comparison to the reference group. Those who found their jobs with the aid of employment agencies are less educated than the reference group; whereas, job seekers who were successful via newspaper or internet adverts are more educated. Individuals who found a job via newspaper adverts are less likely to live with children under 18 in the household. Immigrants are less likely to find a job via newspaper or internet adverts.

Only 20 percent of the individuals who found a job through friends or relatives were unemployed before the new job. This share is significantly higher for employees who found their jobs via employment offices (0.486) and internet adverts (0.259). The overall unemployment experience of those who found their job via internet adverts is significantly lower compared to the reference group. On the contrary, individuals who were successful through employment agencies have been, in average, twice as long unemployed in their lives. Active search is strongly related to finding a job via formal channels. Whereas 44 percent of

those who found their job via friends or relatives were actively searching for a new job, more than 80 percent of those who were successful via formal means sought actively.

Table 7: Descriptive statistics on socio-demographic and job search characteristics by search channel

	Friends/relatives	Newspaper	Empl. office	Internet
Gender (1=Female)	0.484 (0.500)	0.558*** (0.497)	0.502 (0.501)	0.485 (0.500)
Age	36.722 (9.783)	37.267 (9.177)	35.687 (10.302)	35.066*** (8.799)
Years of Education	12.169 (2.485)	12.632*** (2.514)	11.844* (2.210)	13.915*** (2.816)
Married (1=yes)	0.531 (0.499)	0.555 (0.497)	0.424*** (0.495)	0.387*** (0.488)
Children in HH (1=yes)	0.313 (0.464)	0.256*** (0.436)	0.303 (0.460)	0.293 (0.456)
Immigrant (1=yes)	0.099 (0.299)	0.073* (0.260)	0.102 (0.303)	0.066* (0.249)
Unemployed before new job (1=yes)	0.197 (0.398)	0.203 (0.402)	0.486*** (0.501)	0.259** (0.438)
Total years of unemployment	0.889 (1.693)	0.772 (1.614)	1.641*** (2.528)	0.592*** (1.059)
Actively sought (1=yes)	0.436 (0.496)	0.819*** (0.385)	0.858*** (0.350)	0.876*** (0.329)
Observations	2,057	1,001	323	437

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives.

Table 8 presents descriptive statistics on job characteristics and regional determinants by search channel. The results indicate that, in average, individuals who found their job via newspaper or internet adverts are more likely to work in larger firms compared to the reference group. Newspaper adverts are positively related to finding a job in the finance sector, yet, negatively to finding a job in the industry. Via internet adverts, job seekers are more likely to find a job in the finance and service sector; whereas, they are less likely to find a job in the industry or manufacturing branch. Regarding job categories, the results indicate that individuals are more likely to find higher positions via newspaper and internet adverts. In addition, Pearson's χ^2 -tests were conducted and indicate statistically significant differences between sources regarding firm size, branch, and occupation.

Employment agencies are negatively related to placing job seekers into higher positions. Individuals working in the public sector are more likely to have found their job via internet adverts. Both employment offices and internet adverts are positively related to longer working hours. Jobs found via newspaper adverts are more likely to coincide with permanent contracts, whereas, jobs found via employment agencies and internet adverts are likely to be temporary employment jobs.

Table 8: Descriptive statistics on job characteristics and regional variables by search channel

	Friends/relatives	Newspaper	Empl. office	Internet
<u>Firm size</u>				
less than 20 (1=yes)	0.425 (0.494)	0.333*** (0.471)	0.440 (0.497)	0.222*** (0.416)
20 to 199 (1=yes)	0.318 (0.466)	0.312 (0.463)	0.297 (0.458)	0.304 (0.461)
200 to 1999 (1=yes)	0.139 (0.346)	0.215*** (0.411)	0.133 (0.340)	0.199*** (0.400)
more than 2000 (1=yes)	0.118 (0.323)	0.141 (0.348)	0.130 (0.337)	0.275*** (0.447)
χ^2 -test	139.912***			
<u>Branch</u>				
Trade (1=yes)	0.228 (0.419)	0.244 (0.430)	0.251 (0.434)	0.243 (0.429)
Industry (1=yes)	0.091 (0.288)	0.035*** (0.184)	0.108 (0.311)	0.039*** (0.194)
Manufacturing (1=yes)	0.279 (0.448)	0.262 (0.440)	0.226* (0.419)	0.183*** (0.387)
Finance (1=yes)	0.147 (0.354)	0.188** (0.391)	0.164 (0.371)	0.208*** (0.407)
Services (1=yes)	0.256 (0.436)	0.272 (0.445)	0.251 (0.434)	0.327** (0.470)
χ^2 -test	77.230***			
<u>ISCO job classification</u>				
Legislators, senior officials, managers (1=yes)	0.044 (0.205)	0.058 (0.234)	0.012** (0.111)	0.064 (0.245)
Professionals (1=yes)	0.115 (0.319)	0.138 (0.345)	0.056*** (0.230)	0.286*** (0.452)
Technicians, associate professionals (1=yes)	0.204 (0.403)	0.276*** (0.447)	0.217 (0.413)	0.277*** (0.448)
Clerks (1=yes)	0.108 (0.310)	0.131 (0.337)	0.146* (0.353)	0.105 (0.307)
Service workers (1=yes)	0.161 (0.368)	0.159 (0.366)	0.130 (0.337)	0.117* (0.321)
Craft and related trade workers (1=yes)	0.175 (0.380)	0.102*** (0.303)	0.251*** (0.434)	0.069*** (0.253)
Plant and machine operators (1=yes)	0.087 (0.281)	0.056** (0.230)	0.108 (0.311)	0.059 (0.237)
Elementary occupations (1=yes)	0.106 (0.309)	0.081* (0.273)	0.080 (0.272)	0.023*** (0.150)
χ^2 -test	248.775***			
Public sector (1=yes)	0.124 (0.330)	0.142 (0.349)	0.146 (0.353)	0.190*** (0.393)
Working hours per week	36.761 (14.238)	37.177 (12.854)	39.256** (11.810)	41.606*** (10.165)
Limited contract (1=yes)	0.179 (0.383)	0.134** (0.341)	0.229* (0.421)	0.259*** (0.438)
Regional unemployment rate (in %)	9.822 (4.187)	9.081*** (3.824)	10.165 (4.429)	9.308* (3.940)
Regional GPD per capita	26.880 (6.132)	27.299 (5.627)	26.095* (5.716)	28.156*** (6.137)
East Germany (1=yes)	0.245 (0.430)	0.158*** (0.365)	0.266 (0.443)	0.243 (0.429)
Observations	2,057	1,001	323	437

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives.

The regional variables show that individuals have a higher probability to find a job via newspaper or internet adverts in regions with lower unemployment rates and a higher gross domestic product per capita. In East Germany, job seekers are less likely to find a job via newspaper adverts.

It can reasonably be concluded that employees who found their jobs via referrals differ in most of their demographic characteristics from those who were successful by other recruitment sources. This central observation might support the individual difference hypotheses. Moreover, this cannot be interpreted as a clear evidence for the individual difference hypothesis as these results do not take correlations between these measures into account. This aspect will be considered in the multivariate regressions below.

3.4.2 Multivariate Results

In this chapter, multivariate regression results are presented. First, results of the binomial logistic regression are shown; second, multinomial results are displayed.

Table 9 contains binomial regression results and marginal effects with FORMAL as the dependent variable, which takes the value 1 if the job was found by a formal search channel and 0 if it was found via friends or relatives. With reference to demographic characteristics, the results show that individuals who found their job via formal channels are, in average, more likely to be female, older and more educated compared to the reference group. No significant correlation could be found for marital status and children in the household. Immigrants are more likely to find a job via informal means. Finding a job via formal channels appears to be linked to off-the-job search and active search behaviour. Both categories of search channels do not differ concerning branch variables; however, larger companies seem to be more frequently found via formal channels. Apart from elementary occupations, all job class coefficients and the public sector coefficient are insignificant. Finding a job via formal channels is related to longer working hours. Of the regional dummies only the regional unemployment rate appears to be related to information sources. Individuals in regions with higher unemployment rates are less likely to find a job via formal channels.

As described in chapter 3.3.2, multicollinearity might be a reason for concern because of the high pairwise correlation between the regional variables and the East/West dummy. However, dropping the East/West dummy does neither change the regression results nor affect the Pseudo-R² significantly.

Table 9: Binomial regression results on determinants of finding a job

Dep. var.: Formal (1=yes)	Logistic Regression		Marginal Effects	
	Coeff.	SE	Coeff.	SE
Gender (1=female)	0.327*	(0.142)	0.081*	(0.035)
Age	0.071*	(0.029)	0.018*	(0.007)
Age squared/100	-0.084*	(0.038)	-0.021*	(0.009)
Years of education	0.048***	(0.013)	0.012***	(0.003)
Married (1=yes)	-0.025	(0.090)	-0.006	(0.022)
Children in household (1=yes)	-0.045	(0.166)	-0.011	(0.041)
Immigrant (1=yes)	-0.225***	(0.097)	-0.056*	(0.024)
Unemployed before (1=yes)	0.243*	(0.097)	0.060*	(0.024)
Total years of unemployment	0.013	(0.019)	0.003	(0.005)
Actively sought (1=yes)	1.911***	(0.109)	0.471***	(0.027)
<u>Branch (ref.: trade)</u>				
Industry (1=yes)	0.079	(0.114)	0.019	(0.028)
Manufacturing (1=yes)	-0.324	(0.170)	-0.077*	(0.038)
Finance (1=yes)	0.227	(0.154)	0.056	(0.038)
Services (1=yes)	0.126	(0.174)	0.031	(0.043)
<u>Firm size (ref.: less than 20)</u>				
20 to 199 (1=yes)	0.096	(0.082)	0.023	(0.020)
200 to 1999 (1=yes)	0.409**	(0.151)	0.101**	(0.038)
more than 2000 (1=yes)	0.406**	(0.132)	0.100**	(0.033)
<u>ISCO job classification (ref.: Legislators, senior officials, managers)</u>				
Professionals (1=yes)	-0.081	(0.194)	-0.020	(0.047)
Technicians and associate professionals (1=yes)	0.163	(0.090)	0.041	(0.022)
Clerks (1=yes)	0.081	(0.180)	0.020	(0.045)
Service workers (1=yes)	0.108	(0.159)	0.027	(0.039)
Craft and related trade workers (1=yes)	-0.114	(0.146)	-0.028	(0.036)
Plant and machine operators (1=yes)	-0.061	(0.152)	-0.015	(0.037)
Elementary occupations (1=yes)	-0.412**	(0.150)	-0.098**	(0.035)
Public sector (1=yes)	0.105	(0.154)	0.026	(0.038)
Working hours per week	0.012***	(0.003)	0.003***	(0.001)
Limited contract (1=yes)	-0.222	(0.125)	-0.055	(0.031)
Regional unemployment rate (in %)	-0.044*	(0.018)	-0.011*	(0.004)
Regional GPD per capita (in 1,000 €)	-0.012	(0.009)	-0.003	(0.002)
East Germany (1=yes)	-0.152	(0.173)	-0.037	(0.043)
Year dummies		yes		Yes
Constant	-3.330***	(0.738)	-	-
Observations			3,818	
McFadden Pseudo-R ²			0.167	

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Marginal effects are given in order to compare effect sizes. The strongest determinant of finding a job via formal ties appears to be active search. Switching from active to passive search increases the probability of being successful via formal ties by .471. In comparison to this, the probability for females to find a job via formal channels is only .081 higher than for men. Moreover, the two largest company classes increase the probability to find a job via formal channels by .100.

The results described above provide first empirical evidence on the determinants of finding a job via social ties. Nevertheless, more detailed analyses are essential in order to detect differences between the three formal recruitment channels investigated in this dissertation. Therefore, multinomial regression results are displayed in Table 10. The coefficients show how the given determinants are related to finding a job via the respective source in comparison to the reference group (finding a job via social ties).

The results mainly confirm the findings of the previous regression. Females find jobs more frequently via formal channels than via social ties, statistically significant for newspaper adverts and employment agencies. An inverted u-shaped relation could be detected for the factor age when a job was found via newspaper and internet adverts. The maximum of the age function lies at 46 years for newspaper adverts and at 38 years for internet adverts. As these two maxima are around the middle of the working life, a u-shaped relation between age and finding a job via social ties can be assumed. Marital status and children in the household are not related to finding a job through a certain channel. Immigrants are less likely to find a job via newspaper adverts; the coefficient related to internet adverts is negative but insignificant.

Those who found their job via employment offices were more likely to be unemployed before and have been unemployed for longer (age kept constant). Individuals who found their job on the internet were also more likely to be unemployed; though, they have shorter accumulated unemployment spells. The active search coefficient is highly significant and positively related to finding a job via formal channels.

Branch differences seem to be of minor relevance. Individuals who work in the manufacturing branch are less likely to have found their job via newspaper adverts. Newspaper and internet adverts are strongly related to finding a job in larger companies, whereas employment offices are negatively (but insignificantly) related to firm size. Jobs on lower hierarchy levels or requiring fewer skills are more commonly found via employment offices. Elementary occupations are less likely to be found via internet adverts. Longer working hours are

positively related to finding a job via all three formal channels. Newspaper and internet adverts are negatively related to finding a fixed-term contract. In regions with higher unemployment rates individuals are less likely to find a job via internet adverts. Year dummies are not displayed in the table, yet, indicating a negative time trend in job finding via newspaper adverts and a positive time trend in finding a job through internet adverts, which is consistent with descriptive finding displayed in Chart 8.

In Table 11, marginal effects of the regression above are given. The strongest relation has been detected for active search. Relative to the reference category, active search increases the probability to find a job via newspaper adverts by .293. For the other two search channels active search increases the probability to find a job through this channel by .077 respectively .089. The gender effect is mainly driven by newspaper adverts. Females have a .055 higher probability to find a job via newspaper adverts than via social ties. The probability of finding a job via internet search is .079 higher for jobs in firms with more than 2,000 employees.

The previous regression mainly confirmed the hypothesis that females are more likely to find a new job via formal channels. In order to control for gender differences regarding the influence of other determinants, separate regressions for males and females are performed. The results show that male job seekers are mainly responsible for the inverted u-shaped relation between age and finding a job via formal channels. Females with higher levels of education are less likely to find a job via employment agencies. Highly educated male job seekers are more likely to find a job via internet adverts than via social ties. The negative correlation between being an immigrant and finding a job via newspaper adverts is mainly driven by male immigrants. No gender difference can be observed for the active search dummy.

Females who found their jobs via internet adverts are more likely to work in the industry, finance, or service sector compared to the reference category. A positive relation between firm size and formal channels is mainly prevalent for male job seekers. Middle and lower level jobs according to the ISCO classification are more frequently found by male job seekers who found their jobs via employment agencies. Compared to the reference category, females who found their jobs via newspaper and internet adverts are less likely to work in jobs with fixed-term contracts. Females are less likely to find a job via internet and newspaper adverts in regions with higher unemployment rates.

Table 10: Multinomial logit results on determinants of finding a job

DV: Channel job was found through	Newspaper		Empl. office		Internet	
Ref.: Friends/relatives	Coeff.	SE	Coeff.	SE	Coeff.	SE
Gender (1=female)	0.341*	(0.159)	0.409*	(0.192)	0.209	(0.230)
Age	0.095**	(0.037)	-0.019	(0.040)	0.097*	(0.042)
Age squared/100	-0.103*	(0.050)	0.016	(0.049)	-0.129*	(0.058)
Years of education	0.036*	(0.017)	-0.020	(0.032)	0.113***	(0.019)
Married (1=yes)	0.104	(0.091)	-0.260	(0.174)	-0.199	(0.151)
Children in HH (1=yes)	0.053	(0.188)	0.220	(0.259)	-0.290	(0.190)
Immigrant (1=yes)	-0.340**	(0.113)	0.014	(0.133)	-0.189	(0.149)
Unemployed before new job (1=yes)	-0.035	(0.109)	0.881***	(0.133)	0.267*	(0.126)
Total years of unemployment	-0.019	(0.035)	0.111***	(0.030)	-0.106*	(0.050)
Actively sought (1=yes)	1.885***	(0.122)	1.915***	(0.206)	2.083***	(0.150)
Branch dummies (ref.: trade)						
Industry (1=yes)	-0.003	(0.120)	0.129	(0.204)	0.171	(0.168)
Manufacturing (1=yes)	-0.628*	(0.299)	-0.151	(0.257)	-0.064	(0.407)
Finance (1=yes)	0.129	(0.170)	0.484	(0.300)	0.317	(0.222)
Services (1=yes)	0.012	(0.153)	0.339	(0.207)	0.344	(0.320)
Firm size (ref.: less than 20)						
20 to 199 (1=yes)	0.130	(0.113)	-0.229	(0.122)	0.400	(0.211)
200 to 1999 (1=yes)	0.563***	(0.167)	-0.255	(0.274)	0.656***	(0.154)
more than 2000 (1=yes)	0.247	(0.134)	-0.068	(0.290)	1.120***	(0.308)
ISCO job classification (ref.: legislators, senior officials, managers)						
Professionals (1=yes)	-0.274	(0.200)	0.210	(0.384)	0.168	(0.327)
Technicians, associate prof. (1=yes)	0.100	(0.081)	0.995**	(0.350)	0.165	(0.301)
Clerks (1=yes)	-0.039	(0.167)	1.120***	(0.358)	0.001	(0.357)
Service workers (1=yes)	0.034	(0.150)	0.789*	(0.389)	0.210	(0.274)
Craft and related trade workers (1=yes)	-0.351*	(0.147)	1.492***	(0.405)	-0.511	(0.412)
Plant and machine operators (1=yes)	-0.321	(0.189)	1.341***	(0.354)	-0.046	(0.290)
Elementary occupations (1=yes)	-0.417*	(0.186)	0.560	(0.573)	-1.098***	(0.313)
Public sector (1=yes)	0.066	(0.210)	0.397*	(0.185)	-0.079	(0.215)
Work hours per week	0.005	(0.003)	0.019*	(0.008)	0.027***	(0.007)
Limited contract (1=yes)	-0.348***	(0.103)	0.184	(0.192)	-0.294	(0.159)
Regional unemployment rate (in %)	-0.040	(0.026)	0.001	(0.039)	-0.078**	(0.028)
Regional GDP per capita (in 1,000 €)	-0.006	(0.012)	-0.022	(0.013)	-0.017	(0.013)
East Germany (1=yes)	-0.281	(0.290)	-0.479	(0.373)	0.363	(0.300)
Year dummies		yes		yes		Yes
Constant	-3.783***	(1.007)	-3.807***	(0.885)	-8.243***	(0.769)
Observations	3,818					
McFadden Pseudo-R ²	0.176					

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 11: Multinomial marginal effects on determinants of finding a job

DV: Channel job was found through	Newspaper		Empl. office		Internet	
Ref.: Friends/relatives	Coeff.	SE	Coeff.	SE	Coeff.	SE
Gender (1=female)	0.055	(0.029)	0.019	(0.011)	0.005	(0.012)
Age	0.017**	(0.006)	-0.003	(0.002)	0.004	(0.003)
Age squared/100	-0.018*	(0.009)	0.003	(0.003)	-0.006	(0.003)
Years of education	0.005	(0.003)	-0.002	(0.002)	0.007***	(0.001)
Married (1=yes)	0.028	(0.016)	-0.017	(0.010)	-0.013	(0.009)
Children in HH (1=yes)	0.012	(0.032)	0.014	(0.014)	-0.020	(0.012)
Immigrant (1=yes)	-0.062**	(0.021)	0.008	(0.008)	-0.006	(0.009)
Unemployed before new job (1=yes)	-0.027	(0.019)	0.054***	(0.009)	0.014	(0.008)
Total years of unemployment	-0.004	(0.007)	0.008***	(0.002)	-0.007*	(0.003)
Actively sought (1=yes)	0.293***	(0.022)	0.077***	(0.013)	0.089***	(0.010)
<u>Branch dummies (ref.: trade)</u>						
Industry (1=yes)	-0.006	(0.021)	0.007	(0.011)	0.010	(0.009)
Manufacturing (1=yes)	-0.103*	(0.045)	0.000	(0.013)	0.005	(0.025)
Finance (1=yes)	0.011	(0.029)	0.027	(0.018)	0.015	(0.014)
Services (1=yes)	-0.010	(0.025)	0.019	(0.011)	0.020	(0.019)
<u>Firm size (ref.: less than 20)</u>						
20 to 199 (1=yes)	0.022	(0.021)	-0.019*	(0.008)	0.021	(0.011)
200 to 1999 (1=yes)	0.107***	(0.029)	-0.028*	(0.013)	0.029***	(0.008)
more than 2000 (1=yes)	0.024	(0.029)	-0.015	(0.017)	0.079**	(0.027)
<u>ISCO job classification (ref.: legislators, senior officials, managers)</u>						
Professionals (1=yes)	-0.059	(0.035)	0.008	(0.011)	0.018	(0.021)
Technicians, associate prof. (1=yes)	0.004	(0.021)	0.040**	(0.013)	0.006	(0.021)
Clerks (1=yes)	-0.025	(0.030)	0.058***	(0.016)	-0.004	(0.021)
Service workers (1=yes)	-0.007	(0.028)	0.029	(0.017)	0.012	(0.018)
Craft and related trade workers (1=yes)	-0.082**	(0.026)	0.096***	(0.020)	-0.028	(0.024)
Plant and machine operators (1=yes)	-0.079*	(0.032)	0.077***	(0.014)	-0.003	(0.019)
Elementary occupations (1=yes)	-0.072	(0.037)	0.027	(0.025)	-0.045*	(0.018)
Public sector (1=yes)	0.007	(0.039)	0.024**	(0.009)	-0.008	(0.014)
Work hours per week	0.000	(0.001)	0.001*	(0.000)	0.002***	(0.000)
Limited contract (1=yes)	-0.065***	(0.016)	0.019	(0.010)	-0.013	(0.009)
Regional unemployment rate (in %)	-0.006	(0.005)	0.001	(0.002)	-0.004*	(0.002)
Regional GPD per capita (in 1,000 €)	0.000	(0.002)	-0.001	(0.001)	-0.001	(0.001)
East Germany (1=yes)	-0.052	(0.058)	-0.026	(0.025)	0.030	(0.020)
Year dummies		yes		yes		yes

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 12: Multinomial logit results on determinants of finding a job by gender

DV: Channel job was found through Ref.: Friends/relatives	Newspaper		Empl. office		Internet	
	Male	Female	Male	Female	Male	Female
Age	0.174**	0.015	-0.005	-0.068	0.108	0.037
Age squared/100	-0.195**	-0.001	-0.037	0.115	-0.156	0.000
Years of education	0.046	0.021	0.070	-0.010**	0.167***	0.074
Married (1=yes)	-0.193	0.354**	-0.218	-0.163	-0.136	-0.245
Children in HH (1=yes)	-0.070	0.190	0.190	0.308	-0.229	-0.301
Immigrant (1=yes)	-0.668***	0.133	-0.156	0.255	-0.439	0.201
Unemployed before new job (1=yes)	0.032	-0.091	0.799***	1.002***	0.137	0.405
Total years of unemployment	-0.104	0.028	0.159***	0.063	-0.114	-0.095
Actively sought (1=yes)	1.904***	1.969***	1.768***	2.223***	2.261***	1.970***
<u>Branch dummies (ref.: trade)</u>						
Industry (1=yes)	-0.006	-0.045	-0.234	0.728	-0.153	0.467*
Manufacturing (1=yes)	-0.432	-1.512*	-0.232	-1.702	-0.497	0.580
Finance (1=yes)	0.181	0.006	0.254	0.739**	-0.127	0.721**
Services (1=yes)	-0.319	0.094	0.273	0.459	-0.068	0.661*
<u>Firm size (ref.: less than 20)</u>						
20 to 199 (1=yes)	0.288*	0.052	-0.032	-0.465	0.285	0.532
200 to 1999 (1=yes)	1.064***	0.165	0.071	-0.592	0.672*	0.644**
more than 2000 (1=yes)	0.661***	-0.041	0.111	-0.337	1.289***	1.013*
<u>ISCO job classification (ref.: legislators, senior officials, managers)</u>						
Professionals (1=yes)	-0.430	0.046	-0.256	1.208	0.237	0.102
Technicians, associate prof. (1=yes)	0.199	0.190	0.370	1.664	0.378	-0.069
Clerks (1=yes)	-0.096	0.144	1.328**	1.700	0.484	-0.409
Service workers (1=yes)	0.142	0.022	0.726	1.258	0.253	0.109
Craft and related trade workers (1=yes)	-0.420	0.277	1.544*	1.749	-0.190	-1.695
Plant and machine operators (1=yes)	-0.333	0.178	1.329*	1.709	0.121	0.333
Elementary occupations (1=yes)	-0.050	-0.573	0.971	0.374	-0.754	-1.441***
Public sectors (1=yes)	0.065	0.132	-0.166	0.719*	-0.395	0.075
Work hours per week (1=yes)	0.010**	0.009	0.021*	0.022***	0.016	0.036***
Limited contract (1=yes)	-0.251	-0.436*	0.027	0.370	-0.106	-0.445*
Regional unemployment rate (in %)	0.014	-0.083**	0.025	-0.018	-0.071	-0.079*
Regional GPD per capita	-0.019	0.002	0.008	-0.039	-0.047	0.000
East Germany (1=yes)	-0.589	-0.189	-0.091	-0.836	0.330	0.174
Year dummies	yes	yes	yes	yes	yes	yes
Constant	-6.198***	-1.598	-5.642***	-2.320	-7.560***	-20.429***
Observations	1,889	1,929	1,889	1,929	1,889	1,929
McFadden Pseudo-R ²	0.199	0.195	0.199	0.195	0.199	0.195

Notes: *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Standard errors are not provided due to reasons of simplicity.

3.4.3 Robustness Analyses

Additional analyses were conducted to estimate the robustness of these findings. The previous analyses revealed that individuals who found their jobs through public employment agencies systematically differ from job seekers who found their job through one of the other formal channels. Hence, the regressions were performed once again without individuals who found their jobs via employment agencies. The results are nearly identical to the regression given in Table 10, which emphasises the robustness of the findings and of the specification.

Furthermore, the potential problem of multicollinearity has been discussed in chapter 3.3.2. In order to control whether branch dummies and ISCO job classifications measure the same or distinct aspects of jobs, the multivariate regression has been conducted with ISCO dummies. The results remain qualitatively similar which can be interpreted as a sign for the independence of these two measures.

ISCO job classifications are based on the required skills and formal education which are prerequisite to work in a specific job. Hence, the simultaneous inclusion of education and job description dummies might distort the result. If the education variable is excluded, regression results for higher job categories remain stable. For lower categories, the coefficients become larger in size and more significant. This finding supports previous evidence that jobs which require more formal education are more likely to be found via social ties than via newspaper or internet adverts.

An even stronger pairwise correlation has been detected between the regional variables. Hence, the East/West dummy has been excluded from the regression. As a result, the negative coefficient describing the relation between the regional unemployment rate and the probability of finding a job via newspaper adverts becomes significant.

As mentioned in chapter 3.2.1, an interaction term was introduced in order to model the joint effect of females and having a child younger than 18 in the household. Under the assumption that females are more likely to be responsible for childcare, the interaction term was expected to show that females are more likely to find a job via formal channels if they have a child in the household. However, the interaction term is highly insignificant for all search channels.

An interaction effect might also constitute between active search and off-the-job search as unemployed job seekers might be forced to search actively via formal channels. Therefore, the active search and unemployed dummies are interacted. The interaction coefficients are insignificant for newspaper and internet adverts. For employment agencies, a negative

interaction coefficient is estimated. Unemployed job seekers are more likely to find a job via employment agencies, though, this effect is smaller if the unemployed is searching for a new job actively.

Additional analyses investigated potential non-linear relationships. For example, the relationship between the regional unemployment rate and finding a job via formal sources might be u-shaped. This would be the case if social ties would be helpful both in regions with high unemployment rates as well as in tight labour markets with a large number of vacancies that have to be filled and fewer applicants. However, after the introduction of a squared measure of the regional unemployment, both coefficients are insignificant. The result remains stable even if all other regional variables are excluded.

The multinomial regressions showed that individuals with higher education are more likely to find a job via newspaper or internet adverts. In order to model a potential non-linear relationship between education and information sources, a squared measure of education is introduced into the model. For both newspaper and internet adverts, the relationship between education level and finding a job through these channels is inverted u-shaped. The respective maxima are at around 17 years for newspaper adverts and 14 years for internet adverts. Thus, the negative component is only relevant for internet adverts since the maximum years of education (master degree) are 18 years.

So far, the distance to the newly found job has been neglected in these estimations, although this factor might be important to characterise the new job. Via newspaper or internet adverts, employees are able to attract applicants virtually everywhere (only limited by the dissemination area of newspapers). Social ties are more likely to be established between two individuals who live within certain proximity. In line with this, Bayer et al. (2008) found empirical evidence on the importance of neighbourhood networks on labour market outcomes. The authors concluded that employee residing on the same block have a 33 percent higher probability of working together. This relationship is even stronger for individuals with similar socio-demographic characteristics as their social interaction is likely to be stronger. Finding employees close to the workplace is beneficial for employers because of higher flexibility and better performance. Empirical evidence of van Ommeren and Gutiérrez-i-Puigarnau (2011) revealed a strong positive correlation between of distance of work and absenteeism. Additionally, shirking at the workplace could serve as a substitute for reduced leisure time due to longer commutes (Ross, Zenou, 2008). Unfortunately, the data on the commuting distance contains around 500 missing values; therefore, it has not been considered for the

general analysis. However, an additional regression is run to estimate the relationship between job distance and job search channels. The results show no difference between finding a job via social ties and newspaper adverts or employment offices. Internet adverts are positively related to finding a job further away from the place of residence. In an additional regression, job distance and firm size are interacted because one could assume that especially local small firms are more likely to find a job via social ties. The findings are in line with this hypothesis, revealing that job distance is still positively related to finding a job on the internet; yet, the effect is considerably smaller for larger firms.

In previous studies, house ownership has proven to be a considerable obstacle for job mobility (see e.g. Caliendo et al., 2015 and the references therein). Job seekers owning houses are searching for a new job closer to their place of residence which might be positively related to finding a job via social ties. Additional regressions have been performed including a house ownership dummy. The results show that house ownership may determine where individuals search for a new job but does not affect if a job was found via newspaper or internet adverts. Solely finding a job via employment agencies is negatively related to house ownership.

3.5 Discussion

The empirical results above reveal considerable differences between individuals who found a job through one of the search channels under investigation. Some of the hypotheses postulated in chapter 3.2 have been confirmed by the empirical results, others not. In this chapter, the findings are interpreted and limitations of this study are discussed. Finally, practical implications of the findings are debated.

3.5.1 Discussion of the Empirical Findings

The empirical findings confirm gender differences in job finding as hypothesised. Females are less likely to find a job via social ties which can be interpreted as evidence for the homophily hypothesis. Females seem to be less involved in valuable networks helpful in finding a job.

The relationship between age and the two formal channels newspaper and internet adverts can be described as inverted u-shaped. Especially young and older job seekers are more likely to find a job via social ties. Younger job seekers dispose of less work experience and branch or job specific human capital. Additionally, employers might have difficulties estimating the work motivation and other characteristics which are unobservable at the beginning of a career. Thus, younger job seekers benefit from their social ties because asymmetric information is particularly high in this case. Plug et al. (2015) explained this finding by the use of parental

networks. In order to help their children finding a good job at the beginning of the career, parents make use of their social ties in order to overcome the lack of social capital of their children. Older job seekers, in turn, dispose of a large network of ties established during their working life. Through their ties they are able to find a job although empirical evidence shows that employers refrain from hiring older workers because they fear higher labour costs, lower productivity, or more or longer periods of sickness absence (Boockmann, Zwick, 2004).

The level of education is positively related to finding a job via formal ties (newspaper and internet adverts). Especially individuals with lower levels of education seem to benefit from social ties in the job search process. As explained earlier, asymmetric information between employer and employee might be especially prevalent for individuals with lower levels of formal education. For individuals with a university degree, social ties become again more important to find a job. Those job seekers are more likely to dispose of valuable ties established during their studies. Furthermore, parents, relatives, and friends of individuals with university degrees are more likely to dispose of university degrees themselves (homophily) and, thus, dispose of more valuable ties.⁴⁶

No significant effects were found for being married and living with children below 18 in the household. The results remain stable if gender and child in household dummies are interacted. This shows that family composition does not affect how individuals search for jobs. It can be assumed that both families with children and without as well as married and unmarried job seekers dispose of similarly valuable social ties. As hypothesised, individuals who are not born in Germany are less likely to find a job via newspaper adverts.

Search behaviour respectively the conditions under which the new job was found are closely related to the source the search was successful through. The strongest determinant in all regressions is the active search dummy. Individuals who are actively searching for a new job (while it is controlled for being unemployed) are by far more likely to find this job via formal channels. Conversely, finding a job via friends or relatives seems to be a rather unintended process. This can be understood as a proof for Lin's hypothesis that social capital can work in "invisible" ways (Lin, 2008: 53), i.e. passive search. Via social ties, individuals are provided with job offers they did not expect coming up or they did not search for initially. This finding is of great importance for the understanding of social ties as a search instrument. In addition

⁴⁶ See Eccles (2005) for an overview of the literature on links between parental education and children's educational achievements.

to this, job seekers who are successful via formal ties (apart from newspaper adverts) are more likely to be unemployed before finding the new job.

Only few statistically significant results have been found for the branch dummies. This may be the case because branch categories used in this dataset do not describe the qualification or abilities required in the respective job. The given sectors provide positions for generally all kinds of professions so that few differences can be measured. Solely the manufacturing sector and the finance sector partially fulfil the expectations formulated in chapter 3.2.3. This may be the case because these two sectors – more than the others – are related to a relatively clear job model. This interpretation is supported by the relatively high correlation between branch and occupation dummies in this sector. Employees in the finance or manufacturing sector might be more homogeneous than in other branches.

As ex-ante assumed, firm size is positively related to find a job via formal channels, which has been confirmed for newspaper and internet adverts. This may be explained by greater financial and personnel resources of larger firms. Small firms without institutionalised human resource departments are more likely to find a job via informal means. Furthermore, a job seeker presumably has less ex-ante information about small firms compared to larger firms. Hence, social ties are helpful to bridge the information gap and make small firms more attractive for job seekers.

The results with reference to the job classification show that job categories which involve less formal education and skills are more likely to be found via informal means. This finding has been confirmed by additional estimates described in chapter 3.4.3. Job seekers who work in positions for employees with lower levels of education appear to benefit most from personal contacts to find a job. Social ties, therefore, are less likely to be responsible for placing well-educated and skilled employees into well-paid positions but to help disadvantaged job seekers to find a job.

Job seekers who were successful finding a job via newspaper or internet adverts are more likely to find an unlimited position. Although this factor also could be understood as an outcome of job search (as a measure for job stability), jobs with limited and unlimited contracts might differ in other regards. Fixed-term working contracts more frequently offered to females, unmarried and, younger employees (Beckmann et al., 2007). Furthermore, Portugal and Varejao (2010) argued that employers use fixed-term contracts as a screening device. They found that firms who employed more workers under fixed-term conditions were

more likely to offer permanent contracts after a certain screening period. In relation to finding a job via social ties – which is more likely for disadvantaged job seekers – the results indicate that limited contracts are used as a means to screen those job seekers who cannot prove their abilities by formal means.

Measures at the regional level showed that the regional labour market influences how individuals find their jobs. The results indicate that job seekers in regions with higher unemployment rates are more likely to find a new job via informal means. This implies that social ties are especially helpful in order to find a job in regions with higher unemployment rates. In conjunction with the results discussed above that mainly disadvantaged job seekers benefit from social ties, this effect might be even more severe because less educated individuals suffer relatively more from high unemployment rates (OECD, 2014). Interestingly, the overall welfare, measured as the GDP per capita, does not affect job finding. Presumably, job search does not depend on the general living conditions in a region but on the amount of jobless individuals and vacancies.

3.5.2 Limitations

The findings of this analysis are robust in the light of various robustness checks and alternative specifications. However, two aspects limit the interpretation of the results: measurement problems in the dependent variable and room for interpretation of job-specific variables.

First, the data solely contains information on how the respective job was found, not how individuals were searching for a respective job. Job seekers who are actively searching for a new job might utilise more than one channel during the search process. As a result, the findings have to be understood as the determinants of finding a respective job not how these determinants influence job search in general. This conceptual difference is important for understanding the relationship between determinants and finding a job via a certain channel. Finding a job through a certain channel already includes a certain measure of success. Job seekers might use multiple search channels, yet, they accept the most attractive job offer. If jobs which are advertised by different channels differ regarding their attractiveness (monetary and non-monetary benefits), the results do not only show how job seekers are searching for jobs but also who gets better jobs. Therefore, additional analyses are required to estimate if sources differ regarding their outcomes (see chapter 4). How actual search through multiple channels affects pre- and post-hire outcomes is investigated in chapter 6 based on a sample of unemployed job seekers.

Another problem might be the interpretation of the determinants. Whereas the interpretation of the demographic characteristics as factors determining search behaviour is rather straightforward, this is less clear for job-specific factors. On the one hand, job seekers might have certain preferences regarding the sector, the firm size or the position of the new job. On the other hand, though, employers are actively searching for new employees and the way these two actors meet is determined by the behaviour of both actors. For example, larger firms dispose of more resources which enable them to utilise more search channels to advertise job offers. Therefore, the findings regarding the job-specific determinants cannot be interpreted as purely preference-based but affected by the job search effort of firms.

3.5.3 Practical Implications

The findings imply practical implications for both job seekers and organisations searching for new employees. In general, disadvantaged job seekers strongly benefit from social ties in the job search process. Younger, less educated individuals and also immigrants are more likely to bridge the information gap towards employers by being recommended by others. This implies that especially individuals from these disadvantaged groups should invest in their social capital in order to establish valuable ties.⁴⁷

Employers, in turn, can benefit if they adjust their search strategy to address the desired employee population. Organisations can utilise internet adverts in order to find young and well-educated job seekers. Newspaper adverts address usually older people with higher levels of literacy. Firms might be able to reduce recruitment costs by carefully addressing the desired population of job seekers. Although the number of applications might decrease, the received applications are more likely to fit to vacancy which should be filled.

Moreover, firms which aim to fill lower positions generally have problems estimating the skills and motivation of job seekers. Applicants recommended by social ties are more likely to meet the employers' expectation because the referrer disposes of better information about the motivation and abilities of the applicant. Thus, firms should encourage their employees to recommend friends or relatives in order to increase matching quality and employee performance. Addressing the desired population of job seekers adequately is likely to reduce search costs or costs of selection errors (Fernandez et al., 2000). However, this implication

⁴⁷ However, such investment might be limited due to a lack of ties, especially for immigrants compared to natives. For the Swedish labour market, Behtoui (2008) detected that immigrants who found a job via social ties received significantly lower wages than natives. Hence, finding a job via social ties might be helpful in finding a job at all but detrimental in relation to post-hire outcomes. For a single Swedish firm, Behtoui and Neergaard (2010) showed that part of the immigrant-native wage gap could be explained by social capital variables.

has to be considered carefully in the light of the limitation mentioned above that finding a job not seeking through a certain channel has been investigated. How individuals find a job is not solely determined by individual search decisions but also by the way firms search for employees. As a result, this implication is only reliable under the assumption that job seekers anticipate employers' search behaviour and adjust their search effort according to their preferences. Individuals who wish to work for larger firms anticipate that these firms offer a career portal on their website and, thus, search on the internet. Preferences for which firm to work (e.g. for a smaller or larger firm) might be determined by demographic or job specific characteristics. Therefore, it may be concluded that firms should adjust their employee search behaviour towards the search behaviour of competitors with similar properties (firm size, branch etc.) in order to react to anticipated search behaviour.

3.6 Conclusion

In this chapter it has been analysed if job seekers who have found their job through different search channels differ with regards to their socio-demographic characteristics or regarding job-specific or regional differences. The results show that especially disadvantaged job seekers – young/old, less educated, immigrants – are more likely to find a job via social ties. Furthermore, formal channels attract different job seekers, which is particularly important for employment offices. Newspaper and internet adverts appear to be a promising job search instrument for well-educated and medium-aged job seekers. Estimated coefficients are vastly robust towards alternative specifications and potential non-linearities. The findings have practical relevance for both employers and employees in the job search process. Employers should adjust their search strategy towards the desired target group by using the channels used by the targeted job seekers or by using channels commonly used by competitors in order to adjust to job seekers' anticipations. Disadvantaged job seekers benefit from investments into their social capital.

4 Effectiveness of Informal Recruitment Channels – Post-hire Outcomes

4.1 Introduction

In chapter 2.5, theoretical arguments have been discussed how social ties could affect monetary and non-monetary outcomes of job search. On the one hand, pre-screening of applicants or realistic job previews could be responsible for increasing matching quality and, hence, performance. Individuals who fit better to the respective job and are performing better are likely to be earn higher wages and to be more satisfied with the current job. Altogether, these factors might increase the probability of staying at the current employer, reducing turnover probability. On the other hand, Schwab (1982) argued that different search channels might be used by different individuals and, therefore, search channels might not be associated with higher income or satisfaction.

The previous chapter has provided first evidence that individuals who are successful finding a job via social ties substantially differ from job seekers who found a job via formal means. Informal means help especially disadvantaged job seekers in finding a job, whereas highly educated and middle-aged job seekers are more likely to find a job via formal means. This can be interpreted as first evidence for the individual difference hypothesis. However, keeping everything else constant, this does not rule out potential monetary and non-monetary benefits of social ties. Apart from finding a job at all, disadvantaged job seekers might find a better paid job or a position that generates higher job satisfaction.

This section empirically investigates whether individuals hired through different recruitment channels also differ in terms of post-hire outcomes, such as wage, job satisfaction, and future turnover (see chapter 2.6). These results will provide further evidence on the appropriateness of the two different hypotheses described above. If differences in post-hire outcomes still exist even though it is controlled for various demographic, firm and job-specific variables, this could be interpreted as supporting evidence that social ties are a superior means in finding a job. Conversely, if differences in post-hire outcomes vanish when a set of control variables is inserted, individual differences could be responsible for self-selection into the recruitment channels under investigation. This chapter, therefore, answers the second research question of the introduction, which emphasised the role of the German labour market regulations and traditions in determining post-hire outcomes of job search.

This chapter contributes to the existing literature in two ways. First, it investigates in how far the usage of a specific recruitment channel affects labour market outcomes for employees.

Especially, this chapter is (to the best of my knowledge) the first which considers reduced turnover as an outcome of job search channels in a large data set. Second, this chapter investigates wage and job satisfaction differentials, i.e. the wage (job satisfaction) difference between the current and the past job. This way it is investigated whether individuals already earned higher wages or were more satisfied before the job change. Furthermore, it is analysed whether sources generate a so-called “honeymoon effect” (Boswell et al., 2005), an increase in the job satisfaction after the job change. Finally, particular attention will be paid to the evaluation of the appropriateness of the two the alternative hypotheses (information benefits and self-selection) mentioned above.

The remainder of this chapter is structured as follows: In chapter 4.2 the existing empirical evidence on the effectiveness of recruitment channels is summarised. Subsequently, the research methodology is described in chapter 4.3. Empirical evidence, both descriptive and multivariate is provided in 4.4. The findings are discussed in chapter 4.5. Chapter 4.6 concludes.

4.2 Literature Review and Hypotheses

The empirical literature on post-hire outcomes of recruitment channels has provided ample yet controversial evidence on the effectiveness of formal and informal means. In this chapter, selected studies are summarised and hypotheses regarding post-hire outcomes are formulated. First, the literature on monetary outcomes is reviewed; second, literature on non-monetary outcomes is summarised.

4.2.1 Monetary Post-hire Outcomes of Social Capital

So far, only one study has explicitly investigated the explanatory power of the two alternative hypotheses. According to Breugh and Mann (1984), who used a rather small sample of 98 social service employees, the RJP hypothesis received more support than the Individual Difference hypothesis. Participants were asked about the quality of ex-ante information on job characteristics and requirements. Those who found their job through informal means reported that they disposed of significantly better information compared to newspaper adverts or direct applications. However, the Individual Differences hypothesis has been investigated on a small set of demographic variables (gender, race, education, age) and two constructs (ease of

movement, applicant's abilities). Thus, a more detailed analysis of individual differences as a potential source of self-selection – which is part of this chapter – deems to be necessary.⁴⁸

Most studies in this field of research build on the RJP or pre-screening hypotheses and investigate if social ties yield employees who perform better or realise higher post-hire outcomes. Performance as an outcome of job channels is investigated by Pesek and McGee (1988), Kirnan et al. (1989), and Williams et al. (1993).

Pesek and McGee (1988) investigated the effectiveness of informal recruitment channels from an organisation's point of view. Based on data from three U.S. hospitals in Western Pennsylvania, they analysed quit rates and performance of new-hires (from maintenance mechanics to medical staff) recruited via different channels (e.g. education institutes, direct applications, or employee referrals). Although providing solely bivariate results, the authors found statistically significant differences in quit rates and performance. Those hired via employee referrals were the best performers and less likely to quit.

Measuring performance differentials in a sample of life insurance agents, Kirnan et al. (1989) detected that informal recruiting sources yielded applicants who were better performers (measured as annual sales) than formal sources. The pool of applicants found via informal means was better in comparison to applications received through other channels. Yet, after the hiring decision, only little performance differences could be identified.

Investigating a sample of 476 applicants for nursing positions of which 234 were finally hired, Williams et al. (1993) found out that referrals and rehires attracted applicants with greater working experience and pre-hire knowledge. However, these nurses did not perform better than their colleagues hired by other sources and had higher turnover rates after one year. Hence, it is concluded that Individual Differences between applicants were more important than conveying realistic information concerning jobs.

As this summary indicates, early research mainly finds positive effects of informal search channels on performance, at least in the applicants' pool. In contrast to this, later studies find mixed results regarding wages and provide different explanations for their findings.

⁴⁸ Breaugh (1981) and Taylor and Schmidt (1983) did not find evidence on source differences. Thomsen and Wittich (2010) provided recent evidence on the determinants of job search via formal and informal means. The results indicate that job seekers who found their jobs via different channels differ in numerous demographic and job-specific characteristics (e.g. age, gender, job autonomy). The literature investigating determinants of source choice is described in detail in chapter 3.2. In addition, chapter 3.4 provides new evidence on determinants of finding a job via three formal means and social ties.

Boxman et al. (1991) analysed a set of 1,359 Dutch managers and found a positive relationship between social capital and earnings. They detected that human capital and social capital can serve as substitutes and that social capital is helpful at any level of human capital.

Based on 209 observations of male employees of a manufacturing firm in Egypt, Antoninis (2006) found that social ties are not per se helpful in finding a better paid jobs. Whereas, a referral by an individual with a valid estimate of a job seeker's skills was associated with higher earnings, referrals from friends or family members were negatively related to wages.

Bentollila et al. (2010) found a negative relationship between finding a job via social ties and wages with both US and European data. The authors assumed that job seekers who find a job via social ties do not work in the jobs in which they have a competitive advantage but in jobs their ties would like them to work. They interpreted social ties as a source of social pressure which makes job seekers accept jobs they would not accept without.

Pellizzari (2010) provided cross-country evidence on the wage effect of finding a job via informal means for 15 countries based on the European Community Household Panel. Both wage premiums and wage penalties were equally observable across countries which can be explained by differences in the effectiveness of formal search channels. For Germany, the author detected a wage penalty of -0.086 without job characteristics and -0.043 with job characteristics (OLS). In an additional fixed-effects regression, this wage penalty shrank and became statistically insignificant.

The study which is most closely related to the investigation in this chapter has been conducted by Delattre and Sabatier (2007) who analysed the wage effects of finding a job via one's social network or without in France. The authors applied switching regression models in order to account for endogeneity in finding a job via formal/informal means and the wage determination. They detected a meaningful selection effect for finding a job via social ties and after correcting for this selection bias the relationship between social networks and wages became negative. The most recent study is provided by Plug et al. (2015), who analysed the relationship between parental networks and children's labour market outcomes. The authors did not find significant wage effect. Parental networks, though, had a weak impact on occupational choice of children entering the labour market.

This review of the related literature shows that results are largely heterogeneous in terms of monetary outcomes. While early studies (mainly for the US labour market) report a positive correlation between finding a job via social ties and performance, other studies were not able

to show that this is compensated by firms. Even more, recent studies in European countries have revealed that the wage effect diminished or even turned negative. Korpi (2001) explained this by stronger labour market institutions compared to the U.S. This is in contrast to theoretical considerations of chapter 2.5 that social capital might overcome information asymmetries and that matching bonuses are shared between employer and employee. In the introduction it has been argued that the German labour market differs in many aspects from the US labour market and is commonly regarded as rather inert (Kemmerling, Bruttel, 2006). Furthermore, it appears questionable that employers are able or willing to differentiate between employees hired through different channels, particularly in Germany where wage postings and collective bargaining are important factors of wage determination (Brenzel et al., 2014). Thus, positive wage effects of finding a job via social ties are, according to the existing empirical evidence, rather unlikely and it is hypothesised:

H1 (Wage): Employees who found their jobs via social ties do not earn higher wages or even lower wages compared to those who found their job via formal means.

4.2.2 Non-monetary Post-hire Outcomes of Social Capital

Few studies investigate the relationship between recruitment channels and *non-monetary* outcomes. As an example of early evidence, Latham and Leddy (1987) analysed a sample of 68 car dealers recruited via newspaper adverts, unsolicited applications, and social ties. They found that social ties yielded employees which showed higher job involvement, organisational commitment, and job satisfaction compared to those recruited via newspaper adverts. Moser (2005) analysed a set of 767 new employees of a large German electronic company to investigate the relationship between formal/informal channels and non-pecuniary outcomes (job satisfaction, organisational commitment). Special emphasis was laid upon the role of unmet expectations (as the inverse of realistic job previews) as a mediator between social ties and post-hire outcomes. The results indicated that finding a job via informal means was negatively related to the number of unmet expectations (measured as 48 dummies of pre-hire expectations) and that unmet expectations mediated the relationship between informal search and non-pecuniary outcomes. Franzen and Hangartner (2006) showed that finding a job via social ties was positively related to non-monetary outcomes. Based on a sample of 8,000 Swiss university graduates, the authors provided evidence that social networks help finding a job related to the job seeker's educational degree and better career chances.

Using a sample of 1,100 German low-skilled or long-term unemployed who re-entered the labour market, Krug and Rebien (2012) found no evidence for a wage premium of finding a

job via informal means and only little evidence for a positive relation between social ties and non-monetary outcomes (job and task satisfaction, employment stability) utilising a propensity score matching approach.

To capture potential non-monetary benefits, the correlation between source of information and job satisfaction is investigated. If the use of informal means improves the matching quality employees are likely to be more satisfied with working conditions. Furthermore, an adequate preview of the contemplated job offer protects applicants against major disappointments yielding to an ex-post higher job satisfaction. Thus, it can be assumed that:

H2 (Job satisfaction): Employees who found their jobs via social ties report higher job satisfaction compared to those who found their job via formal means (wages kept constant).

Whereas job satisfaction describes the feelings or attitudes an employee has towards his/her job, turnover describes the actual decision to leave the current job (voluntary turnover) or the fact of being dismissed by the employer (involuntary turnover). Mobley et al. (1979) categorised determinants of turnover as individual demographics, job satisfaction, organisational and work environment factors, job content, and external environment factors. Differences in turnover can be explained by two theoretical approaches described in chapter 2 – matching theory and realistic job previews. It has been argued that finding a job via social ties is likely to provide more valuable information on job characteristics. Such information benefits are likely to increase P-O and P-J fit, which results in better performance and higher job satisfaction. Employees who are performing better than their co-workers are less likely to be fired, even in economic downturns. Furthermore, more satisfied employees are less likely to quit the current job voluntarily.

The RJP hypothesis postulates that individuals, who found a job via social ties, dispose of more realistic expectations towards the job. Moreover, Porter and Steers (1973) found that unmet expectations, which is the perceived mismatch between expectations and work reality, are a potential source of dissatisfaction and, thus, turnover. Finding a job via social ties is likely to reduce the degree of unmet expectations and, therefore, turnover probability of new hires. Williams et al. (1993) investigated whether job search channels affected the turnover probability (after one year) of nurses. Their findings indicated that turnover was positively related to employee referrals. However, the authors argued that due to few control variables, a large number of variables that are likely to affect turnover have been omitted.

In this chapter, turnover is used as an additional measure of source effectiveness. In contrast to starting wages (which might not reflect individual performance since performance is not observed) and job satisfaction (which might be biased upwards shortly after a job change due to the "honeymoon effect", see Boswell et al., 2005), turnover might be a more reliable measure for matching quality. The better the matching quality, the less likely an employee is dismissed or quits the job voluntarily. As it is assumed that finding a job via social ties is likely to result in a better match, the following hypothesis is formulated:

H3 (turnover): The turnover ratio of employees who found their jobs via social ties is lower compared to those who found their job via formal means.

In the next chapter, these three hypotheses are investigated empirically to find out if social networks serve as beneficial in the job search process. Furthermore, the analysis is able to show which of the two alternative theories – namely Individual Differences and Realistic Job Previews – is able to explain recruitment source differences.

4.3 Methodology

For reasons of comparison, the dataset in this chapter is identical to the dataset used in the previous chapter. As described in chapter 3.3.1, three major formal channels of information (newspaper or internet adverts and public employment offices) and one informal channel (finding a job via friends/relatives) are taken into account (see chapter 3.3.1 for a detailed description of the dataset and the four search channels). The dataset contains 3,825 observations of job changes. Three measures of effectiveness of job search means – wages, job satisfaction, and turnover – are investigated and described below.

Wage

To measure wage income, the generated variable LABGROSS⁴⁹ provided in the SOEP is used which contains all types of gross labour income per month. It is assumed that the determination of wage income follows the logic of the Mincerian earnings regression where *logarithmised wage* acts as the dependent variable. The whole model can be described by

$$\text{Log}(W_{it}) = \alpha + \text{SOURCE}'_{it} \cdot \beta + \text{Dem}'_{it} \cdot \gamma + \text{Lab}'_{it} \cdot \delta + \text{Job}'_{it} \cdot \epsilon + \text{Reg}'_{it} \cdot \zeta + \theta \quad (4.1)$$

where α stands for the intercept. SOURCE stands for a set of recruitment channel dummies (newspaper adverts, public employment agencies, internet adverts) which take the value "1" if the job was found through that particular source and "0" if not. If all dummies simultaneously

⁴⁹ See SOEP Group (2015) for a description of generated variables provided in the SOEP data.

take the value “0”, the job seeker has been successful via friends/relatives. *Dem* is a vector of demographic control variables, *Lab* comprises variables which describe search and labour market experience. *Job* stands for a set of job- and firm-specific indicators (firm size, branch, occupation). Regional differences like an East/West dummy and regional unemployment rate and GDP are part of the *Reg* vector. θ is the error term.

The regression model above describes the relationship between the recruitment channel the job was found through and the current monthly wage. Since unobservable factors, such as motivation or ability, are likely to affect wages (and also search effort), the difference between the current and the previous salary is of interest. Wage differentials between individuals who earned less in their previous jobs (e.g. due to unobservable individual characteristics) are likely to earn less in their current jobs as well. If less able or less motivated individuals are more likely to find their jobs through a certain channel, wage differentials between channels are likely to be overestimated. In order to control for the possibility that job seekers who used a specific search channel systematically gained higher wages in their former job, another regression approach is applied. In the following model

$$\Delta W_{it} = W_{it} - W_{i,t-1} = \alpha + SOURCE'_{it} \cdot \beta + Dem'_{it} \cdot \gamma + Lab'_{it} \cdot \delta + Job'_{it} \cdot \epsilon + Reg'_{it} \cdot \zeta + \theta \quad (4.2)$$

ΔW represents wage income changes computed as the difference between the current wage after the job change and the wage paid in the former job. All independent variables on the right side remain the same as in Equation (3).

Job Satisfaction

Job satisfaction (JS) is measured by a single question (“How satisfied are you are with your job?”) on a 11-point Likert scale ranging from 0 (lowest satisfaction) to 10 (highest satisfaction).⁵⁰ Hamermesh (1978: 54) defined job satisfaction as an “individual’s response to a specific question designed to elicit his feelings about the job as a whole”. This definition implies that individuals are able to express a general feeling towards their current job which is affected by various aspects of the job.⁵¹ The estimated model can be describe by

$$JS_{it} = \alpha + SOURCE'_{it} \cdot \beta + Dem'_{it} \cdot \gamma + Lab'_{it} \cdot \delta + Job'_{it} \cdot \epsilon + Reg'_{it} \cdot \zeta + Sat'_{it} \cdot \eta + \theta \quad (4.3)$$

⁵⁰ Albeit single-item measures in contrast to multi-item constructs show weaker validity and reliability, Wanous et al. (1997) as well as Dolbier et al. (2005) supported the applicability of a single single-item measures of job satisfaction. The authors, furthermore, stressed the advantages of single-time measures such as easier understanding of participants and a more convenient interpretation of score changes.

⁵¹ Locke (1976) mentioned the job dimensions work, pay, promotions, recognition, benefits, working conditions, supervision, co-workers, company and management as determinants of overall job satisfaction.

which is largely similar to equation (3). Here, coefficient matrix β contains the effect of the source the applicant was recruited through on the employee's wage. *Sat* contains additional variables that are likely to affect job satisfaction, such as health status (five categories), perceived job insecurity (three categories), and wage income.

Like wages, job satisfaction is likely to be determined by unobserved job characteristics and by external effects from the private domain which spill-over on job satisfaction (Judge, Watanabe, 1994; Rode, 2004). In addition, in contrast to wages, job satisfaction resembles a subjective measure of job quality. Most likely, different individuals evaluate identical jobs differently because each individual associates a certain standard with a certain value on the Likert scale. If job seekers who find a job through a certain channel systematically rate jobs lower than other employees, this might affect the results of the study. Hence, estimating the relationship between recruitment channels and the difference in job satisfaction is likely to reduce such bias because ratings are more likely to be consistent within individuals than between individuals. Therefore, the satisfaction differential ΔJS between the current and the previous job is estimated by

$$\Delta JS_{it} = \alpha + SOURCE'_{it} \cdot \beta + Dem'_{it} \cdot \gamma + Lab'_{it} \cdot \delta + Job'_{it} \cdot \epsilon + Reg'_{it} \cdot \zeta + Sat'_{it} \cdot \eta + \theta \quad (4.4)$$

where there independent variables are the same as in equation (5).

Since both wages and job satisfaction are outcome variables of the job domain and are mainly influenced by similar factors, error terms of the two separate regressions might be correlated. In this case, a seemingly unrelated regression approach (Zellner, 1962; Zellner, Huang, 1962; Zellner, 1963) might yield more robust results. In order to estimate the model, both regressions are calculated simultaneously and both regressions contain the same variables described in the job satisfaction regression.

Turnover

Turnover (TO), which comprises voluntary job leave and dismissals, is measured on a yearly base for the five following years after a job change. A dummy variable is created which takes the value "1" if the individual changed its job again or became unemployed in the respective year (or in the previous year(s)). Due to the unbalanced nature of the SOEP, each year more observations are getting lost by increasing the time horizon of measurement. As turnover is measured as a simple dummy variable, five binomial logit models are estimated. The model estimates the probability that an individual i has changed the job or has become unemployed (summarised as turnover) in a particular year x after finding the job. The regression contains

the same variables as the job satisfaction regression above. In an robustness check, job satisfaction and wages are included in this regression.

$$Pr(TO_{i,t+x} = k) = \alpha + SOURCE_{it} \cdot \beta + Dem'_{it} \cdot \gamma + Lab'_{it} \cdot \delta + Job'_{it} \cdot \epsilon + Reg'_{it} \cdot \zeta + Sat'_{it} \cdot \eta + \theta, \quad (x \in 1,2,3,4,5) \quad (4.5)$$

$$\text{With } k = \begin{cases} 0 & \text{no (job change and not unemployed)} \\ 1 & \text{yes (job change or unemployed)} \end{cases}$$

This study provides different regression models to detect the causal relation between the successful recruitment source and labour market outcomes as well as factors that determine the use of particular recruitment sources. First standard pooled OLS models are applied to calculate cross-sectional effects. An additional median regression, which is more robust regarding outliers, is applied to evaluate relative wage increases. To cover the ordinal nature of the job satisfaction variable, ordered logit or probit models are suggested by the literature. However, Ferrer-i-Carbonell and Frijters (2004) argued that the assumption of cardinality or ordinality of general satisfaction does not lead to meaningful differences of the results. Therefore, and as OLS results are more convenient to be interpreted, linear regression models are used in this study. Additionally, Ferrer-i-Carbonell and Frijters (2004) stated that controlling for time-invariant unobserved factors affects the results most. By implementing fixed- and random effects panel estimators the longitudinal character of the data is exploited.

4.4 Empirical Evidence

This chapter presents empirical evidence on the post-hire outcomes of job search via social ties. First, descriptive statistics on the three measures of labour market success are presented.⁵² Second, multivariate results are shown.

4.4.1 Descriptive Statistics

Table 13 contains descriptive results on wages and job satisfaction as a result of finding a job via one of the four channels. Regarding gross income, the table shows that finding a job via social ties is linked to lower wages compared to finding a job via newspaper or internet adverts. The difference is meaningful in size (239 respectively 608 euros per month) as well as highly significant. However, those who found their job with the aid of employment agencies earn significantly lower wages. In contrast to this, the results regarding job

⁵² Descriptive findings on the independent variables can be found in chapter 3.4.1.

satisfaction show that individuals who were successful via social ties are more satisfied with their jobs, statistically significant for employment offices and internet adverts. Although empirical studies do not deliver clear evidence on the correlation between pay and job satisfaction (see Judge et al., 2010 for a meta-analysis), it is quite astonishing that higher wages seem to coincide with lower degrees of job satisfaction. This could be an indication that seekers face a trade-off between wages and job satisfaction and that individuals who search for a job via social ties lay more emphasis on satisfaction than on wages.

Table 13: Descriptive results of job satisfaction, income, and wages of different recruitment channels

		Friends/relatives	Newspaper	Empl. office	Internet
Gross income	AM	1,982.95	2,219.65***	1,808.44*	2,590.52***
	Std. Dev.	(1,298.83)	(1,379.35)	(924.14)	(1,358.86)
Job satisfaction	AM	7.300	7.185	6.923**	7.126
	Std. Dev.	(1.983)	(2.059)	(1.985)	(2.171)
Change gross income (€)	AM	128.40	116.24	111.28	274.56**
	Std. Dev.	(859.670)	(749.405)	(711.753)	(900.800)
% change in gross income	AM	0.417	0.248*	0.478	0.483
	Std. Dev.	(2.119)	(0.909)	(1.973)	(1.416)
	Med.	0.039	0.042	0.020	0.065
Change job satisfaction	AM	0.711	0.676	0.152***	0.874
	Std. Dev.	(2.670)	(2.694)	(2.637)	(2.985)
Observations		2,057	1,001	323	437

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives. Income and wage are in prices of 2010.

The results on wage and job satisfaction changes compared to the former job are less significant than the previous findings. The increase in monthly wages is higher for job seekers who were successful via internet adverts. The increase in job satisfaction is much lower for those who found a job via employment agencies. All other findings are insignificant.

Table 14: Turnover ratios by recruitment source

	Friends/relatives	Newspaper	Empl. office	Internet
Turnover after one year	0.336	0.329	0.353	0.350
	(0.473)	(0.470)	(0.479)	(0.478)
Observations	1,914	952	303	380
Turnover after two years	0.495	0.447*	0.542	0.544
	(0.500)	(0.497)	(0.499)	(0.499)
Observations	1,799	902	286	327
Turnover after three years	0.536	0.482**	0.579	0.623**
	(0.499)	(0.500)	(0.495)	(0.485)
Observations	1,679	868		297
Turnover after four years	0.598	0.532**	0.615	0.691**
	(0.490)	(0.499)	(0.488)	(0.463)
Observations	1,572	827	262	285
Turnover after five years	0.652	0.580***	0.679	0.774***
	(0.476)	(0.494)	(0.468)	(0.419)
Observations	1,484	797	246	261

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives.

Additionally, Table 14 contains information about turnover after one to five years after the job was found. The findings reveal that turnover ratios are similar between individuals who found their job via social ties and via employment agencies. Compared to the reference group, finding a job via newspaper adverts is related to lower turnover ratios in all years apart from the first year after the job change. Those who found their jobs on the internet are more likely to change jobs in all years after the second year.

4.4.2 Multivariate Analyses

4.4.2.1 Wage Income

Albeit descriptive evidence above indicates differences in post-hire outcomes, those findings might be explained by the considerable differences in demographics (age, gender, education) or occupational choices of job seekers who found their jobs via different channels (see chapter 3.4.1). Table 15 contains three models of pooled cross-sectional OLS regressions on monthly wage income.⁵³ Model (1) provides a first impression of how the choice of recruitment channels affects wages. Results indicate that finding a job via newspaper or internet adverts yields a wage premium whereas job search through the public employment office does not affect wages. However, these coefficients should not be interpreted further because other factors that determine wages are ignored. Therefore, model (2) includes demographic characteristics such as years of education, gender, and age and, consequently, the source-related coefficients become smaller. Model (3) comprises additional branch- and job-specific as well as regional control variables. These controls reflect differences in jobs found via different search channels and regional factors, such as the unemployment rate. The results show that no significant wage differences occur between social ties, newspaper adverts, and employment offices. A wage premium, though, seems to be related to finding a job via internet adverts. Finding a job via internet adverts increases monthly wages by 5.34 percent.⁵⁴ Both demographic and job-specific variables explain about 30 percent of the variance in wages resulting in a model fit of 66.6 percent in model (3).

Panel estimators can be applied to consider the time structure of the data (Model (4) and Model (5)). A fixed-effects estimator is applied to exclude time-invariant unobserved

⁵³ As the dependent variable is logarithmised, coefficients have to be transformed by the exponential function to get the exact effects respectively differences. The table contains the estimated coefficients, whereas transformed figures are given in the text.

⁵⁴ For comparisons: One additional working hour per week increases monthly wages by 3.46 percent.

individual heterogeneity. Performing a Hausman test⁵⁵ indicates significant differences between fixed and random-effects (GLS) estimators. Hence, fixed-effects models are preferred despite its lower efficiency. However, results of the random-effects estimators are displayed in Table 15 for the sake of completeness (Model (5)). Whereas the fixed-effects model yields no statistically significant source coefficient, the GLS model mainly replicates the previous findings.

However, panel estimators have to be interpreted carefully since fixed-effects estimators presume an adequate degree of variation. The coefficients are influenced by those employees who change their job at least twice and make use of different information channels in the observed time span. Multiple job changers might differ systematically from those who take just one job in the 13 year period. As the internet has become a frequently utilized search channel just recently, more changes can be observed for newspaper adverts. Hence, the insignificant internet coefficient might be caused by too few data for fixed-effects regressions.

In order to control for wage persistence, Table 16 contains empirical evidence on the impact of recruitment sources on wage increases (or decreases) compared to the previous job. Thus, regression results can be interpreted as a positive or negative wage increase in percent compared to the increase of the reference group (in prices of 2010). In the first three models, the relative wage increase (in percent) serves as the dependent variable. Compared to the base category, finding a job via newspaper adverts is associated with a 0.14 lower wage increase. Model (4) uses a median regression which is more robust with respect to outliers, which are quite frequent in the case of percentage wage increases (see descriptive evidence). In this regression, all job channel coefficients are statistically insignificant. This finding is robust if other quantiles than the median (e.g. .25 and .75) are defined. The last model (5) focusses on absolute wage changes (in euros) relative to the base category. Like in the previous regression, job channels are not related to wage differentials.

All in all, these findings imply that individuals who found a new job via newspaper adverts experience lower wage increases compared to the reference category. However, this difference disappears when the absolute increase is investigated. This could be explained by the fact that those who found a job via newspaper adverts already earned higher wages before the job change and that, therefore, relative changes are smaller. The total wage differential, however, is not affected by this.

⁵⁵ $\chi^2=124.86^{***}$, H_0 (difference in coefficients is not systematic) has to be rejected.

Table 15: Mincer wage regression

DV: Monthly Income (log)	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	OLS Base		OLS Demographics		OLS Full Model		Fixed Effects		Random Effects	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment Source (ref. social ties)</u>										
Newspaper (1=yes)	0.110***	(0.033)	0.110***	(0.027)	0.020	(0.019)	0.060	(0.031)	0.012	(0.019)
Employment office (1=yes)	0.026	(0.040)	0.069	(0.038)	0.014	(0.027)	0.027	(0.049)	0.013	(0.027)
Internet (1=yes)	0.425***	(0.038)	0.239***	(0.034)	0.052*	(0.026)	0.062	(0.041)	0.046*	(0.023)
Gender (1=female)			-0.628***	(0.025)	-0.155***	(0.023)				
Years of education			0.081***	(0.005)	0.035***	(0.004)	0.082*	(0.041)	0.040***	(0.004)
Age			0.061***	(0.009)	0.044***	(0.007)	0.048	(0.030)	0.047***	(0.007)
Age squared/100			-0.077***	(0.012)	-0.047***	(0.009)	-0.058	(0.036)	-0.051***	(0.008)
Married (1=yes)			-0.068*	(0.027)	-0.002	(0.018)	0.078	(0.057)	0.012	(0.019)
Child in HH (1=yes)			-0.156***	(0.033)	-0.028	(0.024)	0.019	(0.046)	-0.037	(0.022)
Immigrant (1=yes)			-0.056	(0.045)	0.005	(0.030)				
Actively sought for new job (1=yes)					0.004	(0.018)	-0.038	(0.028)	0.005	(0.017)
Unemployed before new job (1=yes)					-0.042*	(0.019)	-0.051	(0.031)	-0.033	(0.018)
Total years of unemployment					-0.033***	(0.007)	0.006	(0.037)	-0.037***	(0.007)
<u>Branch (reference: trade)</u>										
Industry (1=yes)					0.150***	(0.025)	0.063	(0.045)	0.153***	(0.024)
Manufacturing (1=yes)					0.173***	(0.033)	0.053	(0.066)	0.184***	(0.032)
Finance (1=yes)					0.100***	(0.027)	0.029	(0.043)	0.077**	(0.026)
Services (1=yes)					0.083***	(0.025)	0.050	(0.059)	0.057*	(0.026)
<u>Firm size (reference: less than 20)</u>										
20 to 199 (1=yes)					0.081***	(0.018)	0.067*	(0.030)	0.087***	(0.018)
200 to 1999 (1=yes)					0.177***	(0.023)	0.135***	(0.041)	0.184***	(0.022)
more than 2000 (1=yes)					0.143***	(0.027)	0.173***	(0.042)	0.171***	(0.026)
Limited contract (1=yes)					-0.073***	(0.022)	-0.091*	(0.036)	-0.088***	(0.022)
Working hours per week					0.034***	(0.001)	0.024***	(0.002)	0.035***	(0.001)
Public sector (1=yes)					0.055*	(0.026)	-0.037	(0.042)	0.046	(0.025)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>										
Professionals (1=yes)					0.026	(0.071)	0.026	(0.053)	0.003	(0.045)
Technicians & associate prof. (1=yes)					-0.041	(0.067)	-0.021	(0.052)	-0.087*	(0.043)
Clerks (1=yes)					-0.115	(0.070)	-0.050	(0.062)	-0.169***	(0.048)
Service workers (1=yes)					-0.270***	(0.070)	-0.101	(0.069)	-0.303***	(0.050)
Craft and related trade workers (1=yes)					-0.161*	(0.072)	-0.049	(0.068)	-0.138**	(0.048)
Plant and machine operators (1=yes)					-0.308***	(0.074)	0.040	(0.085)	-0.236***	(0.051)
Elementary occupations (1=yes)					-0.383***	(0.074)	-0.125	(0.092)	-0.356***	(0.055)
East Germany (1=yes)					-0.058	(0.042)				
Regional unemployment rate (in %)					-0.019***	(0.004)	0.003	(0.012)	-0.024***	(0.002)
Year dummies		Yes		yes		yes		yes		yes
Constant	7.478***	(0.046)	5.683***	(0.175)	5.171***	(0.165)	4.621***	(0.783)	5.013***	(0.149)
(Adjusted) R ²	overall	0.051		0.327		0.666		0.554		0.658
	within							0.299		0.268
	between							0.572		0.6848

Notes: Estimations based on 3,818 observations. Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 16: Wage difference regressions

DV: Difference in Monthly Income	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	OLS Base		OLS Demographics		OLS Full Model		Median Regression		Absolute Increase	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment Source (ref. social ties)</u>										
Newspaper (1=yes)	-0.150**	(0.051)	-0.160**	(0.053)	-0.140*	(0.057)	0.000	(0.013)	-41.31	(30.65)
Employment office (1=yes)	0.064	(0.118)	0.044	(0.115)	-0.016	(0.123)	-0.007	(0.019)	-46.31	(42.94)
Internet (1=yes)	0.014	(0.090)	-0.026	(0.099)	-0.028	(0.095)	0.020	(0.017)	57.69	(49.14)
Gender (1=female)			0.168**	(0.059)	0.294***	(0.073)	0.070***	(0.013)	186.13**	(34.93)
Years of education			0.037	(0.021)	0.039*	(0.016)	0.000	(0.003)	8.96	(7.41)
Age			-0.075***	(0.020)	-0.084***	(0.021)	-0.018***	(0.004)	-49.58***	(9.90)
Age squared/100			0.086***	(0.025)	0.096***	(0.027)	0.019***	(0.005)	5.27***	(1.30)
Married (1=yes)			-0.063	(0.051)	-0.018	(0.056)	-0.004	(0.012)	-3.86	(32.19)
Child in HH (1=yes)			0.193*	(0.089)	0.222*	(0.093)	0.041**	(0.014)	122.51***	(35.22)
Immigrant (1=yes)			0.190	(0.201)	0.173	(0.205)	0.014	(0.018)	6.63	(48.39)
Actively sought for new job (1=yes)					-0.101	(0.074)	-0.016	(0.011)	-13.38	(29.77)
Unemployed before new job (1=yes)					0.152*	(0.066)	-0.026*	(0.013)	-42.87	(31.52)
Total years of unemployment					0.058*	(0.026)	0.007*	(0.003)	20.62**	(6.98)
<u>Branch (reference: trade)</u>										
Industry (1=yes)					0.126	(0.093)	0.030	(0.016)	121.02***	(38.07)
Manufacturing (1=yes)					-0.073	(0.084)	0.010	(0.024)	48.85	(60.10)
Finance (1=yes)					-0.075	(0.068)	-0.001	(0.017)	37.29	(44.04)
Services (1=yes)					0.009	(0.072)	0.011	(0.016)	57.19	(36.89)
<u>Firm size (reference: less than 20)</u>										
20 to 199 (1=yes)					-0.045	(0.065)	0.024	(0.012)	41.24	(32.54)
200 to 1999 (1=yes)					0.018	(0.127)	0.021	(0.016)	75.19	(44.03)
more than 2000 (1=yes)					-0.065	(0.085)	0.035*	(0.016)	83.38*	(41.29)
Limited contract (1=yes)					0.088	(0.102)	-0.006	(0.014)	-65.582	(35.82)
Working hours per week					0.009***	(0.002)	0.003***	(0.000)	10.34***	(1.39)
Public sector (1=yes)					0.055	(0.108)	0.020	(0.017)	44.369	(46.80)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>										
Professionals (1=yes)					0.060	(0.176)	-0.017	(0.027)	-31.79	(104.52)
Technicians & associate prof. (1=yes)					-0.054	(0.116)	-0.034	(0.026)	-153.91	(96.75)
Clerks (1=yes)					-0.135	(0.117)	-0.027	(0.028)	-182.43	(94.08)
Service workers (1=yes)					0.005	(0.136)	-0.006	(0.028)	-129.90	(95.80)
Craft and related trade workers (1=yes)					-0.055	(0.106)	-0.011	(0.028)	-128.75	(94.54)
Plant and machine operators (1=yes)					-0.017	(0.116)	-0.007	(0.030)	-170.85	(101.50)
Elementary occupations (1=yes)					-0.015	(0.142)	-0.045	(0.030)	-167.80	(99.03)
East Germany (1=yes)					-0.058	(0.198)	0.016	(0.025)	23.24	(61.87)
Regional unemployment rate (in %)					-0.002	(0.021)	-0.002	(0.003)	-11.97	(6.80)
Year dummies		yes		yes		yes		yes		yes
Constant	0.219***	(0.051)	1.208**	(0.389)	0.991*	(0.472)	0.233**	(0.087)	743.66**	(234.31)
(Adjusted) R ²	0.008		0.019		0.030		0.014		0.064	

Notes: Estimations based on 3,818 observations. Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

4.4.2.2 Job Satisfaction

Table 17 again comprises three cross-sectional regression models and two models with panel estimators to assess the influence of recruitment source on job satisfaction. The first model contains only recruitment channel and year dummies. Although only the employment office coefficient is statistically significant, all coefficients indicate a negative relationship between formal information sources and job satisfaction. Controlling for individual demographics in Model (2) does not affect the results much. Including further job-related variables and a measure of health and perceived job security provide a detailed picture on the factors that influence job satisfaction. Results of Model (3) reveal that all three formal sources are associated with lower job satisfaction compared to social contacts; statistically significant for employment agencies and newspaper adverts. The overall model fit of roughly 14 percent for the third model indicates that there are unobserved characteristics that influence job satisfaction but have not been measured in the dataset.⁵⁶

Exploiting the panel structure of the data by using fixed and random-effects estimators confirms these results in the broadest sense (see Model (4) and (5)). As the result of the Hausman specification test ($\chi^2=85.11^{***}$) indicates, the fixed-effects estimator is efficient and should be preferred compared to the random-effects estimator. However, the use of fixed-effects estimators must be criticised for the reasons stated above. The results show that all formal sources are negatively correlated with job satisfaction – in Model (4) statistically significant for employment agencies. Model (5) confirms the previous OLS regressions.

Table 18 comprises regression results for the job satisfaction differential before and after the job change. Coefficients measure the absolute change in job satisfaction after the job change relative to the reference category. Model (1), containing only recruitment source variables and year dummies, reveals a strong negative effect for the use of employment offices. The effect for newspaper adverts is also negative but insignificant, whereas internet recruitment is associated with a positive but insignificant differential of job satisfaction. If demographic variables are included (Model (2)), the newspaper coefficient becomes insignificant. In the fully specified model, newspaper adverts and employment offices are negatively related to changes in job satisfaction. This finding remains relatively stable in the median regression in Model (4), although the newspaper coefficient is statistically insignificant on the 5%-level.

⁵⁶ See Fietze (2011) for an analysis of the relationship between job satisfaction and personality variables based on the SOEP data.

Table 17: Job satisfaction regression

DV: Job Satisfaction	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	OLS Base		OLS Demographics		OLS Full		Fixed Effects		Random Effects	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment source (ref. social ties)</u>										
Newspaper (1=yes)	-0.138	(0.083)	-0.153	(0.083)	-0.202*	(0.084)	-0.116	(0.194)	-0.197*	(0.084)
Employment office (1=yes)	-0.388**	(0.123)	-0.377**	(0.123)	-0.273*	(0.125)	-0.785**	(0.297)	-0.294*	(0.126)
Internet (1=yes)	-0.141	(0.117)	-0.184	(0.119)	-0.197	(0.114)	-0.386	(0.273)	-0.219	(0.115)
Gender (1=female)			0.092	(0.071)	0.071	(0.091)				
Years of education			0.022	(0.013)	-0.040*	(0.018)	-0.176	(0.117)	-0.043*	(0.017)
Age			-0.010	(0.029)	-0.015	(0.028)	-0.138	(0.127)	-0.016	(0.028)
Age squared/100			-0.014	(0.037)	0.008	(0.035)	0.318*	(0.002)	0.009	(0.035)
Married (1=yes)			0.222**	(0.084)	0.189*	(0.081)	0.388	(0.302)	0.172*	(0.081)
Children in HH (1=yes)			0.110	(0.097)	0.097	(0.091)	-0.546*	(0.269)	0.074	(0.092)
Immigrant (1=yes)			-0.184	(0.132)	-0.122	(0.118)				
<u>Health (ref.: very good)</u>										
Good (1=yes)					-0.383***	(0.091)	-0.392*	(0.178)	-0.388***	(0.091)
satisfactory (1=yes)					-1.072***	(0.105)	-0.697**	(0.235)	-1.040***	(0.105)
Poor (1=yes)					-1.633***	(0.165)	-1.876***	(0.344)	-1.653***	(0.164)
Bad (1=yes)					-2.194***	(0.485)	-5.443***	(1.016)	-2.284***	(0.495)
Actively sought for new job (1=yes)					-0.031	(0.075)	0.152	(0.153)	-0.014	(0.075)
Unemployed before new job (1=yes)					0.029	(0.086)	0.092	(0.166)	0.024	(0.086)
Total years of unemployment					-0.008	(0.025)	0.033	(0.189)	-0.013	(0.025)
Gross Income (in 1,000 €)					0.086*	(0.041)	0.130	(0.116)	0.091*	(0.038)
Limited contract (1=yes)					0.029	(0.094)	-0.144	(0.197)	0.007	(0.093)
Working hours per week					-0.004	(0.004)	-0.016	(0.009)	-0.006	(0.004)
Public sector (1=yes)					0.331**	(0.113)	0.276	(0.240)	0.305**	(0.113)
<u>Perceived job security (ref.: not concerned at all)</u>										
Very concerned (1=yes)					-1.106***	(0.111)	-1.080***	(0.236)	-1.101***	(0.111)
Somewhat concerned (1=yes)					-0.454***	(0.068)	-0.319*	(0.141)	-0.456***	(0.068)
<u>Branch (ref.: trade)</u>										
Industry (1=yes)					0.248*	(0.104)	0.447	(0.277)	0.223*	(0.105)
Manufacturing (1=yes)					0.427**	(0.153)	0.855*	(0.364)	0.415**	(0.152)
Finance (1=yes)					0.055	(0.114)	0.093	(0.274)	0.047	(0.113)
Services (1=yes)					0.211	(0.115)	0.202	(0.332)	0.227*	(0.114)
<u>Firm size (ref.: less than 20)</u>										
20 to 199 (1=yes)					0.067	(0.080)	0.107	(0.172)	0.076	(0.081)
200 to 1999 (1=yes)					0.182	(0.104)	0.196	(0.225)	0.177	(0.104)
more than 2000 (1=yes)					0.074	(0.109)	-0.040	(0.243)	0.073	(0.108)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>										
Professionals (1=yes)					-0.260	(0.159)	0.232	(0.326)	-0.204	(0.157)
Technicians & associate prof. (1=yes)					-0.050	(0.157)	-0.254	(0.304)	-0.013	(0.152)
Clerks (1=yes)					-0.311	(0.185)	-0.221	(0.406)	-0.265	(0.180)
Service workers (1=yes)					-0.062	(0.178)	-0.185	(0.416)	-0.022	(0.173)
Craft and related trade workers (1=yes)					-0.371*	(0.178)	-0.584	(0.468)	-0.362*	(0.177)
Plant and machine operators (1=yes)					-0.228	(0.195)	-0.332	(0.516)	-0.247	(0.192)
Elementary occupations (1=yes)					-0.295	(0.196)	-0.478	(0.482)	-0.287	(0.195)
East Germany (1=yes)					-0.475**	(0.170)				
Regional unemployment rate (in %)					0.041*	(0.018)	-0.031	(0.048)	-0.002	(0.009)
Year dummies		yes		yes		yes		yes		Yes
Constant	7.467***	(0.127)	7.600***	(0.532)	8.849***	(0.621)	11.484***	(2.762)	9.294***	(0.592)
(Adjusted) R ²	overall	0.010		0.021		0.139		0.016		0.136
	within							0.151		0.089
	between							0.011		0.142

Notes: Estimations based on 3,818 observations. Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 18: Change in job satisfaction regressions

DV: Difference in Job Satisfaction	Model (1) OLS Base		Model (2) OLS Demographics		Model (3) OLS Full		Model (4) Median Regression	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment source (ref.: social ties)</u>								
Newspaper (1=yes)	-0.040	(0.099)	-0.064	(0.100)	-0.211*	(0.107)	-0.173	(0.110)
Employment office (1=yes)	-0.575***	(0.152)	-0.538***	(0.152)	-0.658***	(0.163)	-0.509**	(0.165)
Internet (1=yes)	0.163	(0.156)	0.141	(0.160)	-0.009	(0.164)	-0.111	(0.151)
<u>Gender (1=female)</u>								
Gender (1=female)			-0.082	(0.083)	0.116	(0.110)	0.123	(0.112)
<u>Years of education</u>								
Years of education			0.017	(0.016)	-0.011	(0.021)	-0.003	(0.023)
<u>Age</u>								
Age			0.055	(0.034)	0.060	(0.035)	0.014	(0.035)
<u>Age squared/100</u>								
Age squared/100			-0.001	(0.000)	-0.061	(0.044)	0.004	(0.044)
<u>Married (1=yes)</u>								
Married (1=yes)			0.121	(0.100)	0.117	(0.102)	0.025	(0.102)
<u>Children in HH (1=yes)</u>								
Children in HH (1=yes)			-0.042	(0.113)	-0.010	(0.115)	-0.132	(0.118)
<u>Immigrant (1=yes)</u>								
Immigrant (1=yes)			-0.274*	(0.138)	-0.202	(0.146)	-0.030	(0.154)
<u>Health (ref.: very good)</u>								
<u>Good (1=yes)</u>								
Good (1=yes)					0.197	(0.128)	0.114	(0.132)
<u>Satisfactory (1=yes)</u>								
Satisfactory (1=yes)					-0.024	(0.143)	-0.044	(0.146)
<u>Poor (1=yes)</u>								
Poor (1=yes)					-0.636**	(0.211)	-0.443*	(0.203)
<u>Bad (1=yes)</u>								
Bad (1=yes)					-1.290*	(0.519)	-0.571	(0.461)
<u>Actively sought for new job (1=yes)</u>								
Actively sought for new job (1=yes)					0.213*	(0.102)	0.169	(0.100)
<u>Unemployed before new job (1=yes)</u>								
Unemployed before new job (1=yes)					0.197	(0.116)	0.066	(0.111)
<u>Total years of unemployment</u>								
Total years of unemployment					-0.046	(0.039)	-0.035	(0.028)
<u>Gross Income (in 1,000 €)</u>								
Gross Income (in 1,000 €)					0.010	(0.053)	0.032	(0.052)
<u>Limited contract (1=yes)</u>								
Limited contract (1=yes)					-0.001	(0.125)	0.124	(0.126)
<u>Working hours per week</u>								
Working hours per week					0.009	(0.005)	0.004	(0.005)
<u>Public sector (1=yes)</u>								
Public sector (1=yes)					0.192	(0.152)	0.077	(0.151)
<u>Perceived job security (ref.: not concerned at all)</u>								
<u>Very concerned (1=yes)</u>								
Very concerned (1=yes)					-0.698***	(0.140)	-0.459***	(0.135)
<u>Somewhat concerned (1=yes)</u>								
Somewhat concerned (1=yes)					-0.094	(0.095)	-0.098	(0.096)
<u>Branch (ref.: trade)</u>								
<u>Industry (1=yes)</u>								
Industry (1=yes)					0.107	(0.136)	0.067	(0.137)
<u>Manufacturing (1=yes)</u>								
Manufacturing (1=yes)					0.350	(0.194)	0.455*	(0.205)
<u>Finance (1=yes)</u>								
Finance (1=yes)					-0.162	(0.150)	-0.083	(0.145)
<u>Services (1=yes)</u>								
Services (1=yes)					0.066	(0.148)	0.061	(0.139)
<u>Firm size (ref.: less than 20)</u>								
<u>20 to 199 (1=yes)</u>								
20 to 199 (1=yes)					0.117	(0.106)	0.008	(0.108)
<u>200 to 1999 (1=yes)</u>								
200 to 1999 (1=yes)					0.444***	(0.139)	0.574***	(0.136)
<u>more than 2000 (1=yes)</u>								
more than 2000 (1=yes)					0.167	(0.144)	0.299*	(0.144)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>								
<u>Professionals (1=yes)</u>								
Professionals (1=yes)					-0.022	(0.210)	-0.093	(0.234)
<u>Technicians & associate prof (1=yes)</u>								
Technicians & associate prof (1=yes)					0.189	(0.202)	0.147	(0.222)
<u>Clerks (1=yes)</u>								
Clerks (1=yes)					-0.089	(0.234)	-0.148	(0.244)
<u>Service workers (1=yes)</u>								
Service workers (1=yes)					0.001	(0.230)	-0.053	(0.244)
<u>Craft and related trade workers (1=yes)</u>								
Craft and related trade workers (1=yes)					-0.073	(0.229)	-0.106	(0.249)
<u>Plant and machine operators (1=yes)</u>								
Plant and machine operators (1=yes)					0.214	(0.247)	0.122	(0.264)
<u>Elementary occupations (1=yes)</u>								
Elementary occupations (1=yes)					-0.018	(0.254)	-0.161	(0.266)
<u>East Germany (1=yes)</u>								
East Germany (1=yes)					-0.100	(0.214)	0.137	(0.220)
<u>Regional unemployment rate (in %)</u>								
Regional unemployment rate (in %)					0.004	(0.023)	-0.003	(0.023)
<u>Year dummies</u>								
Year dummies		yes		Yes		yes		yes
Constant	0.923***	(0.175)	-0.391	(0.647)	-0.935	(0.781)	-0.503	(0.760)
(Adjusted) R ²	0.010		0.014		0.042		0.019	

Notes: Estimations based on 3,818 observations. Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Overall, employees who found their jobs through social ties report higher job satisfaction compared to formal recruitment channels, even if controlling for a variety of demographic and job-related factors. This finding can be interpreted as evidence for the relevance of Realistic Job Previews. These results are discussed more detailed in chapter 4.

Table 19 displays results of two seemingly unrelated regressions. In the first model, logarithmised monthly earnings and the absolute value in job satisfaction are used as the dependent variables. Changes in wage and job satisfaction serve as the dependent variable in in Model (2). Since seemingly unrelated regressions require the same variables in both related regressions, health and perceived job security are also used as control variables in the wage regressions. The findings show that coefficients do not systematically differ from previous regressions above. Furthermore, the residuals of both regressions are weakly correlated (lower than .05) so that the efficiency gains through this approach are small compared to the regressions above (Cameron, Trivedi, 2010).

Table 19: Seemingly unrelated regression results of post-hire outcomes

DV:	Model (1)				Model (2)			
	Ln(Wage)		Job Satisfaction		Δ Wage		Δ Job Satisfaction	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment source</u>								
Newspaper (1=yes)	0.017	(0.018)	-0.202*	(0.080)	-0.145	(0.075)	-0.211	(0.113)
Employment office (1=yes)	0.010	(0.028)	-0.279*	(0.119)	-0.011	(0.111)	-0.659***	(0.168)
Internet (1=yes)	0.052*	(0.025)	-0.191	(0.109)	-0.029	(0.102)	-0.009	(0.154)
<u>Gender (1=female)</u>								
Gender (1=female)	-0.152***	(0.018)	0.033	(0.079)	0.293***	(0.074)	0.112	(0.112)
<u>Years of education</u>								
Years of education	0.034***	(0.004)	-0.032*	(0.016)	0.036*	(0.015)	-0.010	(0.023)
<u>Age</u>								
Age	0.045***	(0.006)	-0.009	(0.025)	-0.081***	(0.023)	0.061	(0.035)
<u>Age squared/100</u>								
Age squared/100	-0.047***	(0.007)	0.001	(0.032)	0.094**	(0.030)	-0.062	(0.045)
<u>Married (1=yes)</u>								
Married (1=yes)	-0.003	(0.017)	0.192**	(0.074)	-0.013	(0.069)	0.118	(0.104)
<u>Children in HH (1=yes)</u>								
Children in HH (1=yes)	-0.029	(0.020)	0.101	(0.085)	0.227**	(0.079)	-0.010	(0.120)
<u>Immigrant (1=yes)</u>								
Immigrant (1=yes)	0.007	(0.026)	-0.122	(0.111)	0.171	(0.104)	-0.202	(0.157)
<u>Health (ref.: very good)</u>								
Good (1=yes)	0.017	(0.022)	-0.380***	(0.096)	-0.168	(0.089)	0.198	(0.135)
Satisfactory (1=yes)	-0.044	(0.024)	-1.076***	(0.106)	-0.216*	(0.099)	-0.025	(0.149)
Poor (1=yes)	-0.062	(0.034)	-1.636***	(0.147)	-0.315*	(0.137)	-0.636**	(0.207)
Bad (1=yes)	-0.153*	(0.077)	-2.206***	(0.333)	-0.280	(0.311)	-1.291**	(0.470)
<u>Actively sought for new job (1=yes)</u>								
Actively sought for new job (1=yes)	0.009	(0.017)	-0.034	(0.072)	-0.098	(0.067)	0.212*	(0.102)
<u>Unemployed before new job (1=yes)</u>								
Unemployed before new job (1=yes)	-0.035	(0.018)	0.021	(0.080)	0.165*	(0.075)	0.196	(0.113)
<u>Total years of unemployment</u>								
Total years of unemployment	-0.032***	(0.005)	-0.011	(0.020)	0.059**	(0.019)	-0.046	(0.028)
<u>Limited contract (1=yes)</u>								
Limited contract (1=yes)	-0.064**	(0.021)	0.007	(0.091)	0.090	(0.085)	-0.003	(0.128)
<u>Working hours per week</u>								
Working hours per week	0.034***	(0.001)	0.000	(0.003)	0.010***	(0.003)	0.009*	(0.004)
<u>Public sector (1=yes)</u>								
Public sector (1=yes)	0.055*	(0.025)	0.329**	(0.109)	0.051	(0.102)	0.192	(0.154)
<u>Perceived job security (ref.: not concerned at all)</u>								
Very concerned (1=yes)	-0.052*	(0.023)	-1.112***	(0.098)	-0.014	(0.091)	-0.699***	(0.138)
Somewhat concerned (1=yes)	-0.030	(0.016)	-0.458***	(0.069)	-0.049	(0.065)	-0.094	(0.097)
<u>Branch (reference: trade)</u>								
Industry (1=yes)	0.149***	(0.023)	0.274**	(0.099)	0.125	(0.092)	0.110	(0.139)
Manufacturing (1=yes)	0.171***	(0.034)	0.452**	(0.148)	-0.081	(0.138)	0.353	(0.209)
Finance (1=yes)	0.100***	(0.024)	0.081	(0.104)	-0.077	(0.097)	-0.159	(0.147)
Services (1=yes)	0.081***	(0.023)	0.221*	(0.100)	0.010	(0.094)	0.067	(0.142)
<u>Firm size (ref.: less than 20)</u>								
20 to 199 (1=yes)	0.081***	(0.018)	0.083	(0.078)	-0.043	(0.073)	0.119	(0.110)
200 to 1999 (1=yes)	0.173***	(0.023)	0.215*	(0.098)	0.011	(0.091)	0.448***	(0.138)
more than 2000 (1=yes)	0.139***	(0.024)	0.106	(0.103)	-0.068	(0.096)	0.170	(0.145)
<u>ISCO job class. (ref.: legislators, senior officials, managers)</u>								
Professionals (1=yes)	0.033	(0.039)	-0.267	(0.169)	0.061	(0.158)	-0.023	(0.239)
Technicians and associate prof. (1=yes)	-0.035	(0.037)	-0.087	(0.160)	-0.049	(0.149)	0.185	(0.225)
Clerks (1=yes)	-0.110***	(0.040)	-0.364*	(0.175)	-0.131	(0.163)	-0.095	(0.246)
Service workers (1=yes)	-0.264***	(0.040)	-0.125	(0.174)	0.013	(0.163)	-0.006	(0.246)
Craft and related trade workers (1=yes)	-0.149***	(0.041)	-0.436*	(0.178)	-0.049	(0.166)	-0.080	(0.251)
Plant and machine operators (1=yes)	-0.297***	(0.043)	-0.309	(0.188)	-0.011	(0.176)	0.205	(0.265)
Elementary occupations (1=yes)	-0.379***	(0.044)	-0.371*	(0.189)	-0.007	(0.177)	-0.027	(0.267)
<u>East Germany (1=yes)</u>								
East Germany (1=yes)	-0.063	(0.037)	-0.496**	(0.159)	-0.060	(0.149)	-0.102	(0.224)
<u>Regional unemployment rate (in %)</u>								
Regional unemployment rate (in %)	-0.019***	(0.004)	0.038*	(0.017)	-0.001	(0.016)	0.003	(0.024)
<u>Year dummies</u>								
Constant	5.167***	(0.131)	8.736***	(0.567)	1.114*	(0.530)	-0.948	(0.800)
<u>Correlation residuals</u>								
R ²	0.669		0.137		0.032		0.042	

Notes: Estimations based on 3,818 observations. Standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

4.4.2.3 Turnover

The first descriptive results prefigured that job search through the internet might be related to higher turnover rates, whereas newspaper adverts appear to be linked to lower turnover rates. However, it was not clear if this finding could be a result of demographic differences such as age and education. Therefore, cross-sectional regressions are performed to control for potential correlations between these variables. Table 20 contains multivariate results on the determinants of turnover. The dependent variable indicates whether the individual has changed the previously found job after the given period of time. Therefore, over time, the number of job changers increases because it is only of interest if the individual left the initially found job at time t , not if other jobs found later ($t+x$) were changed or not.

With respect to recruitment channels, the results show that no difference in turnover is found between social ties and employment agencies. The newspaper coefficient, though statistically insignificant on the 5%-level, is negative between two to five years after the job change. Finding a job on the internet is linked to a higher turnover probability which is significant four and five years after the change. Table 21 comprises marginal effects of the logarithmic regressions. The results show that finding a job via internet increases turnover probability after four (respectively five) years by 8 (10) percentage points. For comparison, 1,000 euros higher monthly income decreases turnover probability by 4 percentage points. Thus, the higher probability of turnover for those who found their job via internet adverts appears economically relevant.

Table 20: Turnover regressions

DV: Job change (1=yes)	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	After 1 year		After 2 years		After 3 years		After 4 years		After 5 years	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment source (ref.: social ties)</u>										
Newspaper (1=yes)	0.020	(0.091)	-0.132	(0.094)	-0.120	(0.099)	-0.157	(0.105)	-0.168	(0.113)
Employment office (1=yes)	-0.074	(0.132)	-0.061	(0.141)	0.008	(0.145)	-0.132	(0.157)	-0.095	(0.174)
Internet (1=yes)	0.118	(0.126)	0.264	(0.136)	0.285	(0.147)	0.338*	(0.160)	0.405*	(0.186)
<u>Gender</u>										
Gender (1=female)	-0.175	(0.094)	-0.146	(0.098)	-0.062	(0.104)	0.025	(0.111)	-0.090	(0.122)
<u>Years of education</u>										
Years of education	-0.014	(0.019)	-0.024	(0.019)	-0.011	(0.020)	-0.017	(0.022)	0.000	(0.024)
<u>Age</u>										
Age	0.006	(0.028)	-0.006	(0.030)	-0.024	(0.032)	-0.030	(0.035)	-0.019	(0.039)
Age squared/100	-0.007	(0.036)	0.014	(0.039)	0.027	(0.042)	0.034	(0.045)	0.016	(0.049)
<u>Married (1=yes)</u>										
Married (1=yes)	-0.178*	(0.084)	-0.188*	(0.087)	-0.113	(0.092)	-0.066	(0.098)	-0.039	(0.107)
<u>Children in HH (1=yes)</u>										
Children in HH (1=yes)	-0.121	(0.100)	-0.212*	(0.105)	-0.149	(0.117)	-0.293*	(0.136)	-0.239	(0.169)
<u>Immigrant (1=yes)</u>										
Immigrant (1=yes)	0.049	(0.126)	0.139	(0.137)	0.045	(0.144)	0.056	(0.159)	0.130	(0.175)
<u>Health (ref.: very good)</u>										
Good (1=yes)	-0.227*	(0.109)	-0.224*	(0.113)	-0.253*	(0.118)	-0.253*	(0.128)	-0.211	(0.141)
Satisfactory (1=yes)	-0.302*	(0.123)	-0.173	(0.127)	-0.121	(0.133)	-0.089	(0.144)	-0.103	(0.158)
Poor (1=yes)	-0.149	(0.173)	0.066	(0.179)	-0.118	(0.189)	-0.065	(0.204)	0.017	(0.221)
Bad (1=yes)	-0.585	(0.406)	-0.833*	(0.405)	-0.560	(0.429)	-0.939	(0.518)	-0.697	(0.579)
<u>Actively sought for new job (1=yes)</u>										
Actively sought for new job (1=yes)	0.069	(0.084)	0.088	(0.085)	0.028	(0.090)	0.059	(0.097)	0.119	(0.107)
<u>Unemployed before new job (1=yes)</u>										
Unemployed before new job (1=yes)	0.101	(0.091)	0.232*	(0.095)	0.191	(0.100)	0.225*	(0.109)	0.251*	(0.118)
<u>Total years of unemployment</u>										
Total years of unemployment	0.023	(0.020)	0.034	(0.023)	0.029	(0.028)	0.022	(0.031)	0.014	(0.034)
<u>Gross Income (in 1,000 €)</u>										
Gross Income (in 1,000 €)	-0.127*	(0.051)	-0.149**	(0.005)	-0.147**	(0.050)	-0.161**	(0.054)	-0.158**	(0.057)
<u>Limited contract (1=yes)</u>										
Limited contract (1=yes)	0.389***	(0.107)	0.326**	(0.117)	0.245	(0.133)	0.368*	(0.164)	0.283	(0.213)
<u>Working hours per week</u>										
Working hours per week	0.004	(0.004)	0.004	(0.004)	0.005	(0.004)	0.004	(0.004)	0.004	(0.005)
<u>Public sector (1=yes)</u>										
Public sector (1=yes)	-0.344**	(0.126)	-0.414**	(0.133)	-0.389**	(0.141)	-0.329*	(0.154)	-0.359*	(0.168)
<u>Perceived job security (ref.: not concerned at all)</u>										
Very concerned (1=yes)	0.421***	(0.111)	0.388***	(0.115)	0.369**	(0.124)	0.236	(0.132)	0.140	(0.146)
Somewhat concerned (1=yes)	0.186*	(0.084)	0.191*	(0.084)	0.173*	(0.088)	0.077	(0.094)	0.079	(0.101)
<u>Branch (ref.: trade)</u>										
Industry (1=yes)	-0.077	(0.112)	-0.148	(0.113)	-0.247*	(0.118)	-0.342**	(0.127)	-0.453***	(0.137)
Manufacturing (1=yes)	0.027	(0.166)	0.054	(0.162)	0.002	(0.178)	0.042	(0.196)	-0.076	(0.217)
Finance (1=yes)	0.112	(0.116)	0.036	(0.119)	0.094	(0.127)	0.080	(0.138)	0.036	(0.151)
Services (1=yes)	-0.082	(0.116)	-0.113	(0.120)	-0.059	(0.128)	-0.147	(0.137)	-0.183	(0.147)
<u>Firm size (ref.: less than 20)</u>										
20 to 199 (1=yes)	-0.169	(0.089)	-0.183*	(0.091)	-0.195*	(0.097)	-0.182	(0.104)	-0.189	(0.114)
200 to 1999 (1=yes)	-0.114	(0.114)	-0.193	(0.116)	-0.163	(0.122)	-0.129	(0.133)	-0.238	(0.146)
more than 2000 (1=yes)	-0.214	(0.121)	-0.465***	(0.121)	-0.437***	(0.127)	-0.416**	(0.139)	-0.549***	(0.150)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>										
Professionals (1=yes)	0.164	(0.209)	0.107	(0.199)	0.215	(0.215)	0.251	(0.231)	0.202	(0.248)
Technicians & associate prof. (1=yes)	0.024	(0.196)	-0.131	(0.190)	-0.098	(0.206)	-0.182	(0.224)	-0.193	(0.237)
Clerks (1=yes)	0.163	(0.213)	0.063	(0.209)	-0.096	(0.225)	-0.361	(0.244)	-0.555*	(0.261)
Service workers (1=yes)	0.029	(0.219)	-0.229	(0.211)	-0.240	(0.227)	-0.402	(0.246)	-0.442	(0.260)
Craft and related trade workers (1=yes)	0.044	(0.221)	0.072	(0.211)	0.160	(0.227)	0.139	(0.248)	0.18566	(0.265)
Plant and machine operators (1=yes)	-0.071	(0.232)	-0.237	(0.226)	-0.095	(0.248)	-0.085	(0.267)	-0.096	(0.282)
Elementary occupations (1=yes)	-0.040	(0.234)	-0.448*	(0.229)	-0.467	(0.246)	-0.698**	(0.267)	-0.646*	(0.284)
<u>East Germany (1=yes)</u>										
East Germany (1=yes)	-0.430*	(0.183)	-0.520**	(0.199)	-0.530*	(0.215)	-0.846***	(0.240)	-0.905***	(0.271)
<u>Regional unemployment rate (in %)</u>										
Regional unemployment rate (in %)	0.030	(0.019)	0.046*	(0.020)	0.042	(0.022)	0.066**	(0.023)	0.067**	(0.026)
<u>Year dummies</u>										
Year dummies	yes		yes		yes		yes		yes	
Constant	-0.364	(0.658)	0.629	(0.690)	0.947	(0.732)	1.265	(0.781)	1.132	(0.850)
Observations	3,549		3,210		2,852		2,501		2,159	
McFadden Pseudo-R ²	0.029		0.047		0.042		0.049		0.051	

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 21: Marginal effects of turnover

DV: Turnover	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	After 1 year		After 2 years		After 3 years		After 4 years		After 5 years	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Recruitment source (ref.: social ties)</u>										
Newspaper (1=yes)	0.004	(0.020)	-0.033	(0.023)	-0.030	(0.025)	-0.039	(0.026)	-0.042	(0.028)
Employment office (1=yes)	-0.016	(0.028)	-0.015	(0.035)	0.002	(0.036)	-0.033	(0.039)	-0.024	(0.043)
Internet (1=yes)	0.026	(0.029)	0.066*	(0.034)	0.071*	(0.036)	0.083*	(0.038)	0.097*	(0.043)
<u>Gender (1=female)</u>										
Gender (1=female)	-0.039	(0.021)	-0.036	(0.025)	-0.016	(0.026)	0.006	(0.028)	-0.022	(0.030)
<u>Years of education</u>										
Years of education	-0.003	(0.004)	-0.006	(0.005)	-0.003	(0.005)	-0.004	(0.006)	0.000	(0.006)
<u>Age</u>										
Age	0.001	(0.006)	-0.002	(0.008)	-0.006	(0.008)	-0.008	(0.009)	-0.005	(0.010)
<u>Age squared/100</u>										
Age squared/100	-0.002	(0.008)	0.004	(0.010)	0.007	(0.010)	0.008	(0.011)	0.004	(0.012)
<u>Married (1=yes)</u>										
Married (1=yes)	-0.040*	(0.019)	-0.047*	(0.022)	-0.028	(0.023)	-0.016	(0.024)	-0.010	(0.027)
<u>Children in HH (1=yes)</u>										
Children in HH (1=yes)	-0.027	(0.022)	-0.053*	(0.026)	-0.037	(0.029)	-0.073*	(0.034)	-0.059	(0.042)
<u>Immigrant (1=yes)</u>										
Immigrant (1=yes)	0.011	(0.028)	0.035	(0.034)	0.011	(0.036)	0.014	(0.040)	0.032	(0.043)
<u>Health (ref.: very good)</u>										
Good (1=yes)	-0.052*	(0.025)	-0.056*	(0.028)	-0.063*	(0.029)	-0.063*	(0.032)	-0.052	(0.034)
Satisfactory (1=yes)	-0.068*	(0.028)	-0.043	(0.032)	-0.030	(0.033)	-0.022	(0.036)	-0.025	(0.039)
Poor (1=yes)	-0.034	(0.040)	0.016	(0.045)	-0.030	(0.047)	-0.016	(0.051)	0.004	(0.054)
Bad (1=yes)	-0.125	(0.078)	-0.199*	(0.088)	-0.138	(0.103)	-0.228*	(0.115)	-0.172	(0.140)
<u>Actively sought for new job (1=yes)</u>										
Actively sought for new job (1=yes)	0.015	(0.019)	0.022	(0.021)	0.007	(0.023)	0.015	(0.024)	0.029	(0.027)
<u>Unemployed before new job (1=yes)</u>										
Unemployed before new job (1=yes)	0.022	(0.020)	0.058*	(0.024)	0.048	(0.025)	0.056*	(0.027)	0.062*	(0.029)
<u>Total years of unemployment</u>										
Total years of unemployment	0.005	(0.005)	0.008	(0.006)	0.007	(0.007)	0.005	(0.008)	0.003	(0.008)
<u>Gross Income (in 1,000 €)</u>										
Gross Income (in 1,000 €)	-0.028*	(0.011)	-0.037**	(0.012)	-0.037**	(0.013)	-0.040**	(0.013)	-0.039**	(0.014)
<u>Limited contract (1=yes)</u>										
Limited contract (1=yes)	0.086***	(0.024)	0.081**	(0.029)	0.061	(0.033)	0.092*	(0.041)	0.070	(0.053)
<u>Working hours per week</u>										
Working hours per week	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)
<u>Public sector (1=yes)</u>										
Public sector (1=yes)	-0.076**	(0.028)	-0.103**	(0.033)	-0.097**	(0.035)	-0.082**	(0.038)	-0.089*	(0.042)
<u>Perceived job security (ref.: not concerned at all)</u>										
Very concerned (1=yes)	0.095***	(0.025)	0.097***	(0.029)	0.092**	(0.031)	0.059	(0.033)	0.035	(0.036)
Somewhat concerned (1=yes)	0.040*	(0.018)	0.047*	(0.021)	0.043*	(0.022)	0.019	(0.024)	0.020	(0.025)
<u>Branch (ref.: trade)</u>										
Industry (1=yes)	-0.017	(0.025)	-0.037	(0.028)	-0.061*	(0.029)	-0.085**	(0.032)	-0.112***	(0.034)
Manufacturing (1=yes)	0.006	(0.037)	0.013	(0.041)	0.000	(0.044)	0.010	(0.048)	-0.019	(0.053)
Finance (1=yes)	0.025	(0.026)	0.009	(0.030)	0.023	(0.032)	0.020	(0.034)	0.009	(0.037)
Services (1=yes)	-0.018	(0.025)	-0.028	(0.030)	-0.015	(0.032)	-0.037	(0.034)	-0.045	(0.036)
<u>Firm size (ref.: less than 20)</u>										
20 to 199 (1=yes)	-0.038	(0.020)	-0.046*	(0.023)	-0.049*	(0.024)	-0.045	(0.026)	-0.047	(0.028)
200 to 1999 (1=yes)	-0.026	(0.025)	-0.048	(0.029)	-0.041	(0.030)	-0.032	(0.033)	-0.059	(0.036)
more than 2000 (1=yes)	-0.047	(0.026)	-0.115***	(0.029)	-0.108***	(0.031)	-0.104**	(0.034)	-0.136***	(0.037)
<u>ISCO job class. (ref.: legislators, senior officials and managers)</u>										
Professionals (1=yes)	0.037	(0.046)	0.027	(0.050)	0.053	(0.053)	0.061	(0.056)	0.048	(0.059)
Technicians & associate prof. (1=yes)	0.005	(0.043)	-0.033	(0.047)	-0.024	(0.051)	-0.045	(0.055)	-0.047	(0.058)
Clerks (1=yes)	0.037	(0.047)	0.016	(0.052)	-0.024	(0.056)	-0.090	(0.060)	-0.138*	(0.063)
Service workers (1=yes)	0.006	(0.048)	-0.057	(0.053)	-0.060	(0.057)	-0.100	(0.061)	-0.109	(0.063)
Craft and related trade workers (1=yes)	0.010	(0.048)	0.018	(0.053)	0.040	(0.057)	0.034	(0.061)	0.044	(0.063)
Plant and machine operators (1=yes)	-0.015	(0.050)	-0.059	(0.056)	-0.024	(0.062)	-0.021	(0.066)	-0.023	(0.069)
Elementary occupations (1=yes)	-0.009	(0.051)	-0.110*	(0.056)	-0.115	(0.060)	-0.172**	(0.065)	-0.160*	(0.069)
<u>East Germany (1=yes)</u>										
East Germany (1=yes)	-0.095*	(0.040)	-0.130**	(0.050)	-0.133*	(0.054)	-0.211***	(0.060)	-0.224***	(0.067)
<u>Regional unemployment rate (in %)</u>										
Regional unemployment rate (in %)	0.007	(0.004)	0.0114*	(0.005)	0.010	(0.005)	0.016**	(0.006)	0.017**	(0.006)
<u>Year dummies</u>										
Year dummies	yes		yes		yes		yes		yes	
Observations	3,549		3,210		2,852		2,501		2,159	

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

4.4.3 Results from Sup-group Analyses

The population of job seekers is much more heterogeneous than assumed until now. As the large number of control variables indicates, certain demographic or job characteristics are able to explain differences in wages and job satisfaction to a large amount. However, the analyses above do not implement possible interaction effects for reasons of simplicity. Therefore, additional sensitivity analyses are conducted to allow for different source effects for employee subgroups. Although not shown in detail, all regressions contain the same set of control variables as the calculations above. Subgroup results on turnover are not provided since too many observations are lost in each year in the turnover regressions.

4.4.3.1 Gender Differences

As already shown in Table 7, gender differences in source usage are prevalent as females are more likely to find a new job via newspaper adverts. As discussed in chapter 3, females might dispose of less valuable social ties than men due to traditional family roles or gender based segregation of the labour market. Table 22 shows regression results of the effectiveness measures separated by gender. In both wage regressions, source coefficients are similar to the regressions above, though, statistically insignificant. Furthermore, regression results unveil that job seekers of both genders report lower satisfaction if they found their jobs via formal means. However, the effect is solely significant for females who were successful via newspaper adverts. Regarding the satisfaction differential, both males and females report significantly lower levels of job satisfaction when they found their job with the aid of employment offices. For females, the newspaper coefficient is negative and significant.

Table 22: Regression results of recruitment channel effectiveness, separated by gender

Dependent variable	Log(Wage)		Δ Wage (in %)		Job Satisfaction		Δ Job Satisfaction	
	Male	Female	Male	Female	Male	Female	Male	Female
Newspaper (1=yes)	0.043 (0.024)	0.014 (0.028)	-0.082 (0.065)	-0.184 (0.096)	-0.119 (0.122)	-0.295* (0.118)	-0.116 (0.159)	-0.306* (0.151)
Employment office (1=yes)	0.017 (0.033)	0.025 (0.043)	0.093 (0.172)	-0.182 (0.177)	-0.304 (0.175)	-0.313 (0.179)	-0.690** (0.230)	-0.705** (0.239)
Internet (1=yes)	0.057 (0.036)	0.061 (0.036)	-0.043 (0.113)	-0.011 (0.146)	-0.190 (0.163)	-0.210 (0.158)	0.232 (0.231)	-0.295 (0.232)
Observations	1,889	1,929	1,889	1,929	1,889	1,929	1,889	1,929
R ²	0.502	0.692	0.034	0.042	0.179	0.130	0.062	0.050

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Also controlled for demographic and job-specific characteristics.

Thus, one can conclude that gender differences partially account for the negative effect of newspaper adverts on job satisfaction. With respect to wages, neither females nor males benefit from finding a job via informal means.

4.4.3.2 Regional Differences

The German division after the Second World War and more than 40 years of Communist regime still has a considerable long-term impact on living conditions, ethical values, and behaviour in East Germany. Until now, employees in East Germany earn less than their colleagues in West Germany (Gernandt, Pfeiffer, 2008; Brück, Peters, 2009). Furthermore, Vatter (2012) found support for an east-west disparity in terms of subjective well-being. Additionally, recruitment channel usage differs between East and West Germany. East Germans find their jobs more frequently via personal contacts or public employment offices than West Germans. West Germans rely more heavily on newspaper adverts.⁵⁷ Thus, it can be assumed that recruitment sources differ in their efficiency due to regional disparities.

Table 23 depicts regression results separated for West and East Germany. Wages of West German employees do not differ with regard to the source they found their jobs through. However, East Germans who were successful via internet search gain a wage premium of 15 percent. This finding is not supported when the relative wage differential acts as the dependent variable. Similar to the regressions for the whole sample, in West Germany newspaper adverts are associated to a lower wage increase of 14 percent. This lower wage increase is comparable in size in East Germany but insignificant. Regarding the effects on job satisfaction, West German employees report significantly lower job satisfaction when they found their jobs via one of the formal means. In East Germany, this negative effect is considerably smaller and insignificant. With respect to changes in job satisfaction, both East and West German employees report a significantly lower change in job satisfaction compared to the reference group when the job was found via employment agencies.

Table 23: Regression results of recruitment channel effectiveness, separated by region

Dependent Variable	Log(Wage)		Δ Wage (in %)		Job Satisfaction		Δ Job Satisfaction	
	West	East	West	East	West	East	West	East
Newspaper (1=yes)	0.016 (0.022)	0.012 (0.040)	-0.142* (0.062)	-0.118 (0.159)	-0.228* (0.095)	-0.118 (0.191)	-0.208 (0.122)	-0.124 (0.250)
Employment office (1=yes)	-0.006 (0.033)	0.077 (0.043)	0.032 (0.115)	-0.174 (0.351)	-0.382** (0.146)	-0.058 (0.243)	-0.648*** (0.186)	-0.693* (0.347)
Internet (1=yes)	0.025 (0.031)	0.148*** (0.044)	-0.021 (0.121)	-0.048 (0.141)	-0.312* (0.132)	0.124 (0.243)	0.000 (0.196)	-0.008 (0.312)
Observations	2,965	853	2,965	853	2,965	853	2,965	853
R ²	0.692	0.581	0.029	0.088	0.143	0.161	0.042	0.088

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Also controlled for demographic and job-specific characteristics.

⁵⁷ These results are widely confirmed by a study of the German Institute for Employment Research, IAB (2011).

Two arguments are able to explain the efficiency differential of internet adverts in East and West Germany. First, the dissemination of high speed internet has unfolded less rapidly in East than in West Germany (TÜV Rheinland, 2015). Thus, internet recruitment is more likely in urban metropolitan areas than in rural regions. Furthermore, high speed internet might first be disseminated to more developed regions where people are higher educated. Thus, a different population of job seekers is attracted by internet adverts. The second argument stresses the supra-regional view of internet job search. In contrast to newspaper adverts who address local or regional labour markets, internet adverts are more likely to reach people nationwide. As a consequence, job offers reflect a tendency of harmonisation of wages, which means that firms pay higher wages than usual in East Germany and employees report higher job satisfaction. Overall, there is only weak evidence for differences in efficiency – except internet advertising – between East and West German job seekers.

4.4.3.3 Differences in Education

Regression results in chapter 4.4.2.1 indicate that the employees' level of education is an important factor for the determination of wages (positive) and job satisfaction (negative).⁵⁸ However, efficiency of job channels could differ between levels of education. For example, highly educated job seekers could dispose of more personal contacts that are useful in finding a job than job seekers with solely elementary education.⁵⁹ Therefore, an analysis of two distinct labour market groups – high-skilled and low-skilled – appears to be worthwhile.

Regression results for more and less⁶⁰ educated employees are shown in Table 24. For highly educated job seekers there seems to be no correlation between source usage and wages. However, highly educated employees who found their jobs via newspaper adverts report lower levels of job satisfaction. For less educated job searchers, a considerably smaller wage increase is estimated when the job was found via internet adverts. No differences have been detected regarding job satisfaction.

⁵⁸ See e.g. Gordon and Arvey (1975) or Arvey et al. (1991) for empirical evidence on this relation.

⁵⁹ See chapter 3 for a detailed analysis of the relation between job search and education, especially the robustness analyses in chapter 3.4.3 (non-linear relation between education and job search channels).

⁶⁰ The category 'low education' comprises both inadequate (1) and elementary education (2) according the International Standard Classification of Education (ISCED-97) framework (UNESCO, 2006).

Table 24: Regression results of recruitment channel effectiveness, separated by level of education

Dependent Variable	Log(Wage)		Δ Wage (in %)		Job Satisfaction		Δ Job Satisfaction	
	High	Low	High	Low	High	Low	High	Low
Newspaper (1=yes)	-0.019 (0.041)	-0.086 (0.065)	-0.213 (0.185)	-0.320 (0.234)	-0.427* (0.179)	-0.274 (0.257)	-0.274 (0.239)	-0.234 (0.343)
Employment office (1=yes)	-0.031 (0.070)	-0.079 (0.070)	-0.171 (0.544)	-0.092 (0.390)	0.061 (0.310)	-0.306 (0.361)	-0.047 (0.521)	-0.553 (0.483)
Internet (1=yes)	-0.030 (0.041)	0.012 (0.104)	-0.100 (0.219)	-0.780* (0.344)	-0.224 (0.179)	0.247 (0.675)	-0.253 (0.276)	1.250 (1.034)
Observations	752	383	752	383	752	383	752	383
R ²	0.647	0.725	0.063	0.133	0.231	0.218	0.087	0.153

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Also controlled for demographic and job-specific characteristics.

4.4.3.4 Difference in Origin

Surprisingly, regression results in chapter 4.4.2.1 do not reveal any wage differences between natives and immigrants in the fully specified model with branch and job controls. However, this does not necessarily contradict empirical results which detect an immigrant-native wage gap in Germany.⁶¹ Findings in chapter 3 revealed that immigrants tend to use informal means more frequently than natives. In reverse, natives rely more heavily on all three kinds of formal recruitment channels. As a result, an immigrant-native wage gap might be explained by an immigrant-native difference in source usage.

Table 25 contains separate regression results for natives and immigrants. First of all, only natives who found their job on the internet report a wage increase of 6 percent, however, wage increases after finding a job via newspaper adverts are lower for them. Furthermore, natives are affected by significantly lower job satisfaction by the use of formal means, for immigrants the job satisfaction coefficients are negative but insignificant. Regarding satisfaction differentials, natives and immigrants report smaller changes when the job was found with the aid of employment agencies. Additionally, immigrants report a lower increase in job satisfaction if the job was found via newspaper adverts. To summarise, differences between natives and immigrants are rather small, only the negative relationship between finding a job via formal channels and job satisfaction appears to be more robust concerning natives.

⁶¹ See e.g. Bartolucci (2010) or Aldashev et al. (2012) for an empirical analysis of the immigrants' wage gap.

Table 25: Regression results of recruitment channel effectiveness, separated by origin

Dependent Variable Origin	Log(Wage)		Δ Wage		Job Satisfaction		Δ Job Satisfaction	
	Native	Immigrant	Native	Immigrant	Native	Immigrant	Native	Immigrant
Newspaper (1=yes)	-0.059	0.028	-0.449	-0.111*	-0.326	-0.184*	-0.791*	-0.171
	0.078	0.020	0.426	0.056	0.295	0.088	0.373	0.112
Employment office (1=yes)	0.071	0.009	0.124	-0.029	-0.484	-0.262*	-1.232*	-0.595***
	0.078	0.029	0.502	0.130	0.394	0.132	0.510	0.173
Internet (1=yes)	-0.003	0.057*	-0.793	0.017	-0.032	-0.200	0.166	-0.008
	0.091	0.027	0.924	0.086	0.467	0.118	0.731	0.168
Observations	339	3,479	339	3,479	339	3,479	339	3,479
R ²	0.757	0.661	0.113	0.039	0.296	0.137	0.203	0.045

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Also controlled for demographic and job-specific characteristics.

4.5 Discussion

As shown in the previous chapter, the efficiency of recruitment channels is a complex question and effects differ substantially across subgroups. Thus, the results have to be interpreted carefully. In general, personal contacts do not result in higher wages; in fact, those who were successful via internet adverts earn even higher wages. Regarding non-monetary outcomes, though, the results indicate that job search via social ties is associated with higher job satisfaction. Furthermore, weak evidence has been provided for a positive correlation between informal channels and turnover. In this chapter, these mixed findings are interpreted and potential shortcomings of this study are given. First, arguments are given why wages are not or negatively related to finding a job via social ties. Second, the – at least partial – positive relationship between social ties and non-monetary outcomes is discussed. Special emphasis is laid upon the two alternative hypotheses described in chapter 2. Third, limitations of this study are described. Finally, practical implications of the findings are elaborated.

4.5.1 Explanation of the Empirical Findings

With respect to wages, Individual Differences seem to be able to explain most of the variation in the dependent variable. According to Table 15, income differences between sources of information can be explained by individual demographic and job-related characteristics. Only those who found a job via internet adverts earn higher wages.

Two further arguments could explain the absence of wage effects of recruitment sources. One reason might be high rigidity of the German labour market (Kemmerling, Bruttel, 2006). Employers and employees bargain collective wage agreements on branch level and additional agreements are reached on company or plant level. As a result, high wage dispersion in a single firm for comparable jobs is quite unlikely in Germany. Therefore, employers are not

able to pay higher wages for those who were hired through a particular recruitment channel. Such wage dispersion is more likely to occur in case of high potentials, for which no collectively bargained wages exist. However, empirical evidence in this study does not support this argument in case of highly educated employees. In line with this argument, Brenzel et al. (2014) found that 62 percent of the job offers in Germany can be characterised as wage-postings, meaning that there is a simple take-it-or-leave-it decision regarding these kind of job offers. Wage-postings can be found frequently in the public sector, in larger firms and in firms that are covered by collective wage agreements. On the contrary, 38 percent of the job offers can be described as wage-bargaining situations in which job seekers negotiate their future wage. According to the authors, this phenomenon mainly can be found for higher educated job searchers or in tight regional labour markets.

Another explanation for the convergence of wages between search channels is based on the behavioural model of rational choice (Simon, 1955). Bounded rationality disables total information procurement of all job offers in the market. Furthermore, job seekers do not obtain all offers at the same point in time but sequentially. In a simplified search model, in which all job offers only differ as to wages, job searchers only know about the distribution of all job offers. However, they cannot foresee the sequence of job offers they receive in future periods. Consequently, applicants set an ex-ante aspiration level, a wage which evokes indifference between accepting and rejecting the job offer. One could assume that this aspired wage is first of all determined by market wages, demographic factors, and personality traits and not by the channels applicants use when searching for a new job. Hence, employees' wages do not differ as a function of the respective recruiting channel used. This implies that job seekers do not receive better or more information on vacancies that lead to more or better draws from the wage distribution.

The quality of information – which tends to be more precise in case of referrals (Simons et al., 1970) – does not result in higher starting wages. With regard to non-monetary benefits of social capital, realistic expectations (Rees, 1966; Wanous, 1978) seem to affect job satisfaction positively. Personal contacts to insiders provide outside job applicants with valuable information on internal structures and working conditions that are not disclosed to other job seekers. As working conditions are crucial for the satisfaction of employees, the disclosure of trustworthy job-related information makes it more likely for job seekers to apply to the job. For those employees, faceless firms become transparent and get a distinct image. Thus, from the perspective of post-hire outcomes, referrals are a promising means in order to

select motivated employees that match both job and company requirements. Another explanation for the observed increase in job satisfaction could be pre-screening of the person that recommends the job seeker. With the underlying data no distinction of these two different effects can be made. However, for the interpretation of the results, it is not necessary to know if referrers are responsible for a positive selection of employees or if employees select themselves due to a wider base of information. The results indicate a meaningful positive effect on job satisfaction which must be interpreted as a source effect as it is controlled for many demographic and job-related aspects.

Changes in job satisfaction after a job change are commonly described by a honeymoon-hangover relationship (Boswell et al., 2005), which implies that job seekers commonly report an increase in job satisfaction after a change which decreases over time. However, individuals who found a job via social ties still report a higher job satisfaction, although they disposed of more realistic ex-ante information about a certain job. Satisfaction measures could also be biased due to the reasons for the job change, i.e. voluntary or voluntary quit. Especially voluntary job changes could be associated with higher job satisfaction, while involuntary quits could be related to lower job satisfaction because jobs are accepted to escape or to avoid unemployment. In the search models described in chapter 2.1, this could mean that voluntary job changers have a higher satisficing level of utility. Although variables on the reasons of job changes are not included because of too many missing values, other variables like off-the-job search (being unemployed before the job change) and the active search dummy should cover at least part of this aspect.

Interestingly, the positive satisfaction effect does not result in a lower turnover ratio of those recruited after referrals. This can be interpreted as a short-term effect on satisfaction, as (dis-)satisfaction is most likely to be a core determinant of turnover. In the long-run, better pre-hire information are not able to reduce the turnover probability significantly. Practical implications of this finding are discussed in chapter 4.5.3.

4.5.2 Limitations

Six major problems of the data limit the analysis and henceforth the degree of detail of the results. First, job search is only investigated from a retrospective view. Unfortunately the data does not contain information on all channels job searchers used during their job search process but only on the source employees actually found their current job through. However, job seekers generally exploit a broad variety of search channels and do not only concentrate on the most promising channel. Thus, it is not possible to distinguish between job seekers that

invested much time into job search via multiple channels and those who once talked to a peer and then switched jobs. Outcomes are likely to depend on the scope of recruitment channel usage which remains unexplored in this study.

The second and maybe more serious shortcoming is that the data does not distinguish between different kinds of referrals. According to Granovetter's strength-of-weak-ties argument, acquaintances are more helpful in the job search process than close friends or relatives as there are less information redundancies among weakly tied individuals. Individuals with a large network of weak ties dispose of more valuable information and thus are likely to find better paid jobs. Referrals by close friends or relatives might be less useful in terms of monetary outcomes as the probability to find a highly paid job is lower.

An empirical investigation by Antoninis (2006) supports this theoretical argument. For workers of a manufacturing firm the author detected higher starting wages for those who were recommended by someone who is able to assess their productivity. In contrast to this, referrals by close friends or relatives did not increase starting wages. This finding is surprising since productivity might be more easily assessed in manufacturing jobs in comparison to jobs in other branches (service, finance). For employees who work in jobs that require a broad set of cognitive abilities which cannot be directly observed, social ties might be even more helpful. Referrers might be able to reduce information asymmetries due to their knowledge about matching quality especially in jobs where information asymmetries are severe.

Likewise, from the employee's perspective, the quality of information also depends on the position of the referrer. Applicants regard information by potential co-workers concerning job characteristics or organizational routines as more trustworthy compared to supervisors or members of the HR department. Employees who work at the same hierarchy level and have similar tasks are able to evaluate job characteristics from their own experience. Supervisors or HR managers have less insight into working routines. Furthermore, they might be forced to find new employees very quickly to minimize vacancy costs. In their survey on the credibility of sources of information, Fisher et al. (1979) found that business school seniors trust incumbents and friends more than interviewers. Participants were less likely to accept the job if their source of information was a corporate interviewer. Therefore, one can expect larger increases post-hire outcomes for those referred by employees of the same hierarchy level.

Apart from the role of the particular person that recommends the job seeker, another interesting aspect is mentioned by Caliendo et al. (2011). The authors analysed how the

overall network size affects search behaviour and found evidence that network size, measured as the number of close friends outside the family, was positively correlated with the likelihood of informal search channel usage. Furthermore, an increase in applicants' network size was perceived as an increase in search productivity and therefore led to higher reservation wages of around 1 percent. Thus, the authors assumed that higher reservation wages should result in higher wages. On the contrary, one could predict that the perception of a highly valuable network makes job seekers overconfident. Higher reservation wages could cause longer search periods associated to costs of search and forgone earnings. Therefore, it is unclear whether the confidence effect compensates the increase in reservation wages. As a result, a detailed analysis of the role of the referrer should implement measures of reservation wages and overall network size.

Another problem occurs as it is not absolutely possible to assess increases in wages or job satisfaction due to a job change. First, it is not possible to observe the counter-factual wage an employee would have earned if he had stayed in the company. It is possible that employees were close to promotion in their former job and then did not accomplish this wage increase due to their job change. As a consequence, wage increases could be overestimated. However, this seems to be a minor problem as employees are likely to anticipate promotions (e.g. due to comments of supervisors) and are not willing to leave the job then. Additionally, changes in wages and job satisfaction are not only determined by factors measured after the job change (t), but also by wage determinants in $t-1$. Especially changes in determinants, e.g. branch or occupation, are likely to explain post-hire outcome differentials. Due to lack of available data (the number of observations would have shrunk considerably), lagged variables of post-hire determinants have not been included in the regressions. Furthermore, doubling the number of variables does not seem to be helpful in order to gain robust estimates.

Fourth, a considerably more serious problem pertains to the points of time the data is collected. Employees participate in the survey once when they are close to leave the company and again when they just have changed the job. Hence, they maybe worked several years for their past employer but only some months in their new jobs which is likely to affect wage and job satisfaction differentials. If firms pay seniority wages, which increase with tenure, individuals are likely to receive lower wages in their new occupation. In this case job changers anticipate future wage increases which are not contained in the data. However, it is assumed that such wage effects are equally distributed among job changers independent from the source of information. The reversed problem accrues in terms of job satisfaction.

Employees often change their job when they are dissatisfied with working conditions, supervisors, or co-workers. Job satisfaction is likely to decrease over time as one gets to know more and more negative aspects of the current employers. Hence, changing to a new employer necessarily increases job satisfaction as kind of “gift of ignorance” or honeymoon effect (Boswell et al., 2005). Once again, there are no indicators that this effect differs between recruitment channels, but job satisfaction increases after job changes have to be interpreted carefully. This problem cannot be solved calculating the job satisfaction differential after a certain period of acclimatisation (e.g. after two or three years). Job satisfaction is likely to be correlated to turnover as dissatisfied employees are expected quit the current job. However, referrals affect job satisfaction positively by a better quality of ex-ante information. Therefore, employees who found their jobs through formal means are more likely to quit the job which biases the measure of lagged job satisfaction.

To mitigate this potential shortcoming, the relationship between job search channels and turnover has been investigated. Although panel mortality problems arise if a span of up to five years after the job change is investigated, there is no indicator for a considerable variation in the panel mortality between individuals who found their job via different channels.

Fifth, in Chart 1 in the introduction it has been highlighted that the employment status and the reason(s) for searching for a new job could be related to both the way individuals search for a job and which job is accepted by individuals. Unemployed individuals, for example, might set a lower aspiration level in the sense of the Simon (1955) model and, thus, accept lower wages than employed job seekers. Additional regressions, though, interacting recruitment sources with the off-the-job dummy did not provide evidence that this effect differs between recruitment channels. However, particularly job satisfaction could be affected by voluntary or involuntary job search. Even if individuals were not unemployed between job changes, it might be important to know whether individuals changed the job voluntarily or involuntarily. In case of voluntary changes, individuals might have more time to find a better job while involuntary changes – either because of single dismissals or due to company closings – are likely to set the individual under pressure to find a new job. This effect, however, should be at least partially covered in the unemployed dummy, since individuals with valuable ties should be more likely to find a new job without interim unemployment, even in case of dismissals.

Finally, this chapter has not analysed potential selection effects into source usage respectively finding a job through a specific channel. As chapter 3 has pointed out, finding a job through a channel is non-random but determined by demographic and job-related factors. Therefore, the

probability of finding a job through a given channel depends on the search behaviour of employers and job seekers. If this source selectivity is considerably large, source coefficients could be biased. This aspect is further investigated in the following chapter by incorporating a two-stage estimator which explicitly allows for source selection while correcting for it.

Albeit all these shortcomings leave space for a more detailed investigation of the topic, the key findings and the propositions as to the relevance of the two hypotheses remain unaffected. Future research should focus in more detail on the search process itself – to be precise – to investigate not only the source through which the job was finally found but the use of all information sources during the search. Additional in-depth analyses of role of the referrer and the relationship towards the job seeker should be conducted.

4.5.3 Practical Implications

The results have revealed that individuals who found their jobs via social ties do not earn higher wages but are more satisfied with their new jobs compared to those hired via other channels. Organisations could benefit from satisfied job seekers since job satisfaction is positively related to firm performance in general (Bryson et al., 2015) and soft indicators, e.g. creativity, problem solving, pro-social behaviour, and work engagement (Lyubomirsky et al., 2005).

Empirical findings imply that positive effect on satisfaction might be especially important shortly after the job change, since turnover (interpreted as a clear sign of dissatisfaction) is only weakly related to search channels. Firms, therefore, could benefit from employing job seekers who were suggested by their incumbent employees by gaining more satisfied employees, particularly right after the job change. Hence, this finding appears to be related to the literature on organisational socialisation which describes the adjustment and learning process after entering a new organisation.⁶² Newcomers who enter an organisation for the first time are confronted with unknown routines, norms, and tasks which creates a feeling of surprise (Louis, 1980) or stress (Nelson, 1987). In order to adjust to the new corporate culture, new entrants are subject to a socialisation process through which they learn their organizational roles (van Maanen, Schein, 1979). Successful socialisation is assumed to have a positive effect on employee (and thus firm) productivity and organisational commitment (Bauer et al., 1998). In addition, employees who socialise quickly and manage to learn all

⁶² See Bauer et al. (1998) for a thorough summary view of the literature on organisational socialisation.

necessary processes might gain a higher level of autonomy (or receive this autonomy quicker) which is linked to job satisfaction (Langfred, Moye, 2004).

Existing research has shown that newcomers rely on peers and direct supervisors in the socialisation process (see e.g. Feldman, Brett, 1983; Louis et al., 1983). Fang et al. (2011) developed a theoretical model in which they connect socialisation theory with social capital theory. The authors argued that newcomers socialise by establishing (particularly weak) social ties to incumbents. This socialisation process can be strengthened by organisational socialisation tactics and is positively affected by newcomer proactivity. Social ties to incumbents could serve helpful in improving and accelerating this process.⁶³ Apart from learning the new organisational role, socialisation and the establishment of new social ties is indispensable in order to improve knowledge diffusion and information sharing within organisations (Levin, Cross, 2004).⁶⁴

Firms can, therefore, benefit from hiring employees via social ties through a shorter integration and learning period of new hires. Moreover, this positive impact on socialisation comes at no costs for firms, since wages of those hired via social ties are not higher than those hired through other channels. Future research could investigate the relationship between finding a job via social ties and organisational socialisation.

4.6 Conclusion

This chapter investigated the efficiency of formal and informal recruitment channels as regards wage income, jobs satisfaction, and turnover. First, descriptive statistics depict a negative correlation between starting wages and the use of social capital. This finding is contrary to previous theoretical argumentations which imply a positive impact of informal recruitment channels due to better information or pre-screening of the referrer. However, a positive relation between recruitment via personal contacts and job satisfaction is found by descriptive results. Multiple regression analyses, both cross-sectional and longitudinal, indicate that for the complete sample there are no wage differences due to source choice. Individual Differences between the selected persons are able to explain the wage gap between formal and informal channels. Thus, considerable self-selection of source choice plays a

⁶³ Fukuyama (2002: 27) defined social capital as “shared norms or values that promote social cooperation, instantiated in actual social relationships”. If socialisation is understood as learning of social norms, existing ties (social capital) between co-workers is likely to improve the socialisation process.

⁶⁴ Social ties between employees are not always used in favour of the employer. In a sample of 82 nurses, Blau (1985) found that individuals who were more connected to other co-workers were more likely to show withdrawal behaviour defined as unexcused tardiness.

major role. With regard to job satisfaction, results support the positive effect of recommendations. It is assumed that friends or acquaintances are more likely to present a realistic and trustworthy image of the corporation and thus job seekers apply on a well-informed basis. Post-hire job satisfaction increases as the information asymmetries and the gap between expectations and reality is smaller. Only weak evidence for a relationship between social ties and lower turnover rates has been detected. This is interpreted as a positive short term effect of social ties on satisfaction, however, in the long-term, this effect is less relevant. Further sensitivity analyses reveal a more complex relationship between recruitment channels and post-hire outcomes. For example, employees in East Germany gain a significant wage premium of about 12 percent when they found their job on the internet.

As regards the two alternative hypotheses, the results are not easy to interpret. Both considerable self-selection and the higher quality of job-related information seem to play a role. However, branch specific collective wage agreements and company agreements limit employers to pay selected employees above tariff. Thus, in the highly regulated German labour market wage differences for employees recruited via different channels are less likely to occur. Hence, the information function of referrals only affects job satisfaction.

Unfortunately the data do not allow controlling for different kinds of referrals, e.g. family members, friends, or acquaintances. Therefore, future research should focus on the role of the referrer in the job search process. Additional research should be conducted in the field of job search through multiple sources of information.

All in all, the results reveal a positive impact of referrals on job satisfaction. As companies are interested in attracting motivated employees, referrals could act as a means to select workers that fit both job requirements and firm structures. Thus, search through personal contacts enables firms to hire applicants that match the firm's needs out of the faceless mass of job seekers.

Future research could investigate the role of finding a job via social ties on the socialisation process of new hires. Furthermore, the lack of wage differences could either imply that employee matching quality, and thus performance, is not affected by the recruitment source. If those hired via informal means are more performing better, this would imply that the gained surplus is not shared between employer and employee as assumed by Pissarides (1994). This would mean that firms, in contrast to employees, benefit from hiring through informal means via productivity gains without costs.

5 Determinants and Effectiveness of Recruitment Channels – The Role of Personality

5.1 Introduction

In the two previous chapters, empirical evidence on the determinants of recruitment channel choice and the relationship between channel usage and post-hire outcomes has been presented. According to social capital theory, job search via social contacts should result in higher wages and job satisfaction, which could not be fully supported by the underlying data. However, social capital does not only represent a sociologic or economic construct to describe valuable relations, but comprises interpersonal relationships that have to be formed, strengthened, maintained or dissolved. Hence, an analysis of this construct should include measures that describe the foundations of individual interaction – both during the job search process and when entering a job. In this context, psychological measures of personality are used to describe differences between individuals and to explain their behaviour.

Personality sets a frame for individual behaviour by determining how an individual acts or reacts in general. Although individuals are able to act against their general personality in a particular situation, personality provides the frame for long-term behaviour. “Personality dimensions are behavioural dispositions in the sense that they correlate with determination and drive, to affect social behaviour” (Furnham, Heaven, 1999: 10). Personality traits, therefore, set a framework for an individual’s social behaviour and any kind of interaction with network members is shaped by an individual’s non-cognitive skills. Therefore, the quality and quantity of social ties is likely to depend on the individual’s personality.

Already Simon (1959: 253) mused: “How have psychology and economics gotten along with little relation in the past?” Yet, in recent years a growing stream of the economic literature incorporates psychological measures of personality to explain labour market outcomes, such as wages (e.g. Nyhus, Pons, 2005) or job satisfaction (e.g. Judge et al., 2002a). So far, this research has not been related to job search through different channels. Personality traits might be relevant for two reasons: Generally, certain character traits could determine individual capabilities or preferences to search via a specific channel. More precisely, certain character traits (e.g. extraversion, reciprocity) might determine the amount of social capital and, hence, the probability to use the informal search channel. Secondly, personality is likely to play an important role in determining the person-job or person-organisation fit (Pervin, 1968) which could affect wages and job satisfaction. High scoring in certain personality dimensions might, therefore, increase search success regardless of the utilised search channel. However, it is so far unclear if personality affects post-hire outcomes directly or through source choice.

Furthermore, personality traits are included to account for a major shortcoming of the previous analyses. A large concern for any kind of empirical research is to find a way to eliminate or at least to reduce the impact of unobserved heterogeneity, meaning certain characteristics of survey participants that cannot be observed. Therefore, fixed or random-effects estimators have been utilised in chapter 4 to reduce unobserved heterogeneity in order to get more reliable estimators of the coefficients. However, as discussed in the previous chapter, fixed-effects estimators are likely to be biased in the case of job search as the coefficients are solely driven by multiple job changers. Therefore, a better way to reduce unobserved heterogeneity should be applied to find unbiased coefficients. Several researchers mention different aspects of personality⁶⁵ as a core element of unobserved individual heterogeneity. For instance, analysing the statistical relevance of measures of personality based on SOEP data, Boyce (2010) found that personality traits were able to explain about 20 percent of the unobserved heterogeneity in life satisfaction regressions. Thus, including reliable measures of personality increases the validity of the main coefficients of the pooled OLS regressions of chapter 4.

This chapter contributes to the existing literature by combining two distinct streams of research, namely economic outcomes of certain personality traits and job finding via social capital. First, it is analysed how personality traits and source choice are related. Second, post-hire outcomes (wages, job satisfaction) of job search via different information channels are analysed while controlling for differences in personality. Furthermore, these two analyses are combined by using an approach proposed by Bourguignon et al. (2007) to implement the selectivity bias in the estimation of wage and job satisfaction regressions. Thus, this chapter addresses question 3 of the introduction.

The remainder of this chapter is organised as follows: The following subchapter (5.2) contains a description of personality measures and a brief summary of the related literature. At the end of this subchapter, hypotheses regarding the relationship between personality traits and post-hire outcomes are formulated. In subchapter 5.3.1 the measurement of personality traits in the SOEP sample is described in detail. The model specification and the econometric approach are delineated in chapter 0. Descriptive results are presented in chapter 5.3.3, whereas chapter

⁶⁵ Factors that are usually considered as being unobserved: e.g. career ambition (Montgomery, Powell, 2003) and motivation (Polachek, Kim, 1994) as determinants of wage gaps. See Ferrer-i-Carbonell and Frijters (2004) and Vendrik and Woltjer (2007) for examples of unobserved factors in the field of subjective well-being research.

5.3.4 contains multivariate analyses. The results of these analyses are discussed in chapter 5.4. Chapter 5.5 concludes.

5.2 Theoretical Background and Literature Overview

5.2.1 Models of Personality

First of all, it appears necessary to distinguish personality – often referred to as “non-cognitive traits” – and cognitive abilities or simply intelligence. A taskforce, initiated by the American Psychological Association (APA) and headed by Ulric Neisser, defined intelligence as the “ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking through” (Neisser et al., 1996: 77). Based on this narrow definition of intelligence as an act of reasoning and decision making, Borghans et al. (2008) emphasised that cognition and personality are two distinct concepts. Albeit certain aspects of personality require or include cognitive processes (e.g. sociability, empathy, humour), they can be “separated from raw problem solving abilities for abstract problems” (Borghans et al., 2008: 1035). Thus, personality can be understood as “tendencies to think, feel, and act in consistent ways” (McCrae, 2004b: 469). Each personality trait reflects a continuum of individual characteristics and behavioural responses that are broadly consistent over time and across situations (Matthews, 2004). In this chapter, three conceptually unrelated measures of non-cognitive traits are presented.

5.2.1.1 The Five-Factor Model of Personality (FFM)

First attempts to find a simple structure of personality can be traced back to the Swiss psychologist Franziska Baumgarten (1933) who assembled 1,093 German adjectives and nouns related to descriptions of human behaviour. Furthermore, she raised the question of the number of separable character traits that aggregate the collected words. Inspired by Baumgarten’s findings, Allport and Odbert (1936) started their own examinations of 17,953 English terms which influenced later researchers. One decade later, Raymond Cattell investigated in how far adjectives, that describe personality patterns, were related to each other. Based on factor analyses, his research resulted in in a complex taxonomy of 12 (Cattell, 1945), 13 (Cattell, 1947), respectively 11 (Cattell, 1948) distinct character traits. Attempting to find a simplified and more robust structure of personality, Tupes and Christal (1961) re-examined the data of Cattell (1947, 1948) and Fiske (1949) and, additionally, conducted four own surveys. Careful analyses of the data revealed five major traits of personality – consistent over all datasets – which they called surgency, agreeableness, dependability, emotional

stability, and culture. However, their results had little impact on personality research as they were published in an obscure Air Force technical report (Digman, 1990). Yet, later studies were able to replicate the five-factor structure in independent studies (see e.g. Norman, 1963; Borgatta, 1964; Smith, 1967).

The so-called “**Big Five**” personality traits, formalised in its most common way by Costa and McCrae (1985), include openness to new experiences (O), conscientiousness (C), extraversion (E), agreeableness (A), and neuroticism (N), referred to as the acronym OCEAN. This model allows a parsimonious description of individual characteristics and is well researched by psychologists and sociologists. Each of the traits represents a “large number of distinct, more specific, personality characteristics” (Borghans et al., 2008: 984) which are frequently called facets. Conceptually, all five traits are orthogonal within a person (McCrae, 2004b). Individuals who score high in one dimension can both score high or low in another dimension. Table 26 presents a comprehensive overview of the five major dimensions of personality and their respective facets as they are empirically supported by Costa et al. (1991). The next two columns provide adjectives that characterize individuals that score high respectively low in the given dimension.

Table 26: Big Five personality traits and descriptions

Personality Traits	Facets ^a	High scores ^b	Low scores ^b
Openness to experience	Fantasy aesthetics feelings actions ideas values	creative unconventional sensitive to art and beauty	conservative conventional narrow interest
Conscientiousness	Competence Order dutifulness achievement striving self-discipline deliberation	thorough neat well-organised diligent achievement-oriented	disorganised lazy hasty
Extraversion	Warmth gregariousness assertiveness activity excitement seeking positive emotions	cheerful enthusiastic optimistic talkative sociable	quiet reserved retiring shy silent
Agreeableness	Trust straightforwardness altruism compliance modesty tender-mindedness	warm caring emotionally supporting nurturing polite trustful	hostile indifferent to others self-centred spiteful jealous
Neuroticism	Anxiety hostility depression self-consciousness impulsiveness vulnerability	nervous depressed, irrational thinking insecure	calm relaxed even-tempered unflappable

Notes: a: facets defined by Costa et al. (1991); b: high and low scores defined by McCrae and John (1992), Sheese and Graziano (2004), and McCrae (2004b).

The first factor – *openness to experience* – represents the least well understood dimension of personality which reflects an “intrinsic interest in experience in a variety of areas” and the willingness to try new activities and being unconventional (McCrae, 2004a: 707). On the contrary, closed people can be characterized as conservative and conventional, feeling more comfortable within familiar surroundings.

Conscientiousness, forming the second factor, describes the individual’s ability to work methodically, being diligent and self-disciplined. Persons who score low in this dimension are rather disorganised, lazy, and hasty (McCrae, 2004b).

Extraversion and its counterpart *introversion* represent a bipolar continuum of individual differences. Whereas extraversion is generally associated with characteristics like sociability, assertiveness, and enthusiasm, *introversion* is usually described as being socially reserved, quiet, and thoughtful (Matthews, 2004). In addition, Eysenck and Eysenck (1985) mentioned potential negative aspects of extraversion, namely being impulsive or unreliable.

Agreeableness, as the fourth factor of personality, is suited to define the degree to which an individual acts mostly either pro-socially or self-oriented. Related adjectives for high scorers in this dimension are warm, caring, and trustful. Low levels of agreeableness are associated to indifference or even hostility towards others and selfishness (Sheese, Graziano, 2004).

The last factor is commonly referred to as *neuroticism* or emotional stability as the inverse. Neurotic individuals appear rather insecure, nervous, and depressed, whereas emotionally stable persons are calm and even-tempered. Hence, this dimension reflects how individuals are able to cope with stressful situations (Bolger, Schilling, 1991).

However, the model has been heavily criticised by researchers who argued that either more or less factors determine individual differences in personality. For example, Brand claimed that general intelligence does not exist in “separate, noetic, cognitive domain” but represents a dimension of personality, which leads to a model with six personality traits (Brand, 1994: 299). Mershon and Gorsuch (1988) compared how an increase in personality factors affects the explained variation (R^2) and proposed to utilise a 16-factor model instead of a 6-factor model. On the contrary, Eysenck and Eysenck (1985) argued that only three factors can be found on the highest level of abstraction.

In their article published in “Personality and Individual Differences”, Costa and McCrae (1992) defended their taxonomy based on four criteria which they regarded as being met by the Big Five model:

- (i) cross-observer validity,
- (ii) temporal stability (see chapter 5.2.2 for a detailed discussion),
- (iii) cultural stability, and
- (iv) biological basis.

Eysenck replied to their article in the same journal and formulated four criticisms which – in his view – suggested “that the postulation of the 5-factor model is a premature crystallization of spurious orthodoxy” (Eysenck, 1992: 667). According to his arguments, only 3 of the 5 factors can be considered as primaries that emerge on the highest level of personality assessment.

However, for the analysis in this chapter the discussion about the number of primary and secondary level traits is irrelevant and should be left for of psychological scientists. In other words, it is not important if the five traits are actually major personality dimensions but if these aspects of personality affect source choice or post-hire outcomes. Albeit all critique, the **Five Factor Model of Personality (FFM)** has emerged as the predominant means to measure differences in personality in a reliable and parsimonious way. Therefore, the usage of this taxonomy allows for comparisons between different settings or datasets.

5.2.1.2 Locus of Control (LoC)

Internal versus external control of reinforcement (Rotter, 1966), commonly referred to as **locus of control (LOC)**, is a personality construct that has been under investigation by psychologists and social scientists for decades. Internal locus of control comprises the belief that one’s own behaviour determines outcomes such as success or failure whereas external locus of control refers to the degree to which one believes that outcomes are determined by fate, luck, powerful others, or capricious surroundings (Rotter, 1990). Hence, the construct of locus of control sets up a bipolar continuum spanning from internal to external. Reviewing the existing evidence, Cobb-Clark (2015) stated that locus of control is a psychological construct which might be related to labour market success via human capital investments, hiring decisions, and incentive contracts.

According to Crandall (1978), LOC is conceptually related to self-esteem. Coopersmith defined self-esteem as a “personal judgement of worthiness that is expressed in the attitudes

the individual holds toward himself” (Coopersmith, 1967: 5). Thus, internally oriented individuals believe to be responsible for their outcomes and are likely to be high in self-esteem. Conversely, low self-esteem and therefore internal orientation are associated to social introversion (Berger, 1955).

5.2.1.3 Reciprocity

Another aspect of personality is the construct of **reciprocity** which is defined as the “behavioural response to perceived kindness or unkindness” (Falk, Fischbacher, 2006: 294). Positive reciprocity refers to the degree in which people respond a positive action with a corresponding positive reaction and vice versa for negative reciprocity. Reciprocity does not include altruistic behaviour, as altruism is defined as an action without any prior or future advantages. Reciprocal behaviour can help to maintain beneficial relationships and reciprocal agents act like in an iterated prisoners’ dilemma. Hence, this construct does not automatically contradict the economic concept of *homo oeconomicus*. Negative reciprocity includes acts of retaliation which means that evil behaviour of others is resisted. Consequently, reciprocal actions appeal to fairness concerns that someone is treated the way he/she deserves it.⁶⁶

However, the three constructs of personality might not be free from overlap. For example, conscientious employees could also dispose of an internal locus of control because they can observe how their effort translates into the desired outcomes. In order to account for potential overlap, all regressions are run separately including only one of these constructs. Personality traits, though, can be separated from traditional economic measures of individual behaviour. Becker et al. (2012) found that preferences and personality measures were rather complementary than substitutive in explaining labour market outcomes and life satisfaction. However, personality traits are likely to serve better in explaining outcomes of events including interpersonal exchange like job search.

5.2.2 Stability of Personality Traits

As previously mentioned, the temporal stability of individual character traits is an important concern when personality measures are included into an empirical model. There is little doubt that personality is changing, or better developing, during childhood and adolescence (Dahmann, Anger, 2014). However, the debate on the consistency of adult personality is still ongoing. McCrae and Costa (1999) postulated that personality traits develop through childhood and are stable in adulthood – which Srivastava et al. (2003) termed **plaster**

⁶⁶ See Becker (1986) for a more detailed analysis of the concept of reciprocity.

hypothesis.⁶⁷ The economic literature often assumes that personality traits are constant over time and can be treated as exogenous variables (see e.g. Nyhus, Pons, 2005; Mueller, Plug, 2006; Heineck, 2011). This implies that the estimated coefficients are not biased by simultaneity or reversed causality. It is therefore of utmost importance to assure that personality measures are not affected by aging or certain life-events.

Two interpretations of trait consistency can be found in the literature: mean-level consistency and rank-order consistency (Specht et al., 2011). The first definition focusses on mean-level changes in personality trait scores of a group of individuals. Inconsistency arises if average scores of personality traits change during the life-cycle. On the contrary, the latter considers the rank-order-stability of individuals of a population. Hence, personality traits are even consistent when increases in the average scores do not change the rank-order of individuals within the group. On the other hand, the average score can remain stable but the rank-order of individuals changes when increases and decreases in certain dimensions offset each other.

Costa and McCrae (1988) analysed self-reports and spouse ratings on the NEO Personality Inventory and found little evidence on the relation between personality and maturation in cross-sectional regressions. Furthermore, they detected a high retest stability of both self-reports and spouse ratings six years after the first interview. Cobb-Clark and Schurer (2012) investigated the stableness of Big Five personality traits measured by a 28-item inventory in the Australian HILDA survey. The authors concluded that personality measures were constant over time and found only little evidence that serious employment-related events influenced personality measures.

However, there exists evidence of the effect of ageing on personality. Evaluating a large North-American internet survey, Srivastava et al. (2003) detected considerable increases of conscientiousness and agreeableness of adults aged 31-60. Using data from the GSOEP and the British Household Panel Study (BHPS), Donnellan and Lucas (2008) observed age trends in Big-Five traits. Extraversion and openness were negatively correlated to age, agreeableness increased in older ages. In a more thorough study based on the GSOEP data, Specht et al. (2011) found a significant impact of age on Big-Five personality traits of participants above the age of 30. Furthermore, they investigated in how far major life events influenced personality. According to their findings, personality even predicted the occurrence of life

⁶⁷ See Roberts and DelVecchio (2000) for a summary of environmental, genetic, psychological, and person-environment factors that could contribute to the increased stability of personality in adulthood.

events which, in return, triggered changes in personality. This is related to another largely untangled problem that could derive from reserved or backward causality measuring the impact of personality on wages. Lee (2006) argued that new employees adapt to the firm culture when entering a new job. Absorbing certain memes and behavioural patterns could increase promotion perspectives and thus wages. Higher initial wages or large wage gains prospects could foster internalisation of firm values. However, it is rather questionable if behaviour in work relationships and main character traits are intertwined.

Examining the mechanisms of personality maturation of SOEP participants aged 16-82, Specht et al. (2012) detected a positive correlation between life satisfaction and positive changes in personality. Individuals reporting higher life satisfaction were less neurotic and more agreeable and conscientious. As there is strong empirical support that overall life satisfaction and job satisfaction are closely related through spill-over effects⁶⁸ from one domain to the other (for empirical evidence see e.g. Tait et al., 1989; Judge, Watanabe, 1994; Rode, 2004), there presumably exists a relationship between personality and job satisfaction. However, the direction of causality is hitherto opaque. Roberts et al. (2006) conducted a meta-analysis of 113 samples. They demonstrated that personality traits were object to constant change, mainly in traits related to interpersonal interaction, such as socialibility and agreeableness. Yet, the changes were more robust in studies that observed individuals over a long period. Similarly, Schurer et al. (2015) found that university students became less extravert and male students from disadvantaged backgrounds became more agreeable. Yet, they did not find changes in traits related to work ethics or intellect.

Roberts and DelVecchio (2000) analysed the rank order stability of personality traits. They found that trait consistency increased from early childhood through college age until the age of 30. However, the consistency even increased to a plateau between 50 and 70. Their results support the plaster hypothesis although it contradicts the assumption that personality rarely changes above the age of 30.

With reference to the construct of locus of control, Cobb-Clark and Schurer (2011) found no meaningful changes in a four-year-period for most participants. Changes in the subjective believe of control only occurred among young and old participants. Therefore the authors suggested for both measures of personality to limit the analysis to individuals in working age. So far no study has analysed the stability of reciprocity. However, as this measure only

⁶⁸ The pairwise correlation between job and life satisfaction is $\rho = 0.407$ in this sample.

reflects the reaction to good or bad behaviour of others and not the degree of altruism, it can be assumed that reciprocity should be time invariant to a large extent.

To sum up, the stability of personality is rather questionable which must be taken into consideration when interpreting the results. However, the discussed results show that personality remains rather stable for a limited period of time. Thus, despite these potential limitations, personality measures are nevertheless utilised for the following waves as the data only contains personality variables in two waves (see chapter 5.3.1 for details). Therefore, the stability of personality traits over the whole life cycle is rather irrelevant for this study. Furthermore, the sample is restricted to the working age population which eliminates potential maturation effects in retirement age.

5.2.3 Personality and Job Search

Job search represents an important aspect at the beginning of the working career as well as for job changes during the career. Finding a job that matches both abilities and individual preferences can be seen as an important determinant for later career success and job satisfaction. However, asymmetric information between job searchers and employers are a considerable obstacle in finding the best available person-job fit. On the one hand, job seekers are not able or willing to reveal all information about their productivity in a reliable manner. On the other hand, employees do not dispose of information about job characteristics, such as supervisors or promotion perspectives. Hence, these frictions lead to imperfect allocations on the labour market, which result in poor performance, dissatisfaction and, in the end, the decision to separate which causes costs for both employers and employees.

In this context, job search via personal contacts is regarded as a superior means to find a job. At the very latest since Granovetter (1973) presented his “strength of weak ties”-hypothesis, job search via different search channels has received wider interest by economists. Increasing theoretical and empirical knowledge on search channels, Wanous (1978) stressed the aspect of information accuracy on job-related descriptions. In contrast to supervisors or HR managers, incumbents are more likely to deliver accurate and trustworthy information on job characteristics. As a result, job matches are found on well-informed basis because they dispose of **realistic job previews** (Wanous, 1978), which are likely to increase the person-job and person-organisation fit resulting in better performance and a reduction in turnover probability (Pervin, 1968). Questioning such information benefits, Schwab (1982) mentioned potential self-selection into source usage for the first time. He argued that different recruitment channels might be used by different populations of job seekers. Hence,

information advantages of job search via social capital are likely to be over- or underestimated due to individual differences.

So far, research of the relationship between source usage and search outcomes has neglected the impact of personality. First, personality can be understood as an element of individual differences which might explain behavioural differences in the job search process, e.g. the selection of search channels in the sense of the “Individual Difference”-hypothesis (Schwab, 1982). Second, researchers repeatedly found significant correlations between certain dimensions of personality and post-hire outcomes. However, these findings on the relationship between personality and post-hire outcomes – as well as source choice and post-hire outcomes – might be biased, if personality affects job search. For instance, psychologists like Buss (1997), who stress the evolutionary foundations of personality, interpret character traits as a result of adaption to hostile forces of the environment. Certain representations of character traits facilitate living together in a community and to defend against external pressures and threats. Thus, Buss (1997) argued that “personality, from this perspective, consists centrally of the psychological mechanisms and behavioural strategies that humans have evolved for solving these problems.” As a result, personality is likely to play an important role in the labour market where adaption to organisational standards, common values among employees, and behavioural expectations of supervisors is relevant for the individual career success. During the job search process, interviewers of the HR department and direct supervisors must not only be convinced of the job searcher’s human capital but also of the job seeker’s organisational fit which depends vastly on personality issues. High scoring in certain personality dimensions might, therefore, increase success in the search process.

Albeit personality traits are originally a domain of psychological or sociological researchers, Borghans et al. (2008) described three ways, personality measures can be applied in economics: (i) as a constraint, (ii) as a public good, or (iii) as a private good (see Chart 9). Personality as a constraint means that personality dimensions can be interpreted as a binding condition. This means, if an individual scores above a threshold level in one personality trait further options become available. Speaking in the sense of the Simon (1955) model of sequential search, high scores in certain personality dimensions enlarge the set of available alternatives (A).⁶⁹ In contrast to this understanding of personality, one can assume that character traits do not restrict alternatives but facilitate or impede actions. For example, less

⁶⁹ See chapter 2.5.3 for a detailed description of the Simon model in the context of job search.

conscientious individuals are able to gather relevant information on job search but at higher costs as search can be regarded as a rather boring activity that requires endurance and patience. Hence, different personality manifestations between individuals affect the costs of search, both in time and money. Assuming that higher search costs decrease the amount of considered alternatives (\bar{A}) in the sense of the Simon model, this can be interpreted as a shift of the considered alternative function to the left.

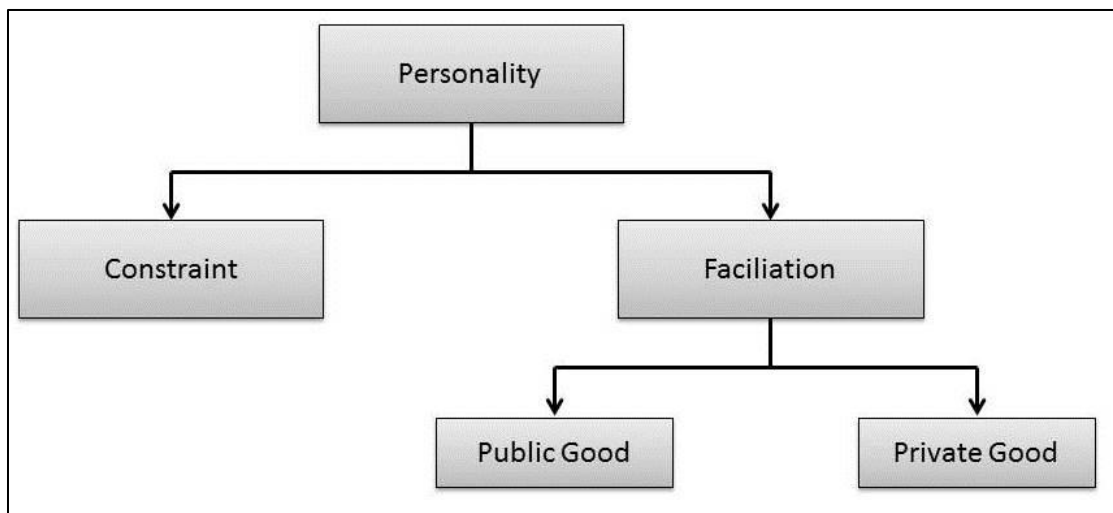


Chart 9: Personality in economic research

(Source: own representation based on Borghans et al., 2008)

The view of personality as a facilitating means can be further divided by inherent properties that Borghans et al. (2008) described as public or private goods.⁷⁰ As a public good, personality traits are available for multiple activities at the same time. In contrast to this, the view of personality as a private good includes rivalry in the use of certain personality traits. Rivalry in this case means that if personality attributes are exploited to facilitate a certain action or to improve a specific outcome, these personality properties are not available to be used for other alternatives at the same time. However, this does not have to be similar for all dimensions of personality. According to this view, high levels of conscientious can solely be directed to one task at a time as conducting several tasks simultaneously leads automatically to a less conscientious behaviour. On the contrary, extraversion, agreeableness, or emotional stability cannot be assigned to any specific task but rather reflects a general non-cognitive ability with no rivalry in consumption. With regard to job search, the latter distinction is not

⁷⁰ However, this distinction is not completely correct in the classic economic sense. A public good is marked by the properties of non-rivalry in the consumption and non-exclusiveness (other individuals can be legally excluded from the consumption of the good). The latter characteristic cannot be transferred to the issue of personality traits as there is no – conscious or unconscious – mechanism to exclude certain actions from the exploitation of character traits.

relevant as it is very likely that job search is a meaningful aspect of individual life. Therefore, most individuals would assign their (positive) personality resources in order to increase job finding possibilities.

Chart 10, which is based on the O'Brien (1986) model of job search, shows the theoretical background of this article. Apart from biological origins, personality is influenced by family and other contacts as well as the level of education and training. Personality affects the way (i.e. the intensity and frequency) an individual interacts with others, which determines the accumulation of social capital. Furthermore, personality and formal education shape the ideal job for an individual. These job characteristics and the amount of social capital affect the way an individual searches for a new job. The job seeker's socio-economic status (e.g. the current employment situation) might affect search behaviour like on or off-the-job search. Along with further influences, such as labour market conditions and the socio-economic status, the source choice determines which job the individual actually finds. Finally, labour market conditions as well as one's personality finally determine post-hire outcomes of job search.

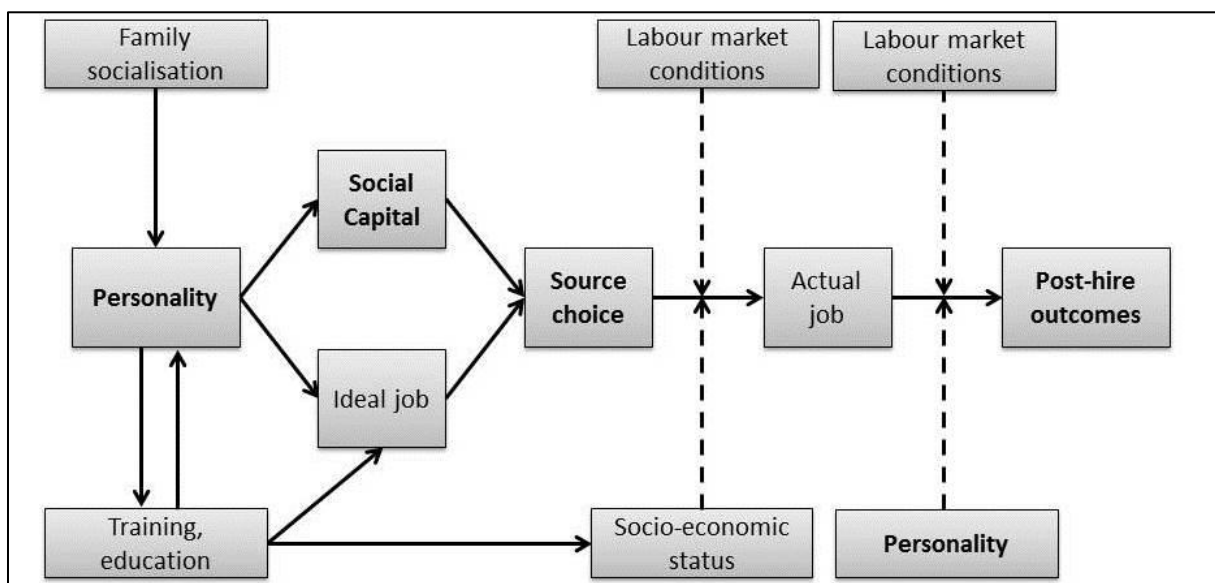


Chart 10: Personality in the job search process

(Source: own representation based on O'Brien, 1986)

According to this model, personality has mainly two ways to influence post-hire outcomes: by determining the source selection and the behaviour on the job. So far, several researchers have analysed separate aspects within one of the mechanisms. In the next subchapter, the existing literature that provides empirical evidence on these relationships is presented.

5.2.4 Literature Review of Empirical Analyses of Personality

Personality research has gained increasing importance during the last decades in various scientific disciplines. Whereas psychologists aim to explain individual behaviour, such as responses to stressors or drug abuse, economists analyse the role of personality traits in the determination of individual and organizational economic success. As it is impossible to give a concise overview on the entire field of personality research in this thesis, Chart 11 displays the literature related to the research question. Like effects of social ties, effects of personality can be measured at two stages of the job search process: before (pre-hire) and after (post-hire) a new job has been found. Pre-hire effects describe how personality affects job search while post-hire effects comprise all outcomes after the new job has been found. First, a strand of the literature directly attempts to measure the returns of personality traits in the labour market, e.g. measured as wages (5.2.4.1) or job satisfaction (5.2.4.2). Other researchers in this field focus on behaviour that is closely related to the earnings (e.g. performance, the level of education, and leadership abilities) or job satisfaction (e.g. team or individual work, level of autonomy). Furthermore, few researchers examine the role of personality during job search (5.2.4.3), e.g. search channel usage, search intensity, or the duration of unemployment spells. Moreover, this chapter also considers the psychological literature on individual behaviour, which includes stress responses or the ability to process information. These behavioural determinants might be related to the performance of job search or at work and, thus, to post-hire outcomes. Due to this relation to post-hire outcomes, these aspects are described in the post-hire outcomes chapter.

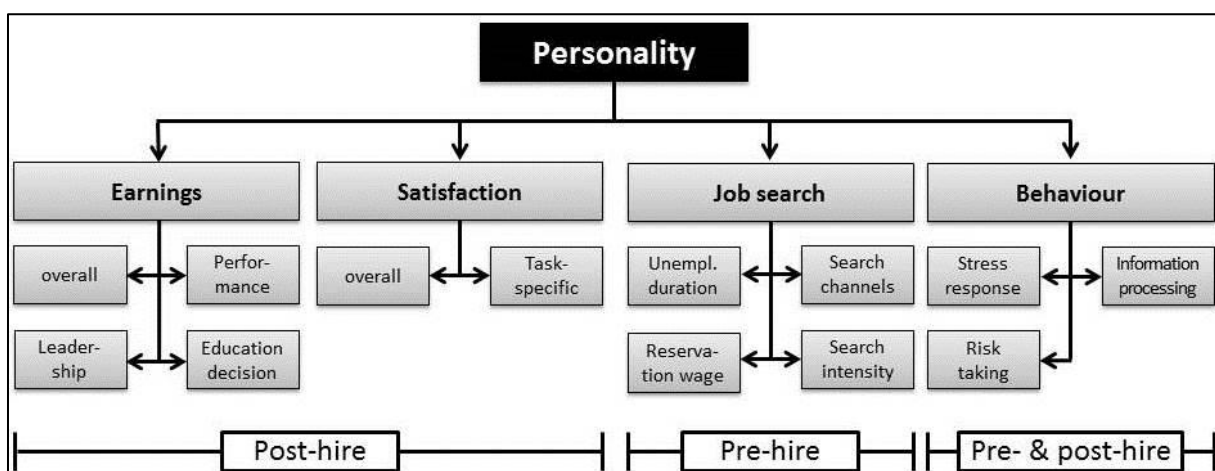


Chart 11: Personality research overview

(Source: own representation)

5.2.4.1 Personality and Earnings

The empirical literature has investigated several channels through which personality could affect wages. Personnel economists tried to explain earnings differentials by individual behaviour based on personality traits. Hence, authors such as Nyhus and Pons (2005), Mueller and Plug (2006), Heineck and Anger (2010), as well as Heineck (2011) used large samples that comprised a variety of socio-economic data to measure a direct relation between personality and earnings.

Nyhus and Pons (2005) found that emotional stability (the obverse of neuroticism) was positively related to wages of Dutch employees, whereas agreeableness was correlated with lower female wages. At the beginning of a work-relationship, conscientiousness was associated with higher wages for men while openness to experience (here called autonomy) was related to a higher wage for men with longer tenure. Mueller and Plug (2006) analysed data on the 1957 cohort of high schools graduates in Wisconsin who were re-interviewed in 1992. For males, they found a significant positive relation between antagonism (as the reversed measure for agreeableness), emotional stability and openness to experience. Women benefited from high degrees of conscientiousness and openness to experience. Heineck and Anger (2010) were the first who used SOEP data to measure the relationship between personality and earnings. While controlling for cognitive abilities, the authors found a negative correlation between agreeableness and wages. Furthermore, they detected clear gender differences for openness and extraversion. Whereas extraverted males earned higher wages, extraverted females earned significantly less. On the contrary, women were rewarded for openness, while open males received a wage penalty. Positive reciprocity was rewarded for both genders, negative reciprocity only for males. The strongest correlation was detected for locus of control. An external orientation was strongly related to lower earnings. In another article, Heineck (2011) analysed the relationship between personality and earnings in the United Kingdom. He found a substantial positive relationship between openness to experience and wages and a negative relationship between agreeableness and wages. Women, additionally, received a wage penalty for high degrees of neuroticism.

The summary of these studies shows that the relationship between Big Five measures and earnings is largely stable across countries. Conscientiousness appears to be positively related to income, whereas agreeableness and neuroticism are negatively related to wages.

However, already Mueser (1979) questioned that personality directly affects earnings or indirectly determines occupational choice. Albeit his analyses do not contain a convincing

measure of orthogonal personality traits, he found a strong indication that adolescent personality affects their later occupational status largely by affecting the degree of education. In a survey of American eighth graders, Coleman and DeLeire (2003) found that locus of control affected investments into human capital by determining the expected returns of education. Students with an internal belief invested more into their human capital as they were convinced that their own effort was related to their later income. Heckman et al. (2006) argued along similar lines and showed significant correlations between personality⁷¹ and wages as well as personality and other measures of labour market outcomes or behaviour, such as schooling abilities, occupational choice, risky behaviour like smoking, drug use, or illegal activities.

Furthermore, performance could represent another potential channel through which personality could affect wages. Barrick and Mount (1991) analysed the relation of the Big Five personality traits and three measures of job performance (job proficiency, training proficiency, and personnel data) respectively five occupational groups (professionals, police, managers, sales, and skilled/semi-skilled). Results of this meta-study indicated that extraversion was related to performance of managers and sales staff (.18 and .15). Coefficients for emotional stability range from -.13 to .12, whereas conscientiousness was equally positively related to all occupations (.21 to .23). Regarding job success criteria, extraversion and openness to experience had a strong influence on training proficiency (.26 and .25). Conscientiousness was positively correlated to all three measures of job performance. Surprisingly, emotional stability and agreeableness were both weakly but positively correlated to all kinds of job performance.

Analysing employees' responses to external incentives, Bowles et al. (2001) found that a high degree of internal locus of control could be interpreted as an incentive-enhancing effect. Individuals with a strong belief that their working effort actually affected the production increased their effort. Henceforth, higher wages are likely to be paid to those who score high on the internal dimension of locus of control. Analysing the role of environmental influences, Mount et al. (1998) showed that agreeableness, conscientiousness, and emotional stability were correlated with performance in jobs with social interaction. This relation was stronger in

⁷¹ The authors used an aggregated measure for personality computed as the average of the Rosenberg Self-Esteem Scale and the Rotter scale of Locus of Control. Hence, this measure cannot be compared to the more detailed trait models presented in the remainder of this chapter.

jobs that require frequent team interaction compared to jobs that involve dyadic interaction with customers.

Apart from performance on the job, earnings increases could be a result of a vertical climbing of the hierarchy ladder into leadership positions. Employees in leadership positions have to show abilities to be promoted into and to remain in this position. These required abilities are not only high levels of human capital but also social (non-cognitive) skills that enable leaders to guide and motivate their subordinates. In their meta-analysis, Judge et al. (2002b) analysed the correlation between Big Five personality traits and both leadership emergence (a person could serve as a good leader) and leadership effectiveness (evaluated mostly by subordinate or supervisor ratings). The results revealed that extraversion ($\rho = .31$) was the strongest correlate. Further character traits, such as conscientiousness ($\rho = .28$), neuroticism ($\rho = -.24$), and openness to experience ($\rho = .24$), showed significant correlations with leadership. Agreeableness ($\rho = .08$) was rather weakly correlated with leadership. The 95% confidence interval excluded zero for all traits. These findings indicate that certain personality traits might be helpful in being promoted into leadership positions in which higher wages are paid.

Related to this, Gunthert et al. (1999) investigated the role of neuroticism in daily stress occurrence and coping behaviour. Neurotic persons were more likely to be exposed to situations they regarded as severely stressful. Additionally, highly neurotic individuals reacted more frequently with less adaptive coping strategies (e.g. hostility, self-blaming, or withdrawal) to stressors. Leading positions are associated with a high degree of responsibility for subordinates and, therefore, it is less likely that neurotic individuals are performing successfully in these positions which results in lower wages.

In other studies, Booth-Kewley and Vickers (1994), Trobst et al. (2002), and Turiano et al. (2012) analysed, if self-damaging behaviour (lack of health care, risky behaviour, substance abuse) is related to personality. In general, conscientiousness was negatively related to self-damaging behaviour, whereas extraversion and openness were positively related. Hence, these studies indicate that certain character traits are associated to risky or unhealthy behaviour which is likely to have a negative effect on labour market success.

Evidence from the domain of sports economics is provided by Deutscher et al. (2013). The authors analysed how ‘mental strength’ (measured as the performance differential in free-throws at the end of tight matches in comparison to performance during the rest of the match) of professional basketball players of the National Basketball Association (NBA) is related to

wages. They found that one players whose ‘mental strength’ was one standard deviation above the average earned 50% higher wages. Companies could benefit from employees who score high in mental strength (i.e. the inverse of neuroticism) by gaining employees who react appropriately to stressors and do not “choke under pressure” (Baumeister, 1984).

All in all, the empirical literature suggests several channels through which personality traits might affect wages, e.g. by job performance, leadership abilities, and responses to stressors.

5.2.4.2 Personality and Job Satisfaction

Job Satisfaction is a thoroughly investigated element of economics and social science, as satisfaction with working conditions and compensation is an import determinant of employee motivation and commitment. A growing literature aims at elucidating the determinants and moderators of job satisfaction and an excerpt of this literature is presented here. Furthermore, studies that focus on general life satisfaction are presented as life and job satisfaction are naturally related.⁷²

Analysing the relationship between Big Five personality traits and three measures of extrinsic and intrinsic job satisfaction, Furnham et al. (2002) solely found a significant correlation between job satisfaction and conscientiousness. However, the study suffered from the small sample size ($n = 82$) and a small set of control variables (gender, age). In their meta-analysis of 334 correlations from 163 independent samples, Judge et al. (2002a) found strong correlations between Big Five personality traits and job satisfaction. Neuroticism (-.29) and extraversion (.25) were the strongest predictors for job satisfaction. The whole set of personality traits had a multiple correlation of .41 with job satisfaction, which stresses the validity of the Big Five taxonomy in measuring determinants of job satisfaction. In another study of approximately 500 university employees, Judge et al. (2008) analysed the correlation between three measures of personality (FFM, core-self evaluations, and positive/negative affectivity). Emotional stability, extraversion and conscientiousness showed positive (univariate) correlations with job satisfaction. Inadequate stress coping and unhealthy behaviour (see chapter 5.2.4.1) might explain this relation. The whole set of Big Five traits explained 23 percent of the variation of job satisfaction.

However, similar working conditions might not only be perceived differently by employees with differences in personality traits. A growing literature deals with the complex relationship

⁷² See e.g. Tait et al. (1989) or Rode (2004) for a discussion of the relationship between life and job satisfaction.

between pay and life or job satisfaction. For example, Boyce and Wood (2011) analysed how differences in personality mediate differences in the happiness response to household income increases. Based on SOEP data, the authors detected that more conscientious individuals obtained higher increases in satisfaction compared to less conscientious participants. For women, high degrees of neuroticism and openness and low degrees of extraversion reduced the increase of satisfaction caused by an increase in household income. Moreover, it has become common sense, that relative income comparisons between related persons are more important for one's own happiness than absolute increases in income. For instance, Brown et al. (2008) – as well as Clark et al. (2009) and Boyce et al. (2010) – found that not the absolute amount of income affects satisfaction but employees' relative income rank. Stepping higher in the income ladder of a given population (e.g. neighbourhood or company) had a positive effect on satisfaction. Based on this literature, Budria and Ferrer-i-Carbonell (2012) examined if non-cognitive skills (FFM, LoC, reciprocity) affect the relationship between an individual's relative income rank and self-reported life satisfaction. Their results indicated that especially highly extraverted and neurotic individuals are rank-sensitive. Surprisingly, the authors found that individuals that scored low on external LoC were sensitive to their relative position in the income distribution. The authors argued that internally-oriented individuals are probably "more prone to blame and credit themselves for their economic status" (Budria, Ferrer-i-Carbonell, 2012: 17).

Winkelmann and Winkelmann (2008) analysed the mediating role of personality on the relationship between occupation and life respectively job satisfaction. Their results indicated that certain personality traits increased the likelihood to choose a specific job – which, henceforth, affected job satisfaction. Unfortunately, the authors only distinguished very few kinds of jobs which limits the validity of their study.

Hence, these results indicate that job satisfaction (and life satisfaction) might be related to personality traits directly. However, the existing evidence shows that personality could mediate the relationship between work-related events (such as wage increases) and satisfaction. This means that work-related events are perceived differently by individuals. If search channel usage is also affected by personality, this could explain differences in job satisfaction.

5.2.4.3 Personality and Job Search

So far, it is only rarely investigated if personality affects the job search process. Most researchers focus on locus of control, a measure that is most likely to be related to active

search behaviour and search success. Early research focussed on the relevance of the locus of control construct on learning and information processing. In an experimental setting, Davis and Phares (1967) found that participants were actively searching for more information when they scored high on the internal dimension of locus of control. Additionally, Seeman and Evans (1962), Seeman (1963), and Phares (1968) delivered empirical support that internally-oriented individuals were more able to recall and utilise information that had been open to participants. In line with this argument, Andrisani (1977) interpreted locus of control as a measure of personal initiative in the search for a new job that expresses individual motivation. An internal orientation had a positive impact on subsequent labour market experiences, when differences in abilities, skills and demographic characteristics are controlled for. Participants with an internal belief were in better occupations and earned higher hourly wages.

Only two current studies examined the meaning of locus of control in the job search process. In a more general analysis, Caliendo et al. (2010) observed a positive impact of internal locus of control on search intensity and on reservation wages. Unfortunately, the authors could not investigate if higher reservation wages affected actual wages (or job satisfaction) or simply increased search time, or both. In a second study, Caliendo et al. (2011) investigated the relationship between personality and the search behaviour of recently unemployed and they did not find significant effects on the choice of informal search methods.

5.2.5 Hypotheses Regarding Source Choice and Post-hire Outcomes

Based on theoretical considerations and empirical evidence, hypotheses describing the potential relationship between personality and both source choice and post-hire outcomes are formulated.

Openness to Experience

Openness to experience describes the degree of open-mindedness regarding new situations in contrast to the feeling of comfort from conventional or well-known situations. Hence, openness could improve the possibilities to create social capital which increases the probability to search via this channel.

H1a: Openness to experience is positively correlated with finding a job via social capital.

Openness might be related to career success as this dimension comprises flexibility and creativity. However, creativity requires the possibility to work autonomously. Only if this is supported by working environment, openness could result in poorer performance and dissatisfaction. Hence, a clear statement regarding the two post-hire outcomes is not possible.

Conscientiousness

Conscientiousness comprises the ability to search methodically and actively for a new job, which is most likely done via formal channels. Individuals with a lack of conscientiousness are more likely to find their jobs via social capital which might include spontaneous information of referrers.

H2a: Conscientiousness is negatively correlated with finding a job via social capital.

The relation between conscientiousness and wages is probably the most stable in the economic research on personality outcomes. Employees who rate themselves as hard working and diligent should receive higher wages compared to individuals who score low in this dimension. Based on models of motivation (Herzberg et al., 2010), Furnham et al. (2009) stated that factors that motivate the employee to work might be the same factors that determine job satisfaction. As conscientiousness can be interpreted as a major determinant of intrinsic motivation, being enabled to work successfully should increase satisfaction.

H2b: Conscientiousness is positively correlated with wages.

H2c: Conscientiousness is positively correlated with job satisfaction.

Extraversion

Extraversion appears to be obviously related to the frequency and intensity of social interaction and the creation of social capital. Introverts, however, are rather quiet and reserved and, therefore, they are less likely to dispose of a large social network. As a result, introverts are more likely to search via formal channels.

H3a: Extraversion is positively correlated with finding a job via social capital.

Apart from social interaction, Eysenck and Eysenck (1985) mentioned negative aspects of extraversion, such as impulsiveness and unreliability. Watson and Clark (1997), however, stressed the positive aspects such as optimism and sociability which could serve helpful on the job. Furnham and Zacherl (1986) as well as Tokar and Subich (1997) found evidence that extraverts are more satisfied with their job which hints at the positive aspects of extraversion. These findings lead to the following hypotheses:

H3b: Extraversion is positively correlated with wages.

H3c: Extraversion is positively correlated with job satisfaction.

Agreeableness

Agreeableness is an essential determinant of the quality and also the quantity of personal contacts. Agreeable persons are more likely to dispose of a large network whose members are willing to support their associates during job search.

H4a: Agreeableness is positively correlated with finding a job via social capital.

Regarding post-hire outcomes, agreeableness is usually seen as a two-sided sword. On the one hand, agreeableness might be advantageous in socialising with people – especially in settings that require teamwork and communication (Graziano et al., 1997). On the other hand, Judge et al. (1999) assumed that highly agreeable individuals could be too focused on pleasing others that they sacrifice their own career, when opportunistic behaviour towards colleagues might be more successful. The opposite relation could be expected for job satisfaction. Agreeable persons are less likely to be in conflict with their co-workers or supervisors, which leads to higher job satisfaction.

H4b: Agreeableness is negatively correlated with wages.

H4c: Agreeableness is positively correlated with job satisfaction.

Neuroticism

An important aspect of this dimension is the way how individuals cope with stress as job search exposes individuals to stressful and unfamiliar situations. Under the assumption that better information about the prospected job reduces the amount of stress, neurotic individuals are more likely to find their jobs via social capital. However, neuroticism could also represent an obstacle in creating social ties. Referrals might also increase stress, especially if the referral originates from a close friend or relative, who set the job searcher under pressure. Therefore, no ex-ante hypothesis can be formulated.

Empirical studies repeatedly found a negative correlation between neuroticism and post-hire outcomes. Highly neurotic persons are performing worse in their jobs which results in fewer career chances because of problems coping with stressful situations. The incapacity of coping with stress also causes dissatisfaction as stress is answered by inadequate behaviour.

H5b: Neuroticism is negatively correlated with wages.

H5c: Neuroticism negatively correlated with job satisfaction.

Locus of Control

Locus of control is likely to be related to source choice. Individuals with an internal belief are convinced that their search effort will pay off in finding a job. Therefore, they invest more effort in job search via formal channels (Caliendo et al., 2010). On the contrary, externally oriented individuals do not search actively but find a job randomly, which is much more probable through social contacts that spread information about a vacancy.

H6a: Internal LOC is negatively correlated with finding a job via social capital.

Apart from search effort, an internal locus of control is likely to increase individual work motivation. As Bowles et al. (2001) stated, employees with an internal orientation are more sensitive to monetary incentives or promotion perspectives. Moreover, believing in one's own strengths should be positively related to job satisfaction. Being convinced that powerful others determine career outcomes is likely to be dissatisfying.

H6b: Internal LOC is positively correlated with wages.

H6c: Internal LOC is positively correlated with job satisfaction.

Positive Reciprocity

Positive reciprocity is expected to be a predictor for social capital because returning favours appears to be a determinant of tie stability. One-sided relationships are not likely to pertain for long. Hence, reciprocal individuals are more likely to dispose of a large and useful network to find a job.

H7a: Positive reciprocity is positively correlated with finding a job via social capital.

Being highly reciprocal might have a positive effect on wages. Returning favours of others ensures that both individuals are willing to exchange favours again. Hence, a mutually beneficial relationship remains intact. Additionally, returning favours could be positively related to job satisfaction, because the ability to exchange favours is likely to have a positive effect on the working relationships and the general working atmosphere.

H7b: Positive reciprocity is positively correlated with wages.

H7c: Positive reciprocity is positively correlated with job satisfaction.

Negative Reciprocity

Strong reactions to negative experiences are likely to destroy interpersonal ties in contrast to calm and thoughtful reactions. Therefore, persons who tend to react strongly and to get angry quickly might dispose of smaller networks.

H8a: Negative reciprocity is negatively correlated with finding a job via social capital.

However, it is questionable if negative reciprocity is related to job search outcomes. With increasing tenure, aggressive and hostile reactions towards others might be regarded as a lack of self-control, which could be an obstacle in one's career. Inappropriate reactions cause similar responses from others, which might lead to dissatisfaction and the decision to quit the job. However, it is not important at the beginning of the employment. Therefore, no relation between negative reciprocity and post-hire outcomes are expected. All hypotheses describing the expected correlation between job search via social capital and personality traits with post-hire outcomes are summarised in Table 27.

Table 27: Summary of hypotheses regarding personality traits

		(a)	(b)	(c)
	Character Trait	Channel choice (SC)	Wages	Job satisfaction
H1:	Openness to Experience	(+)	no effect	no effect
H2:	Conscientiousness	(-)	(+)	(+)
H3:	Extraversion	(+)	(+)	(+)
H4:	Agreeableness	(+)	(-)	(+)
H5:	Neuroticism	no effect	(-)	(-)
H6:	Locus of Control	(-)	(+)	(+)
H7:	Positive Reciprocity	(+)	(+)	(+)
H8:	Negative Reciprocity	(-)	no effect	no effect

5.3 Empirical Evidence

5.3.1 Dataset and Personality Measures

The data for this study are drawn from the German Socio-Economic Panel (SOEP) and comprises data of 1,432 individuals who changed their jobs 1,880 times in the years 2005 to 2011. The data has been limited to the working population aged 18-65; self-employed workers and the agricultural sector have been excluded. In 2005, a set of questions measuring three distinct measures of personality – the Big Five, locus of control, and reciprocity – were included in the SOEP for the first time. As shown in Chart 12, the Big Five questions are asked again in 2009, whereas questions for locus of control and reciprocity are repeated in 2010. Personality measures are regarded as stable enough to assume similar values in the years after the measurement. Therefore, the results of the 2005 and the 2009/2010 waves are used as a proxy for the personality measures in the following years (see the discussion of the consistency of personality traits in chapter 5.2.2).

Survey year	2005	2006	2007	2008	2009	2010	2011
Measure							
Big Five	1 st wave				2 nd wave		
Locus of Control	1 st wave					2 nd wave	
Reciprocity	1 st wave					2 nd wave	

Chart 12: Personality questionnaires on the Socio-Economic Panel

The SOEP questionnaires in 2005 and 2009/2010 contain 31 questions to assess the three personality measures. 15 of these items – three for each dimension – measure the *Big Five* by a short inventory (BFI-S) that has been invented to take the limited time and space of a large multi-topic survey into account. In extensive pre-tests, the inventory has shown a satisfactory relation to long personality questionnaires.⁷³ Respondents had to rate themselves on a 7-point Likert scale (1 – “does not apply to me at all” to 7 – “does apply to me perfectly”). Questions were asked in the form of “I see myself as someone who ...” followed by a characteristic description referring to one personality dimension (see Table 57 in the Appendix). As Boyce et al. (2013) suggested, scores of each dimension were added and normalised ($\mu=0$, $\sigma^2=1$).

Locus of control is estimated by ten items, six of which refer to an external, four to an internal orientation (see Appendix: Table 58). The initial question was posted: “To what degree do you personally agree with the following statements?” Scores for the external belief were inverted to get a one-dimensional bipolar measure, followed by normalisation. The last six items (three each) pertain to the two distinct measures of *positive* and *negative reciprocity*. Participants were asked to what degree the six statements apply to them (see Appendix: Table 59). In contrast to locus of control, positive and negative reciprocity are not a single bipolar measure as reactions to positive or negative actions of others might differ (Heineck, Anger, 2010). Chart 13 shows the distribution of the personality variables with the assumed normal distribution. Only few measures fit the normal distribution well, most are skewed.

⁷³ See Gerlitz and Schupp (2005) for a detailed description of the implementation and the validity of the BFI-S.

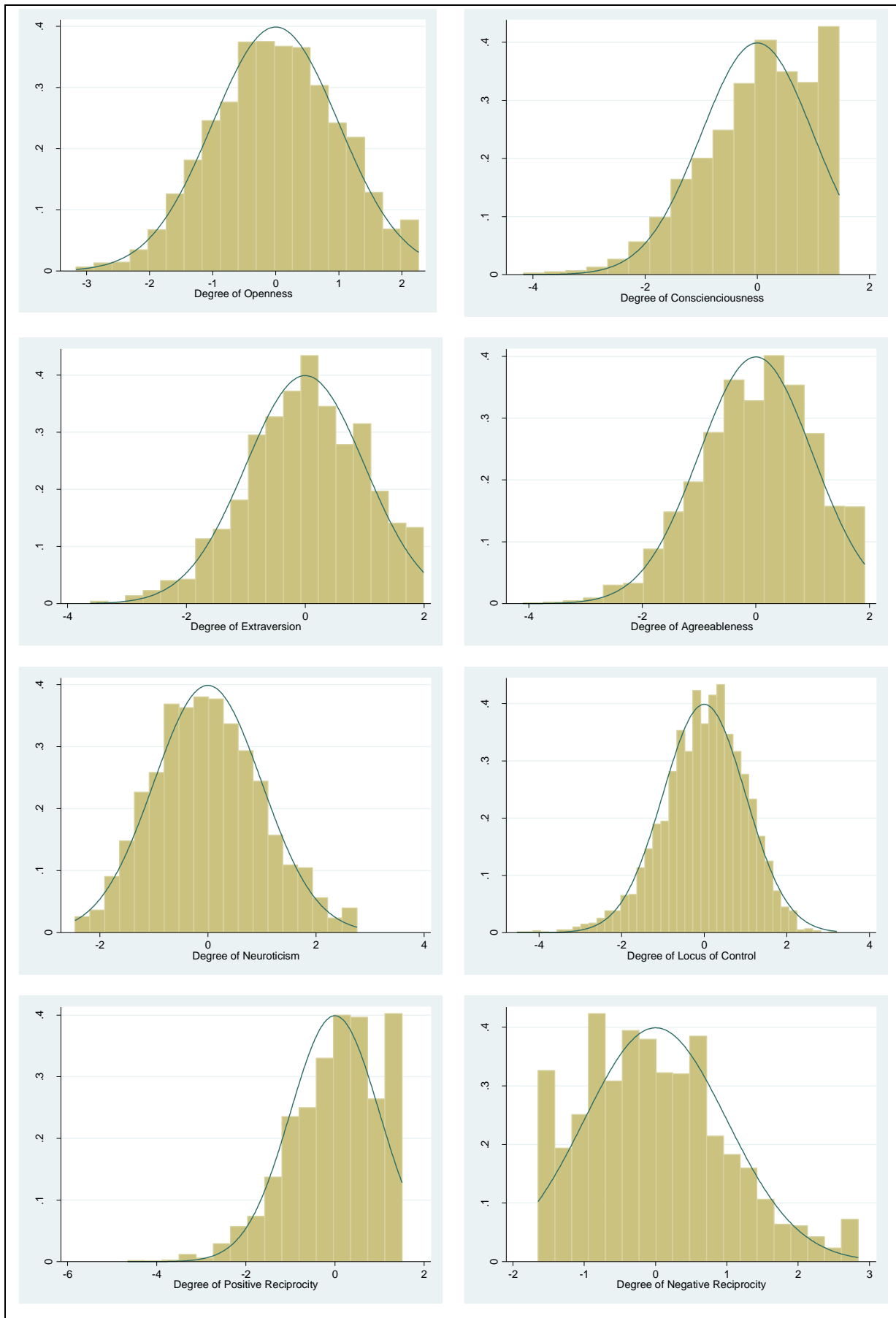


Chart 13: Distribution of answers to the personality questions

Table 28 provides an overview of the variables used in this chapter. Apart from personality variables, all measures are the same as in chapter 3 (see Table 5). A comparison of the reduced dataset with the original dataset in chapter 3 shows that there are little differences between the two datasets. The use of social ties and employment agencies is nearly identical. Internet adverts have become slightly more important in the reduced dataset while newspaper adverts have been used less frequently. This can be explained by an underlying time trend in the data. Since the years 1999 until 2004 are excluded in this sample, the dataset contains observations of the years in which internet adverts became more and more important (see Chart 8 in chapter 3). Normalised personality measures, in average, fluctuate rather sharply around zero. Negative reciprocity, a measure which is most likely skewed, accounts for the largest distance from zero. Dependent variables are monthly earnings and job satisfaction. In average, respondents earned around 2,000 euros (in prices of 2010) and reported a level of job satisfaction of 7.1.

With regard to demographic characteristics, only few differences can be observed between the two datasets. Around half of the job changers are female. Job changers in this sample are slightly older (37.2 compared to 36.6) and report a slightly higher level of education (12.7 compared to 12.5). This difference is likely to be caused by demographic changes (e.g. older employees, more educated employees) and not by selection effects. All other demographics are nearly the same.

Little differences can be found for job related characteristics. Regarding branch differences, an increase in the importance of the service sector is remarkable. Little changes can be found in terms of firm size and job classifications. The most striking difference is detected for finding a job with limited duration, which is considerably higher in the reduced dataset (.32 compared to .18) which might indicate a time trend the emergence of temporary contracts. All in all, this overview shows that few differences can be found when years without personality variables are excluded. Missing values in the personality variables are, therefore, random.

Table 28: Dataset overview (reduced dataset with personality traits)

Variable	Obs.	Mean	Std. Dev.
<u>Dependent variable</u>			
Monthly wage income	1,880	1,965.40	1303.76
Job satisfaction	1,880	7.137	2.062
<u>Recruitment source</u>			
Referrals (1=yes)	1,880	0.539	0.499
Newspaper (1=yes)	1,880	0.212	0.409
Employment office (1=yes)	1,880	0.086	0.281
Internet (1=yes)	1,880	0.162	0.369
<u>Five Factor Model</u>			
Agreeableness	1,880	-0.012	0.978
Conscientiousness	1,880	-0.017	1.026
Extraversion	1,880	0.007	1.000
Neuroticism	1,880	0.005	1.004
Openness to experience	1,880	-0.012	0.971
<u>Locus of control</u>			
Locus of control	1,880	-0.027	0.997
Positive reciprocity	1,880	0.025	0.986
Negative reciprocity	1,880	0.050	1.010
<u>Demographics</u>			
Gender (1=female)	1,880	0.521	0.500
Age	1,880	37.220	9.963
Years of education	1,880	12.688	2.598
Married (1=yes)	1,880	0.494	0.500
Children in household (1=yes)	1,880	0.474	0.499
Immigrant (1=yes)	1,880	0.090	0.286
East Germany (1=yes)	1,880	0.244	0.429
<u>Unemployment</u>			
Unemployed before (1=yes)	1,880	0.259	0.438
Total years of unemployment	1,880	1.034	1.881
Actively sought (1=yes)	1,880	0.651	0.477
<u>Branch</u>			
Industry (1=yes)	1,880	0.219	0.414
Manufacturing (1=yes)	1,880	0.061	0.240
Trade (1=yes)	1,880	0.245	0.430
Finance (1=yes)	1,880	0.159	0.365
Services (1=yes)	1,880	0.316	0.465
<u>Firm size</u>			
less than 20 (1=yes)	1,880	0.363	0.481
20 to 199 (1=yes)	1,880	0.310	0.462
200 to 1999 (1=yes)	1,880	0.172	0.378
more than 2000 (1=yes)	1,880	0.155	0.362
<u>ISCO job classification</u>			
Legislators, senior officials & managers (1=yes)	1,880	0.049	0.217
Professionals (1=yes)	1,880	0.143	0.350
Technicians and associate professionals (1=yes)	1,880	0.245	0.430
Clerks (1=yes)	1,880	0.116	0.321
Service workers (1=yes)	1,880	0.154	0.361
Craft and related trade workers (1=yes)	1,880	0.131	0.337
Plant and machine operators (1=yes)	1,880	0.077	0.267
Elementary occupations (1=yes)	1,880	0.085	0.279
<u>Other</u>			
Civil servant (1=yes)	1,880	0.158	0.365
Working hours per week	1,880	37.008	13.621
Limited contract (1=yes)	1,880	0.316	0.465

5.3.2 Methodology

As already shown in chapter 3 of this dissertation, source choice is non-random. Individuals self-select into sources according to certain demographic or job-related characteristics. As a result, estimated coefficients are likely to be biased. Furthermore, as this chapter concentrates on the role of personality traits in the job search process, it is not clear if personality traits affect source choice, source outcomes or both. Therefore, a two-stage estimator is chosen to reduce potential biases.

The most common method to reduce the selectivity bias is the two-stage Heckman approach which corrects for self-selection in the binomial case (Heckman, 1979). In order to avoid biased source estimators by grouping search channels into formal and informal, four recruitment channels are separated in this paper. It is quite likely that both determinants and post-hire outcomes differ between these formal channels which would result in biased coefficients when formal channels are simply pooled together. Two early methods that can be applied to the multivariate selection case were introduced by Lee (1983) and Dubbin and McFadden (1984), more recently, a semi-parametric approach has been presented by Dahl (2002). Bourguignon et al. (2007) compared these three approaches in a set of Monte Carlo experiments. They showed that the Dubbin-McFadden model performs well under the restriction that all correlation coefficients between selection channels sum-up to zero. However, if this assumption is violated, the estimator performs poorly. Therefore, they introduced a variant of Dubin-McFadden estimator (called DMF2) that relaxes this restriction.

The DMF2 estimator consists of a multinomial logistic regression on the first level that estimates four correction terms for each observation (one for each source) to take the selection effect into account. On the second level, an OLS model including the correction term is estimated. In order to increase the validity of the estimations, an exclusionary restriction is required – a variable which is solely in the selection equation and not in the second stage regression. It is assumed that active search is highly correlated with job search via formal channels but being unrelated to post-hire outcomes. Active search is likely to be driven by dissatisfaction with the current job or job loss because individuals search actively in order to find a new job in this situation. Furthermore, previous analyses in chapter 3 have shown that active search is a key determinant of finding a job via formal means. On the contrary, job search via social ties appears to be related to passive search. Moreover, in the regression analyses in chapter 4, the active search dummy is not statistically related to post-hire

outcomes. Thus, it is assumed that active search fulfils all requirements of an exclusionary restriction.⁷⁴ The full theoretical model is given by

$$\text{Log}(W_{it}) = \alpha + \text{SOURCE}'_{it} \cdot \beta + \text{Corr}'_{it} \cdot \gamma + P'_{it} \cdot \rho + A'_{it} \cdot \delta + \epsilon \tag{5.1}$$

with

$$\text{Pr}(\text{SOURCE}_{it} = k) = \theta + P'_{it} \cdot \kappa + \text{Actsought}'_{it} \cdot \lambda + A'_{it} \cdot \mu + \eta, \quad (k = 1, 2, 3, 4) \tag{5.2}$$

and

$$k = \begin{cases} 1 & \text{friends/relatives} \\ 2 & \text{newspaper adverts} \\ 3 & \text{(public) employment agencies} \\ 4 & \text{internet adverts} \end{cases}$$

where equation (1) represents the second level equation including $\log(\text{wage})$ as the dependent variable of individual i in period t and equation (2) which accounts for the endogeneity of source choice. α and θ represent the intercepts. In both regressions, SOURCE stands for a set of dummy variables for the recruitment channel the job was finally found through. P represents the vector of the personality variables described above. $Corr$ contains correction terms which derive from the first stage regression. Vector A contains a set of demographic and job-related control variables that are likely to determine the respective wage respectively the selection into job finding channels. $Actsought$ represents a dummy variable that takes the value 1 if the job was found after active search and 0 if not. ϵ and η are error terms.

The model to estimate the relationship between source usage and job satisfaction is given by:

$$\text{JobSat}(JS_{it}) = \alpha + \text{SOURCE}'_{it} \cdot \beta + \text{Corr}'_{it} \cdot \gamma + P'_{it} \cdot \rho + B'_{it} \cdot \delta + \epsilon \tag{5.3}$$

with

$$\text{Pr}(\text{SOURCE}_{it} = k) = \theta + P'_{it} \cdot \kappa + \text{Actsought}'_{it} \cdot \lambda + A'_{it} \cdot \mu + \eta, \quad (k = 1, 2, 3, 4) \tag{5.4}$$

where equation (3) is the second-stage regression and equation (4) equals equation (2) of the wage estimation. Apart from demographic and job related measures, the control vector B contains variables related to satisfaction, such as health, perceived job security, and wages. Vector A is the same as in the regression above. The latter approach is chosen to eliminate potential income effects in job satisfaction. In a further regression, it is not controlled for income in order to be able to compare the findings.

Moreover, ignoring the two-stage nature of the model leads to inconsistent standard errors (Newey, McFadden, 1994). Therefore, Bourguignon et al. (2007) strongly suggested

⁷⁴ Huber and Mellace (2014) proposed tests for the violation of the assumptions of exclusion restrictions (the variable is related to the selection but not to the second stage outcome), however, this approach has not been applied to a model with a multivariate selection regression.

resampling methods to correct the variances of the estimators. The jackknife estimator with 1,432 repetitions (sample size) is applied to calculate individually clustered standard errors. The jackknife estimator is preferred to the bootstrap estimator because jackknife calculates solely one value for the standard error, whereas bootstrapping leads to different estimators when it is repeated. Furthermore, Efron (1979) showed that both estimators are related as the jackknife can be regarded as a linear expansion for approximating the bootstrap.

5.3.3 Descriptive Statistics

Table 29 provides a first impression on how employees differ in personality traits across recruiting sources. Arithmetic means in “Big Five” character traits reveal some significant differences. Workers hired through public employment offices are less conscientious; those who used the internet are more open to new experiences and less extraverted. Other “Big Five” personality dimensions show no significant differences between sources. Furthermore, as assumed, an internal locus of control is related to job search via newspaper and internet adverts. Both positive and negative reciprocity show now difference between sources.

Table 29: Big Five personality traits, locus of control, and reciprocity by recruitment source

	Friends/relatives	Newspaper	Emp. Office	Internet
Openness	-0.037 (0.987)	-0.055 (0.922)	0.031 (0.951)	0.105* (0.981)
Conscientiousness	0.005 (1.031)	0.057 (0.998)	-0.210** (1.072)	-0.085 (1.011)
Extraversion	0.038 (0.977)	0.028 (0.984)	-0.076 (1.052)	0.080* (1.062)
Agreeableness	0.001 (0.972)	0.026 (0.934)	-0.116 (1.075)	-0.047 (0.998)
Neuroticism	0.028 (0.996)	-0.037 (1.016)	-0.015 (1.038)	-0.004 (0.998)
Locus of Control	-0.096 (1.015)	0.068** (0.932)	-0.105 (1.010)	0.117** (0.995)
Positive Reciprocity	0.044 (1.001)	-0.015 (1.012)	0.005 (0.878)	0.025 (0.958)
Negative Reciprocity	0.059 (0.994)	0.034 (0.962)	0.179 (1.163)	-0.028 (1.032)
Observations	1,014	399	162	305

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives.

Apart from personality differences, job searchers could also differ with regard to demographic characteristics (see Table 30). Participants who found their job via newspaper adverts are more likely to be female compared to those who found jobs via friends or relatives. Both job searchers via employment offices and internet adverts are younger than the reference group.

More years of education can be observed for those who found their jobs via internet adverts. Further source differences can be found for highly correlated characteristics such as marital status and children in the household. Immigrants search less on the internet. Those who have been unemployed before the new job are more likely to have found their job via employment agencies or internet adverts. The total sum of years unemployed is higher for those who found their jobs with help of employment agencies and lower for internet job searchers. Job search via social capital is less likely to be related to active search but by unintended receipt of information by contacts, which underlines the reliability of the exclusionary restriction. Source differences are qualitatively similar in comparison with the larger dataset utilised in chapters 3 and 4, displayed in Table 7.

Table 30: Demographic and search related individual differences

	Friends/relatives	Newspaper	Emp. Office	Internet
Sex (1=Female)	0.497 (0.500)	0.582** (0.494)	0.516 (0.501)	0.510 (0.501)
Age	38.017 (10.001)	38.653 (9.719)	35.841** (10.605)	35.428*** (8.915)
Years of Education	12.381 (2.488)	12.644* (2.437)	12.089 (2.375)	13.699*** (2.732)
Married (1=yes)	0.525 (0.500)	0.579* (0.494)	0.420** (0.495)	0.390*** (0.489)
Children in HH (1=yes)	0.499 (0.500)	0.510 (0.501)	0.497 (0.502)	0.363*** (0.482)
East Germany (1=yes)	0.258 (0.438)	0.153*** (0.361)	0.338* (0.474)	0.260 (0.440)
Immigrant (1=yes)	0.097 (0.297)	0.082 (0.274)	0.108 (0.312)	0.065* (0.247)
Unempl. before new job (1=yes)	0.213 (0.410)	0.250 (0.434)	0.548*** (0.499)	0.274* (0.447)
Unempl. experience (in years)	1.088 (1.967)	0.992 (1.921)	1.657*** (2.390)	0.644*** (1.045)
Actively sought (1=yes)	0.478 (0.500)	0.824*** (0.381)	0.879*** (0.327)	0.873*** (0.333)
Observations	966	392	157	292

Notes: Arithmetic means, standard deviations in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively, of t-tests for differences in means compared to friends/relatives.

The descriptive analyses provided a first impression of differences between job seekers who were successful via one of the four channels. However, multivariate analyses have to reveal if personality traits and demographic characteristics are able to explain source selection and/or differences in post-hire outcomes.

5.3.4 Multivariate Analysis

The analyses in the previous chapter have revealed differences between individuals who search for a new job via different search channels. However, it is not clear if these factors – both personality traits and demographics – actually determine source choice or if they (also)

determine post-hire outcomes. Thus, multivariate analysis has to reveal (5.3.4.1) determinants of source choice, (5.3.4.2) determinants of wage and job satisfaction, and (5.3.4.3) to correct for self-selection into source usage.

5.3.4.1 Determinants of Job Finding

As hypothesised in chapter 5.2.5, personality is likely to affect source choice and job finding in various ways. Table 31 shows the results of the multinomial logistic regression with the recruitment source as the dependent variable, the mentioned measures of personality as independent variables, and a large set of control variables. Compared to the reference group of job search via social capital, more open individuals are more likely to find a job via internet adverts or employment offices. Those who found their job with the aid of public employment agencies are less conscientious. The coefficient for extraversion is negative for all formal channels but statistically significant only for internet job searchers. Job search via newspaper adverts and employment offices seems to be associated with a higher degree of locus of control. This holds true for the other two channels as well, however, the coefficients are not statistically significant different from zero. Therefore, one can conclude that personality differences affect source choice in the expected direction.

Regarding the other control variables, most demographic coefficients are insignificant. Females tend to search more frequently via newspaper adverts, whereas this channel is less frequently used in eastern Germany. The largest coefficient can be found for active job search, indicating that finding a job via social capital is rather unintended and random. Unemployment increases the likelihood of finding a job via employment agencies and internet adverts, whereas those who found their job via internet adverts were unemployed for fewer years in total. Jobs in the industry sector are often found via employment agencies, in the service sector via employment agencies and internet adverts. Job search behaviour is not related to the type of job change, meaning search for the first job, search after a break, or job-to-job change. Firm size is also positively related to finding a job on the internet. The ISCO job classifications are vastly unrelated to search channels, except for elementary occupations which are less likely to be found on the internet.

As this analysis mainly aimed at identifying determinants of source choice (and not at measuring the size of the correlation), marginal effects are not further discussed but can be found in Table 32.

Table 31: Multinomial logarithmic regression results of the determinants of source choice

DV: Channel the job was found through	Newspaper		Empl. office		Internet	
Ref: Friends/relatives	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Five-Factor Model</u>						
Openness	0.010	(0.079)	0.213*	(0.108)	0.199*	(0.096)
Conscientiousness	-0.001	(0.078)	-0.243*	(0.098)	-0.021	(0.087)
Extraversion	-0.051	(0.078)	-0.210	(0.113)	-0.217*	(0.089)
Agreeableness	-0.026	(0.079)	-0.185	(0.113)	-0.045	(0.092)
Neuroticism	-0.098	(0.081)	-0.105	(0.109)	0.041	(0.092)
Locus of Control	0.201**	(0.075)	0.219*	(0.109)	0.161	(0.093)
Positive Reciprocity	-0.069	(0.077)	0.000	(0.099)	-0.024	(0.087)
Negative Reciprocity	0.059	(0.073)	0.018	(0.110)	-0.035	(0.097)
Gender (1=female)	0.654***	(0.196)	0.423	(0.267)	0.369	(0.204)
Years of education	0.025	(0.038)	-0.032	(0.059)	0.081*	(0.041)
Age	0.010	(0.060)	-0.121	(0.078)	0.050	(0.071)
Age squared/100	0.000	(0.001)	0.001	(0.001)	-0.001	(0.001)
Married (1=yes)	0.310	(0.166)	-0.045	(0.243)	-0.037	(0.200)
Children in HH (1=yes)	0.173	(0.163)	0.371	(0.213)	-0.149	(0.190)
East Germany (1=yes)	-0.801***	(0.198)	0.021	(0.235)	-0.043	(0.193)
Immigrant (1=yes)	-0.101	(0.259)	0.410	(0.330)	0.103	(0.295)
Actively sought (1=yes)	1.738***	(0.161)	1.918***	(0.291)	2.053***	(0.210)
<u>Type of job change (ref.: new employer)</u>						
First job (1=yes)	-0.699	(0.432)	-0.624	(0.586)	-0.550	(0.381)
Job after break (1=yes)	-0.115	(0.197)	0.358	(0.251)	0.245	(0.243)
Unemployed before new job (1=yes)	0.183	(0.166)	1.007***	(0.221)	0.420*	(0.196)
Years of unemployment	0.012	(0.048)	0.087	(0.049)	-0.131*	(0.061)
<u>Branch dummies (ref.: trade)</u>						
Industry (1=yes)	-0.007	(0.217)	1.013**	(0.371)	0.420	(0.260)
Manufacturing (1=yes)	-0.674	(0.381)	0.601	(0.478)	-0.438	(0.530)
Finance (1=yes)	-0.012	(0.241)	0.614	(0.401)	0.248	(0.282)
Services (1=yes)	0.085	(0.218)	0.991**	(0.347)	0.591*	(0.257)
<u>Firm size (ref.: less than 20)</u>						
20 to 199 (1=yes)	0.186	(0.175)	-0.346	(0.265)	0.239	(0.220)
200 to 1999 (1=yes)	0.618**	(0.204)	-0.204	(0.314)	0.728**	(0.247)
more than 2000 (1=yes)	0.152	(0.241)	0.118	(0.324)	1.152***	(0.245)
Limited contract (1=yes)	-0.253	(0.160)	0.288	(0.208)	-0.226	(0.188)
Working hours per week	0.011	(0.006)	0.020*	(0.008)	0.033***	(0.008)
Public sector (1=yes)	-0.355	(0.244)	0.115	(0.336)	-0.388	(0.262)
<u>ISCO job classification (ref.: legislators, senior officials and managers)</u>						
Professionals (1=yes)	-0.100	(0.375)	1.137	(1.138)	0.038	(0.373)
Technicians & associate prof. (1=yes)	0.423	(0.351)	1.814	(1.083)	0.387	(0.368)
Clerks (1=yes)	-0.311	(0.394)	2.132	(1.111)	-0.265	(0.424)
Service workers (1=yes)	0.010	(0.391)	1.965	(1.133)	0.321	(0.414)
Craft and related trade workers (1=yes)	0.152	(0.401)	2.128	(1.104)	-0.401	(0.474)
Plant and machine operators (1=yes)	0.151	(0.414)	2.108	(1.137)	0.052	(0.449)
Elementary occupations (1=yes)	-0.399	(0.423)	1.261	(1.139)	-1.300*	(0.578)
Year dummies		yes		yes		Yes
Constant	-3.596**	(1.295)	-5.040*	(2.049)	-7.082***	(1.382)
Observations				1,880		
McFadden Pseudo-R ²				0.176		

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 32: Marginal effects of the determinants of source choice

DV: Channel the job was found through	Newspaper		Empl. office		Internet	
Ref: Friends/relatives	Mar. Eff.	SE	Mar. Eff.	SE	Mar. Eff.	SE
<u>Five-Factor Model</u>						
Openness	-0.005	(0.012)	0.009	(0.006)	0.019*	(0.009)
Conscientiousness	0.002	(0.012)	-0.013*	(0.005)	-0.001	(0.008)
Extraversion	-0.002	(0.012)	-0.009	(0.006)	-0.020*	(0.009)
Agreeableness	-0.002	(0.013)	-0.009	(0.006)	-0.003	(0.009)
Neuroticism	-0.019	(0.013)	-0.005	(0.006)	0.007	(0.009)
Locus of Control	0.026*	(0.012)	0.009	(0.006)	0.009	(0.009)
Positive Reciprocity	-0.011	(0.012)	0.001	(0.005)	-0.001	(0.008)
Negative Reciprocity	0.009	(0.012)	0.001	(0.006)	-0.005	(0.009)
Gender (1=female)	0.099***	(0.031)	0.013	(0.014)	0.020	(0.020)
Years of education	0.002	(0.006)	-0.003	(0.003)	0.008	(0.004)
Age	0.001	(0.010)	-0.006	(0.004)	0.006	(0.007)
Age squared/100	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Married (1=yes)	0.057*	(0.027)	-0.006	(0.013)	-0.011	(0.020)
Children in HH (1=yes)	0.025	(0.026)	0.019	(0.011)	-0.023	(0.018)
East Germany (1=yes)	-0.134***	(0.031)	0.013	(0.012)	0.017	(0.019)
Immigrant (1=yes)	-0.026	(0.042)	0.023	(0.017)	0.006	(0.030)
Actively sought (1=yes)	0.218***	(0.025)	0.072***	(0.015)	0.156***	(0.020)
<u>Type of job change (ref.: new employer)</u>						
First job (1=yes)	-0.088	(0.051)	-0.020	(0.020)	-0.040	(0.027)
Job after break (1=yes)	-0.034	(0.029)	0.020	(0.016)	0.026	(0.027)
Unemployed before new job (1=yes)	0.005	(0.027)	0.050***	(0.013)	0.032	(0.019)
Total years of unemployment	0.005	(0.008)	0.005*	(0.003)	-0.015*	(0.006)
<u>Branch dummies (reference: trade)</u>						
Industry (1=yes)	-0.017	(0.036)	0.048*	(0.020)	0.036	(0.025)
Manufacturing (1=yes)	-0.096*	(0.047)	0.035	(0.025)	-0.025	(0.034)
Finance (1=yes)	-0.017	(0.039)	0.023	(0.017)	0.020	(0.025)
Services (1=yes)	-0.012	(0.036)	0.040*	(0.017)	0.053*	(0.025)
<u>Firm size (reference: less than 20)</u>						
20 to 199 (1=yes)	0.030	(0.027)	-0.021	(0.014)	0.019	(0.018)
200 to 1999 (1=yes)	0.097**	(0.036)	-0.023	(0.015)	0.054*	(0.024)
more than 2000 (1=yes)	-0.009	(0.034)	-0.004	(0.019)	0.139***	(0.033)
Limited contract (1=yes)	-0.042	(0.025)	0.021	(0.011)	-0.020	(0.018)
Working hours per week	0.001	(0.001)	0.001	(0.000)	0.003***	(0.001)
Public sector (1=yes)	-0.053	(0.039)	0.014	(0.018)	-0.031	(0.025)
<u>ISCO job classification (ref.: legislators, senior officials and managers)</u>						
Professionals (1=yes)	-0.022	(0.058)	0.023	(0.017)	0.004	(0.039)
Technicians & associate prof. (1=yes)	0.055	(0.057)	0.045**	(0.016)	0.025	(0.039)
Clerks (1=yes)	-0.054	(0.059)	0.079***	(0.024)	-0.030	(0.041)
Service workers (1=yes)	-0.018	(0.061)	0.062**	(0.024)	0.029	(0.046)
Craft and related trade workers (1=yes)	0.019	(0.065)	0.076**	(0.026)	-0.048	(0.043)
Plant and machine operators (1=yes)	0.012	(0.067)	0.072*	(0.029)	-0.007	(0.047)
Elementary occupations (1=yes)	-0.037	(0.064)	0.036	(0.020)	-0.086*	(0.040)
Year dummies		yes		yes		Yes

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

5.3.4.2 Post-hire Outcomes without Endogeneity Correction

The following two tables summarise the multivariate results assessing the relationship between search channels and personality as independent variables and either wages (Table 33) or job satisfaction (Table 34) as the dependent variable. In both tables, personality factors and sources are included stepwise to observe potential changes in the coefficients.

The first wage regression model does not include source or personality variables. As expected, several demographic variables are significantly related to wages, such as gender (-.150) or years of education (.032). Furthermore, working in different branches (compared to working in the trade branch) and working in large companies is related to higher earnings. Employees on lower occupational levels (measured by the ISCO job classification) receive lower wages compared to higher levels.

Including recruitment source variables into the regression in Model (2) does not change these findings. All source coefficients are insignificant, whereas the other coefficients remain broadly the same. The results change slightly after adding personality variables, but significant coefficients remain significant. Moreover, only (internal) locus of control is positively related to wages, all other personality coefficients are insignificant. However, as expected, conscientiousness is positively, agreeableness and neuroticism are negatively related to wages. Furthermore, both openness and extraversion are negatively correlated to wages.

Similar stepwise regressions are conducted with job satisfaction as the dependent variable (Table 34). As the results indicate, job satisfaction is not affected by demographic factors. However, individual health and perceived job insecurity are strong determinants of job satisfaction. Furthermore, the gross income coefficient shows a positive correlation to job satisfaction. In Model (2), all three source variables have a negative sign, statistically significant for newspaper adverts. The other coefficients are unaffected, only the gender coefficient becomes significant. This significance vanishes, when personality traits are included. Source coefficients remain stable. Openness to experience and agreeableness, as well as locus of control, are positively related to job satisfaction. Conscientiousness and extraversion estimators have at least a positive sign. Neuroticism does not affect job satisfaction at all.

Table 33: Wage regressions with source choice and personality

DV: Log(Monthly Wage)	Model (1)		Model (2)		Model (3)	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
<u>Source</u>						
Newspaper (1=yes)			0.017	(0.031)	0.009	(0.031)
Employment office (1=yes)			0.051	(0.036)	0.049	(0.037)
Internet (1=yes)			0.054	(0.035)	0.051	(0.035)
<u>Five-Factor Model</u>						
Openness					-0.019	(0.014)
Conscientiousness					0.023	(0.013)
Extraversion					-0.014	(0.015)
Agreeableness					-0.024	(0.013)
Neuroticism					-0.016	(0.014)
Locus of Control					0.027*	(0.013)
Positive Reciprocity					-0.006	(0.012)
Negative Reciprocity					-0.008	(0.013)
Gender (1=female)	-0.150***	(0.034)	-0.152***	(0.034)	-0.147***	(0.034)
Years of education	0.032***	(0.006)	0.032***	(0.006)	0.031***	(0.006)
Age	0.041***	(0.010)	0.041***	(0.010)	0.040***	(0.010)
Age squared / 1,000	-0.044***	(0.013)	-0.044***	(0.013)	-0.041***	(0.012)
Married (1=yes)	0.036	(0.028)	0.037	(0.028)	0.032	(0.028)
Child in HH (1=yes)	-0.003	(0.029)	-0.003	(0.029)	0.002	(0.029)
East Germany (1=yes)	-0.199***	(0.029)	-0.199***	(0.029)	-0.199***	(0.029)
Immigrant (1=yes)	-0.052	(0.043)	-0.053	(0.043)	-0.039	(0.044)
Actively sought for new job (1=yes)	0.000	(0.025)	-0.013	(0.026)	-0.011	(0.026)
Unemployed before new job (1=yes)	-0.045	(0.027)	-0.050	(0.026)	-0.043	(0.026)
Total years of unemployment	-0.038***	(0.010)	-0.038***	(0.010)	-0.035***	(0.010)
<u>Branch (reference: trade)</u>						
Industry (1=yes)	0.162***	(0.041)	0.158***	(0.041)	0.159***	(0.041)
Manufacturing (1=yes)	0.173***	(0.054)	0.173***	(0.054)	0.165**	(0.054)
Finance (1=yes)	0.144***	(0.037)	0.142***	(0.037)	0.142***	(0.038)
Services (1=yes)	0.090**	(0.035)	0.085*	(0.034)	0.088*	(0.035)
<u>Firm size (reference: less than 20)</u>						
20 to 199 (1=yes)	0.043	(0.028)	0.043	(0.028)	0.039	(0.028)
200 to 1,999 (1=yes)	0.157***	(0.033)	0.155***	(0.033)	0.148***	(0.034)
more than 2,000 (1=yes)	0.152***	(0.038)	0.146***	(0.037)	0.139***	(0.038)
Limited contract (1=yes)	-0.092***	(0.025)	-0.092***	(0.025)	-0.086***	(0.025)
Working hours per week	0.037***	(0.002)	0.036***	(0.002)	0.036***	(0.002)
Public sector (1=yes)	0.073	(0.039)	0.074	(0.039)	0.068	(0.039)
<u>ISCO job classification (rf.: legislators, senior officials and managers)</u>						
Professionals (1=yes)	0.049	(0.097)	0.047	(0.098)	0.041	(0.097)
Technicians & associate prof. (1=yes)	-0.012	(0.092)	-0.014	(0.092)	-0.017	(0.092)
Clerks (1=yes)	-0.109	(0.096)	-0.109	(0.096)	-0.112	(0.096)
Service workers (1=yes)	-0.249**	(0.094)	-0.250**	(0.094)	-0.254**	(0.094)
Craft and related trade workers (1=yes)	-0.197	(0.105)	-0.198	(0.104)	-0.202	(0.104)
Plant and machine operators (1=yes)	-0.313**	(0.102)	-0.314**	(0.102)	-0.316**	(0.103)
Elementary occupations (1=yes)	-0.320**	(0.104)	-0.317**	(0.103)	-0.326**	(0.103)
Year dummies		yes		yes		Yes
Constant	4.852***	(0.219)	4.860***	(0.220)	4.914***	(0.215)
Observations		1,807		1,807		1,807
(Adjusted) R ²		0.668		0.668		0.672

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 34: Job satisfaction regression with source and personality

DV: Job satisfaction	Model (1)		Model (2)		Model (3)	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Source						
Newspaper (1=yes)			-0.264*	(0.131)	-0.287*	(0.131)
Employment office (1=yes)			-0.156	(0.180)	-0.132	(0.182)
Internet (1=yes)			-0.260	(0.146)	-0.281	(0.145)
Five-Factor Model						
Openness					0.117*	(0.053)
Conscientiousness					0.082	(0.051)
Extraversion					0.048	(0.054)
Agreeableness					0.149**	(0.055)
Neuroticism					-0.004	(0.054)
Locus of Control						
Positive Reciprocity					0.214***	(0.057)
Negative Reciprocity					-0.016	(0.052)
					0.006	(0.053)
Gender (1=female)	0.238	(0.128)	0.261*	(0.128)	0.153	(0.128)
Years of education	-0.041	(0.027)	-0.039	(0.027)	-0.043	(0.026)
Age	-0.035	(0.042)	-0.035	(0.042)	-0.036	(0.042)
Age squared / 1,000	0.000	(0.001)	0.000	(0.001)	0.000	(0.001)
Married (1=yes)	0.155	(0.121)	0.162	(0.120)	0.159	(0.118)
Child in HH (1=yes)	0.163	(0.111)	0.162	(0.110)	0.146	(0.107)
East Germany (1=yes)	-0.172	(0.122)	-0.189	(0.122)	-0.203	(0.120)
Immigrant (1=yes)	-0.166	(0.165)	-0.170	(0.165)	-0.122	(0.166)
Actively sought for new job (1=yes)	0.065	(0.106)	0.157	(0.113)	0.171	(0.114)
Unemployed before new job (1=yes)	-0.237	(0.122)	-0.224	(0.123)	-0.205	(0.122)
Years of unemployment	0.017	(0.034)	0.016	(0.033)	0.019	(0.033)
Health (reference: very good)						
Good (1=yes)	-0.332*	(0.140)	-0.333*	(0.141)	-0.315*	(0.138)
Satisfactory (1=yes)	-0.961***	(0.160)	-0.969***	(0.160)	-0.887***	(0.159)
Poor (1=yes)	-1.535***	(0.241)	-1.534***	(0.242)	-1.370***	(0.240)
Bad (1=yes)	-1.717**	(0.578)	-1.720**	(0.574)	-1.604**	(0.574)
Perceived job security (reference: not concerned at all)						
Very concerned (1=yes)	-1.171***	(0.166)	-1.172***	(0.166)	-1.062***	(0.167)
Somewhat concerned (1=yes)	-0.384***	(0.102)	-0.391***	(0.103)	-0.314**	(0.103)
Branch (reference: trade)						
Industry (1=yes)	0.118	(0.156)	0.126	(0.158)	0.085	(0.156)
Manufacturing (1=yes)	0.625**	(0.226)	0.604**	(0.224)	0.539*	(0.219)
Finance (1=yes)	-0.207	(0.171)	-0.203	(0.171)	-0.227	(0.168)
Services (1=yes)	0.139	(0.157)	0.155	(0.157)	0.102	(0.156)
Firm size (reference: less than 20)						
20 to 199 (1=yes)	0.029	(0.124)	0.038	(0.124)	0.036	(0.122)
200 to 1,999 (1=yes)	0.029	(0.155)	0.056	(0.156)	0.087	(0.151)
more than 2,000 (1=yes)	0.052	(0.161)	0.079	(0.161)	0.090	(0.159)
Limited contract (1=yes)	0.081	(0.110)	0.071	(0.110)	0.056	(0.108)
Working hours per week	-0.003	(0.006)	-0.002	(0.006)	-0.004	(0.006)
Public sector (1=yes)	0.266	(0.160)	0.250	(0.160)	0.244	(0.161)
Gross Income (in 1,000 Euros)	0.151**	(0.058)	0.154**	(0.058)	0.157**	(0.000)
ISCO job classification (rf.: legislators, senior officials and managers)						
Professionals (1=yes)	-0.454	(0.234)	-0.448	(0.235)	-0.401	(0.228)
Technicians and associate professionals (1=yes)	-0.044	(0.219)	-0.023	(0.220)	0.002	(0.209)
Clerks (1=yes)	-0.379	(0.267)	-0.392	(0.267)	-0.330	(0.256)
Service workers (1=yes)	-0.085	(0.252)	-0.080	(0.252)	-0.010	(0.243)
Craft and related trade workers (1=yes)	-0.360	(0.251)	-0.360	(0.250)	-0.278	(0.244)
Plant and machine operators (1=yes)	-0.177	(0.283)	-0.171	(0.281)	-0.057	(0.277)
Elementary occupations (1=yes)	-0.350	(0.290)	-0.372	(0.289)	-0.228	(0.283)
Year dummies		yes		yes		Yes
Constant	8.776***	(0.882)	8.741***	(0.881)	8.819***	(0.871)
Observations		1,807		1,807		1,807
(Adjusted) R-squared		0.140		0.143		0.166

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

5.3.4.3 Post-hire Outcomes with Endogeneity Correction

The two previous analyses showed that personality variables are – at least partially – able to explain both selection into source usage and post-hire outcomes. In this chapter, both analyses are combined in a two-stage approach to investigate how post-hire outcomes are affected by source choice and personality variables. The following tables contain solely source and personality variables, albeit the other variables of the previous regressions (see Table 33 and Table 34) are included as controls as well.

Table 35: Wage regressions with selectivity bias correction

DV: Log(wage)	Model (1)		Model (2)		Model (3)		Model (4)	
Correction terms included	no	yes	no	Yes	no	yes	yes	yes
Personality on the 1st step	-	yes	-	Yes	-	yes	no	no
<u>Source</u>								
Newspaper (1=yes)	0.016 (0.030)	0.299** (0.112)	0.008 (0.030)	0.233* (0.117)	0.006 (0.030)	0.233* (0.113)	0.195 (0.122)	0.187 (0.121)
Employment office (1=yes)	0.058 (0.036)	-0.059 (0.152)	0.054 (0.037)	-0.083 (0.164)	-	-	0.069 (0.176)	0.090 (0.181)
Internet (1=yes)	0.055 (0.034)	-0.187 (0.116)	0.052 (0.035)	-0.204 (0.127)	0.046 (0.035)	-0.233 (0.127)	-0.199 (0.135)	-0.206 (0.136)
<u>Five-Factor Model</u>								
Openness	-	-	-0.019 (0.014)	-0.011 (0.014)	-0.019 (0.015)	-0.012 (0.015)	-	-0.020 (0.014)
Conscientiousness	-	-	0.020 (0.013)	0.018 (0.014)	0.022 (0.014)	0.022 (0.014)	-	0.022 (0.013)
Extraversion	-	-	-0.014 (0.015)	-0.021 (0.015)	-0.020 (0.015)	-0.026 (0.016)	-	-0.014 (0.015)
Agreeableness	-	-	-0.022 (0.013)	-0.025 (0.013)	-0.028* (0.014)	-0.030* (0.014)	-	-0.023 (0.013)
Neuroticism	-	-	-0.018 (0.014)	-0.013 (0.014)	-0.019 (0.014)	-0.012 (0.014)	-	-0.018 (0.014)
Locus of Control	-	-	0.030* (0.013)	0.029* (0.013)	0.037** (0.014)	0.036* (0.014)	-	0.030* (0.013)
Positive Reciprocity	-	-	-0.003 (0.012)	-0.001 (0.012)	-0.004 (0.012)	-0.002 (0.012)	-	-0.003 (0.012)
Negative Reciprocity	-	-	-0.003 (0.014)	-0.006 (0.014)	-0.003 (0.015)	-0.007 (0.015)	-	-0.002 (0.013)
<u>Correction terms</u>								
λ_1 - social capital	-	-0.008 (0.074)	-	-0.026 (0.075)	-	-0.041 (0.075)	0.007 (0.078)	0.013 (0.078)
λ_2 – newspapers	-	-0.218* (0.095)	-	-0.184 (0.099)	-	-0.199* (0.098)	-0.125 (0.105)	-0.121 (0.104)
λ_3 - employment office	-	0.068 (0.088)	-	0.071 (0.095)	-	-	-0.002 (0.101)	-0.014 (0.105)
λ_4 – internet	-	0.169* (0.084)	-	0.167 (0.088)	-	0.171 (0.090)	0.190* (0.094)	0.197* (0.094)
Observations	1,880	1,880	1,880	1,880	1,718	1,718	1,880	1,880
(Adjusted) R-squared	0.662	0.663	0.664	0.665	0.672	0.673	0.663	0.665

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

Table 35 shows the regression results for wage as the dependent variable. For reasons of comparability, all models are estimated with and without the correction terms. Furthermore, personality variables are introduced stepwise in both the selection correction and the second-stage model. Model (1) can be regarded as the base case without any personality variables. In this model, all source coefficients are insignificant. Introducing the correction reveals a positive and significant wage effect of finding a job via newspaper adverts and a significant correction term for this channel. In Model (2), personality variables are included in the second stage regression. The source coefficients remain similar compared to the previous model. In both regressions locus of control is a significant and positive correlate of wage. In order to get more robust results, job seekers who found their job with the aid of unemployment agencies and who might differ from all other job seekers are excluded in Model (3). Regarding source coefficients and locus of control, the results remain stable. An additional negative wage effect can be found for agreeableness. In the last model (4), personality variables are excluded from the first-stage estimation. This specification leads to insignificant source coefficients and a positive correlation of wages with locus of control. In general, these estimates show that wage effects of newspaper and internet adverts are biased by selectivity into source usage.

The table below presents multivariate results on the relationship between source/personality and job satisfaction. Corresponding to the previous table, Table 36 shows regressions with and without the correction terms and with or without personality in both steps. In Model (1) all source coefficients, with and without the correction terms, are insignificant. After introducing personality variables in Model (2), the newspaper coefficient becomes significantly negative, although it becomes insignificant when the correction terms are added. Among the personality variables, openness, agreeableness and locus of control are positively related to job satisfaction. In the third model individuals are excluded who found their job through employment agencies. The results remain rather unchanged, only the openness coefficient becomes insignificant. Similar findings are suggested by the last specification (Model 4) where personality variables are not included in the first stage regression.

The regression results reveal that self-selection into sources is also an issue regarding job satisfaction. However, wages kept constant, certain personality traits are related to higher job satisfaction. Including a squared measure to allow for a non-linear relationship between wages and job satisfaction did not change the results either.

Table 36: Job satisfaction regressions with selectivity bias correction

DV: Job satisfaction	Model (1)		Model (2)		Model (3)		Model (4)	
Correction terms included	no	yes	no	yes	no	yes	yes	yes
Personality on the 1st step	-	yes	-	yes	-	yes	no	no
<u>Source</u>								
Newspaper (1=yes)	-0.227 (0.126)	0.380 (0.482)	-0.248* (0.125)	0.072 (0.514)	-0.243 (0.126)	0.195 (0.512)	-0.027 (0.537)	0.005 (0.540)
Employment office (1=yes)	-0.231 (0.181)	0.242 (0.649)	-0.198 (0.183)	0.702 (0.689)	-	-	1.133 (0.744)	1.041 (0.753)
Internet (1=yes)	-0.238 (0.140)	-0.014 (0.487)	-0.255 (0.139)	-0.054 (0.511)	-0.231 (0.139)	0.080 (0.518)	-0.156 (0.522)	-0.106 (0.524)
<u>Five-Factor Model</u>								
Openness	-	-	0.120* (0.053)	0.110* (0.053)	0.093 (0.055)	0.094 (0.055)	-	0.121* (0.053)
Conscientiousness	-	-	0.085 (0.051)	0.097 (0.053)	0.073 (0.054)	0.065 (0.054)	-	0.082 (0.051)
Extraversion	-	-	0.042 (0.054)	0.054 (0.056)	0.022 (0.056)	0.028 (0.059)	-	0.039 (0.054)
Agreeableness	-	-	0.149** (0.054)	0.161** (0.055)	0.165** (0.057)	0.165** (0.057)	-	0.149** (0.054)
Neuroticism	-	-	-0.005 (0.055)	0.008 (0.056)	-0.030 (0.057)	-0.025 (0.058)	-	0.001 (0.055)
Locus of Control	-	-	0.201*** (0.058)	0.184** (0.059)	0.228*** (0.061)	0.219*** (0.062)	-	0.204*** (0.058)
Positive Reciprocity	-	-	0.000 (0.052)	-0.003 (0.053)	0.002 (0.054)	0.000 (0.055)	-	-0.006 (0.053)
Negative Reciprocity	-	-	0.019 (0.053)	0.015 (0.054)	0.017 (0.056)	0.014 (0.057)	-	0.019 (0.054)
<u>Correction terms</u>								
λ1 - social capital	-	-0.348 (0.302)	-	-0.372 (0.304)	-	-0.208 (0.298)	-0.424 (0.316)	-0.388 (0.316)
λ2 – newspapers	-	-0.763 (0.401)	-	-0.564 (0.429)	-	-0.507 (0.439)	-0.513 (0.450)	-0.526 (0.457)
λ3 - employment office	-	-0.581 (0.411)	-	-0.863* (0.430)	-	-	-1.177** (0.458)	-1.076* (0.472)
λ4 – internet	-	-0.471 (0.363)	-	-0.466 (0.373)	-	-0.408 (0.374)	-0.415 (0.373)	-0.439 (0.373)
Observations	1,880	1,880	1,880	1,880	1,718	1,718	1,880	1,880
(Adjusted) R ²	0.123	0.125	0.141	0.144	0.147	0.148	0.126	0.144

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

In their analysis of the relationship between personality and wages, Heineck and Anger (2010) found significant gender differences in separate regressions for males and females. Similar degrees in certain personality traits appear to be perceived differently if the respective person is male or female. For instance, an extraverted woman might be perceived differently than an extraverted man, which might have a different effect on wages. Hence, it appears useful to separate regressions by gender (Table 37).

Table 37: Gender differences in wages and job satisfaction with endogeneity correction

DV Gender	Wages				Job Satisfaction			
	Male		Female		Male		Female	
Correction term included	no	yes	no	yes	no	yes	no	yes
<u>Source</u>								
Newspaper (1=yes)	0.045 (0.043)	0.153 (0.194)	0.001 (0.040)	0.308* (0.141)	-0.176 (0.180)	0.285 (0.755)	-0.263 (0.183)	-0.075 (0.713)
Employment office (1=yes)	0.101* (0.051)	0.056 (0.204)	0.042 (0.059)	-0.170 (0.273)	-0.538 (0.281)	-0.450 (0.981)	0.128 (0.243)	2.142* (1.002)
Internet (1=yes)	0.011 (0.057)	-0.171 (0.187)	0.010* (0.044)	-0.177 (0.155)	-0.269 (0.207)	0.127 (0.730)	-0.251 (0.194)	-0.523 (0.737)
<u>Five-Factor Model</u>								
Openness	0.002 (0.023)	0.008 (0.024)	-0.039* (0.018)	-0.030 (0.017)	0.182* (0.074)	0.177* (0.072)	0.093 (0.079)	0.075 (0.080)
Conscientiousness	0.046* (0.020)	0.045* (0.021)	0.012 (0.017)	0.008 (0.018)	0.059 (0.070)	0.055 (0.073)	0.109 (0.078)	0.145 (0.080)
Extraversion	-0.005 (0.023)	-0.010 (0.024)	-0.014 (0.019)	-0.021 (0.019)	0.076 (0.073)	0.086 (0.075)	0.028 (0.080)	0.042 (0.083)
Agreeableness	-0.029 (0.017)	-0.031 (0.018)	-0.016 (0.020)	-0.021 (0.020)	0.100 (0.079)	0.103 (0.080)	0.172* (0.083)	0.189* (0.084)
Neuroticism	-0.001 (0.021)	0.002 (0.021)	-0.024 (0.019)	-0.017 (0.019)	-0.054 (0.081)	-0.046 (0.083)	0.026 (0.077)	0.046 (0.078)
Locus of Control	0.063*** (0.018)	0.063*** (0.018)	0.006 (0.019)	0.002 (0.019)	0.206* (0.088)	0.194* (0.090)	0.193* (0.083)	0.172* (0.085)
Positive Reciprocity	0.010 (0.018)	0.013 (0.019)	-0.013 (0.017)	-0.011 (0.017)	0.036 (0.074)	0.035 (0.076)	-0.033 (0.078)	-0.039 (0.079)
Negative Reciprocity	0.018 (0.020)	0.016 (0.020)	-0.010 (0.017)	-0.015 (0.017)	0.046 (0.078)	0.042 (0.079)	-0.025 (0.079)	-0.036 (0.079)
<u>Correction terms</u>								
λ1 - social capital	-	0.015 (0.115)	-	-0.043 (0.098)	-	-0.067 (0.461)	-	-0.551 (0.432)
λ2 – newspapers	-	-0.064 (0.175)	-	-0.267* (0.114)	-	-0.407 (0.606)	-	-0.629 (0.638)
λ3 - employment office	-	0.042 (0.109)	-	0.105 (0.170)	-	-0.131 (0.594)	-	-1.681** (0.644)
λ4 – internet	-	0.147 (0.125)	-	0.166 (0.103)	-	-0.366 (0.576)	-	-0.261 (0.510)
Observations	900	900	980	980	900	900	980	980
(Adjusted) R ²	0.517	0.516	0.695	0.697	0.191	0.189	0.112	0.118

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

These regressions reveal that the positive correlation between finding a job via newspaper adverts and wages is solely driven by the female share of the population. Furthermore, males benefit from being more conscientious and internally-oriented, whereas no significant correlation between females' personality and wages exists. Regarding job satisfaction, females are significantly more satisfied after having found a job through employment offices, although this effect is based on a small share of the sample (n=82). Openness is related to males' satisfaction, agreeableness to females'. An internal locus of control is positively related to both genders' job satisfaction. Reciprocity again has no effect on post-hire

outcomes. Additional regression analyses which included interaction effects between gender and personality traits did not reveal significant interactions. This implies that gender differences are less meaningful than assumed in the relationship between personality traits and post-hire outcomes – at least shortly after a job change. However, this does not exclude potential gender differences that might increase with tenure.

Table 38: Wages and job satisfaction regressions for job-to-job changers

DV: Correction term included	Wages		Job Satisfaction	
	no	yes	no	yes
<u>Source</u>				
Newspaper (1=yes)	0.015 (0.035)	0.042 (0.118)	-0.025 (0.158)	0.249 (0.518)
Internet (1=yes)	0.044 (0.044)	-0.172 (0.130)	-0.263 (0.178)	-0.097 (0.565)
<u>Five-Factor Model</u>				
Openness	-0.020 (0.016)	-0.015 (0.016)	0.108 (0.069)	0.112 (0.070)
Conscientiousness	0.024 (0.017)	0.027 (0.017)	0.018 (0.068)	0.019 (0.068)
Extraversion	-0.026 (0.017)	-0.032 (0.018)	-0.046 (0.067)	-0.040 (0.070)
Agreeableness	-0.039* (0.016)	-0.043* (0.017)	0.159* (0.069)	0.169* (0.070)
Neuroticism	-0.012 (0.016)	-0.010 (0.016)	-0.066 (0.071)	-0.054 (0.072)
Locus of Control	0.049** (0.017)	0.049** (0.017)	0.238*** (0.074)	0.232** (0.076)
Positive Reciprocity	-0.007 (0.015)	-0.007 (0.015)	0.004 (0.069)	-0.007 (0.070)
Negative Reciprocity	-0.001 (0.017)	-0.001 (0.017)	0.033 (0.067)	0.029 (0.068)
<u>Correction Term</u>				
λ_1 - social capital	-	-0.158 0.095	-	-0.589 0.401
λ_2 – newspapers	-	-0.135 0.105	-	-0.678 0.468
λ_4 – internet	-	0.049 0.099	-	-0.602 0.444
Observations	1,127	1,127	1,127	1,127
(Adjusted) R ²	0.697	0.698	0.135	0.137

Notes: Jackknife clustered standard errors based on 1,426 repetitions in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

A last set of analyses (see Table 38) has been conducted based on the more homogeneous sub-sample of job-to-job changers who reported that they changed to a new employer (without a break) and with no registered unemployment spell in the respective year. This subsample might differ from the whole sample as job-to-job changers could dispose of a more

valuable social network. For example, in case of job-to-job change, ties to co-workers or business partners might be more intimate than after a break. Furthermore, job-to-job changers are likely to have less time for job search activities, which might increase usage and benefits of informal search channels. In this analysis, search via employment agencies had to be excluded as there were too few observations in this category to successfully estimate the correction term. All source coefficients and correction terms are insignificant. Regarding personality traits, the results show a significant negative correlation between agreeableness and wages, whereas there is a positive correlation with job satisfaction. Locus of control is positively related to wages and job satisfaction.

Apart from separate gender regressions, further robustness checks have been implemented. For instance, as the model contains branch, occupation and firm size variables as controls it might be over-specified. If personality traits were responsible for the selection into certain jobs, which – in turn – are related to income or satisfaction, the personality effect might be captured in the control variables. Hence, branch, occupation, and firm size variables have been excluded (stepwise and altogether) to avoid this effect. The robustness checks confirm the previous findings for both dependent variables. Additionally, all regressions were run while including the personality traits separately in order to control for potential overlap of the measures but this procedure did not yield other results.

5.4 Discussion

In this chapter, the main findings of the empirical analyses are summarised and interpreted. Additionally, some limitations, such as non-linearities and data problems are described. The chapter concludes by elaborating upon practical implications of the findings.

5.4.1 Interpretation

The empirical estimates are only partially able to confirm the hypotheses formulated in chapter 5.2.5. Therefore, the results regarding the relationship between post-hire outcomes and source coefficients respectively personality traits are further discussed.

First, wage regressions revealed that finding a job via social ties does not increase wages. On the contrary, including correction terms resulted in a significant positive coefficient of newspaper adverts and negative (but insignificant at the 5 percent level) coefficients representing employment offices and internet adverts. Hence, these findings indicate considerable self-selection into sources which is particularly meaningful in case of newspaper adverts. This is especially unexpected as newspaper adverts might be considered as a rather

old-fashioned search channel. However, even controlled for a large variety of job related characteristics, newspaper adverts appear to attract a distinct kind of job seekers. Relatively higher costs of newspaper advertisements (especially when other cheaper channels are available) might be responsible for a selection of jobs offered via this channel. Although also jobs for untrained workers are offered in print media, this effect (when controlled for job characteristics) might be driven by companies searching for highly educated and experienced job seekers for upper positions. On the other hand, firms might use newspaper adverts (a channel with considerable costs) in order to find employees for jobs that are difficult to be filled, for example because only few job seekers might be willing to work in this job. Firms might try to address a larger population of job seekers in order to fill jobs with unpleasant or undesirable attributes like high risk of work accidents, inconvenient working times or with a lot of stressors (e.g. noise, smell). In these jobs, employees earn usually higher wages due to compensating wage differentials.⁷⁵

Further regression results showed negative correlations between formal channels and job satisfaction, however, statistically significant on the 5 percent level only for newspaper adverts. Including correction terms into the regressions revealed that selection into source usage explains source differences in job satisfaction. This implies that information benefits are less meaningful than expected. Individuals adjust their job search strategy according to their preferences, for instance, it appears reasonable that individuals, who prefer to work for large firms, are more likely to search (or are found by the firms) via formal channels.⁷⁶ Having found this job, employees do not report higher job satisfaction due to more ex-ante information and the satisfaction effect is probably captured in the job-related coefficients.

Apart from applying a two-stage estimator to measure post-hire outcomes of different job search channels, the focus of this article lies on examining the role of personality traits in these two stages. On the first stage, some character traits appear to be related to job finding via certain channels. For example, as ex-ante hypothesised, individuals who found their job via employment offices are less conscientious than other job searchers, whereas internet job seekers are less extraverted. Furthermore, an internal locus of control is related to job finding. This stands in line with the argument that individuals who are convinced that their own effort

⁷⁵ The idea of compensating wage differentials can be traced back to Adam Smith's 'Wealth of Nations' published in 1776, in which he defined "agreeableness or disagreeableness of the employments themselves" (Smith, 1848: 74) as a potential source of wage differentials. Grund (2001) provided empirical evidence for the existence of compensating wage differentials in case of high risk jobs in Germany.

⁷⁶ Due to a lack of resources, small firms cannot afford to search via multiple (costly) channels which makes it more attractive to search via personal contacts (Carroll et al., 1999).

determines their outcomes are more likely to search via formal channels. More surprisingly, formal channels are more likely to be used by individuals open to experience. Formal means might create more unknown situations (as no direct ex-ante contact existed before the application) which seems to deter less open individuals. Hence, the hypotheses on the selection process could be widely confirmed.

On the second stage, the estimation of post-hire outcomes, results on personality traits are mixed. In the wage regressions LOC is the only variable that has a significant correlation with earnings. As hypothesised, individuals with an internal orientation are more convinced of their personal impact on outcomes. Although it is controlled for various other determinants of career success, an internal orientation is still able to explain wage differences. This might be caused by the relation between LOC and job search which does not only affect the decision of channel usage, but also reservation wages and search intensity (Caliendo et al., 2010). A strong belief in the success of one's search effort increases search effort and raises the reservation wage, which – finally – increases starting wages in new jobs.

However, other relations that have been frequently found in the literature could not be confirmed by the data. For example, high levels of agreeableness have often shown a negative correlation with wages (Heineck, 2011) which could not be confirmed in this analysis. This finding is robust to other specifications (gender separation, robustness checks). However, compared to the related literature, this study focusses on individuals only in the first year after a job change. Being too agreeable might have a negative effect on career prospects with increasing tenure, which is not part of this analysis. A similar explanation can explain the insignificant correlation between conscientiousness and wages. Due to asymmetric information, conscientiousness is mainly invisible for employers. Employers, therefore, do not pay higher wages for new hires scoring high in conscientiousness, yet, career effects might occur in the long run when information asymmetries play a minor role.

In all analyses, measures of reciprocity have not shown any significant correlation to either channel selection or post-hire outcomes. Two arguments could explain this result: Firstly, reciprocity might not be related to post-hire outcomes directly after the job change but after certain tenure. Secondly, it is rather questionable if reciprocity is related to post-hire outcomes in general. Reciprocity appears to represent a general habit towards the behaviour of others. This general attitude seems to have no meaning in the working environment.

In additional regressions, job finding channels have been interacted with personality traits in order to investigate whether certain personality dimensions are particularly beneficial in case the job was found through a given channel. Most interaction coefficients are statistically insignificant. Scoring high on internal locus of control, however, is negatively related to wages for those who found a job via employment agencies. Individuals who are more open to experience report higher job satisfaction when they found their job through newspaper adverts or employment agencies. This shows that labour market benefits of personality traits do not differ much dependent on the source the job has been found through. Personality traits are rather universally applicable non-cognitive skills.

5.4.2 Limitations

Some shortcomings in the study design and the data limit the validity of these analyses. Unfortunately, the sample had to be restricted to individuals that completed the whole set of personality questions and reported a job change in the period under investigation. As a result, the earnings respectively the job satisfaction differential ($\Delta W = W_t - W_{t-1}$; $\Delta JS = JS_t - JS_{t-1}$) between the current and the previous job could not be used as the dependent variable. This might have been beneficial, because increases in wages and job satisfaction would have been analysed directly. As this approach requires data from two consecutive periods per observation, this would have reduced the sample size even more. A further reduction of the sample size would have limited the significance of the findings too much. In addition, in order to avoid a further reduction of the sample size, only the first year after the job change is investigated. Hence, it is not possible to investigate the long-term effects of job search via certain channels respectively personality traits and post-hire outcomes.

A further constraint is that only linear relationships between personality measures and post-hire outcomes have been considered. LaHuis et al. (2005), for instance, discussed the role of non-linear personality effects. They argued that not all levels of a certain personality trait might have the same effect on wages. For example, a minimum level of agreeableness might be helpful to be successful in everyday work-relations, whereas a too high degree of agreeableness means that an individual is not able to focus on his/her own goals but tries to help others to the point of self-sacrifice. So far, few researchers have analysed non-linear effects of personality. Benson and Campbell (2007) found an inverted u-shaped relation between derailing/dark side personality traits (e.g. ego-centred, intimidating, and manipulating) and ratings of leaders. These negative facets of personality cannot be directly related to the Big Five taxonomy. Nevertheless, they provide evidence that personality and

leadership might be related in a non-linear way. However, as the underlying study shows, personality traits are rather responsible for channel selection than for determining post-hire outcomes, non-linear terms have not been included.

Apart from non-linearities, this study as well as the related literature has not analysed interactions between certain personality dimensions. Scoring high (or low) in two distinct personality measures might serve even more helpful in the labour market. For example, high scores in conscientiousness and locus of control could be mutually enforcing as individuals are willing to work hard and believe that this work will result in positive outcomes.

Table 31 revealed the strong correlation between formal source channels and active search. The immense importance of active versus passive job search raises the questions if the job search model in chapter 5.2.3 describes the complete search process. The decision to search or not to search actively can be interpreted as a preceding step before the beginning of the search process. This decision is likely to depend on the current employment situation (on-/off-the-job search) but might be also affected by personality traits. Especially locus of control could largely affect the probability to search actively when individuals believe in the effectiveness of their effort. On the contrary, an external orientation might drive individuals into a state of resignation in which they give up any search initiative. This might especially be the case if long-term unemployment spells had an effect on LOC and other personality traits. By affecting the probability to search actively, personality traits might determine search channel choice even more strongly.⁷⁷ However, channel selection determinants remain largely robust to the exclusion of the active search dummy.

A shortcoming in the econometric approach is that the two-stage estimator is only used to correct for the selection into sources. It is assumed that personality traits and other demographic variables explain source selection which is used to correct the wage and job satisfaction regressions. This implies that personality only affects source choice but no other variables that determine post-hire outcomes. However, Mueser (1979) found that adolescent personality influences later occupational status largely by affecting the degree of education. In a survey of American eighth graders, LOC affected investments into human capital by determining the expected returns of education (Coleman, DeLeire, 2003). Students with an internal belief invested more into their human capital as they were convinced that their own

⁷⁷ Additional regressions in Table 38 focussed on job-to-job changers without interim unemployment so that personality could not be affected by unemployment. The results mainly replicated previous findings.

effort is related to their later income. Therefore, the level of education might be affected by personality as well, which could not be accounted for. In addition to this, empirical evidence has found a correlation between personality and occupational choice and, thus, the choice of higher of vocational education. Ham et al. (2009a, 2009b) found that individuals chose their jobs according to their personality, e.g. more extravert individuals are more likely to become sales representatives than introverts. Since occupations are often connected to wages, personality traits can affect wages by determining the occupational choice.

Unfortunately, data on informal channels is very limited. For instance, it would have been interesting to investigate the relationship between personality traits and tie strength between the referrer and the referred person. High scores in certain personality dimensions, such as agreeableness or extraversion, could increase the number of strong ties within one's network. According to the "strength of weak ties"-hypothesis (Granovetter, 1973), those ties are less likely to lead to well-paid or satisfying jobs. Further information about informal search channels (e.g. if the information was provided by relatives or friends, frequency of exchange etc.) could increase our understanding of how personality and labour market outcomes are related.

5.4.3 Implications for Practice

This study enhances the understanding of recruiting processes, especially with respect to the relation between search channels and personality. Individuals that are found through different search channels differ considerably regarding their personality. This finding is particularly relevant for companies or jobs with meaningful bonus systems (e.g. sales, production, see Heywood, Jirjahn, 2002), as formal channels are more likely to attract employees that score high on internal locus of control. Those individuals are easier to be motivated by monetary incentives (Bowles et al., 2001), which is likely to be linked to performance.⁷⁸ Bryson et al. (2013) found that individual performance pay in Europe is most frequently paid to low-skilled employees in the construction and manufacturing sector. Hiring through formal channels might be particularly promising for employers in these sectors. Organisations who utilise incentive schemes should, furthermore, try to attract individuals who score low in neuroticism. Neurotic individuals with inadequate stress responses are more likely to "choke under pressure", meaning that high incentives could be detrimental to performance (Ariely et al., 2009). With respect to post-hire outcomes, an internal orientation is related to both wage

⁷⁸ See Cable and Judge (1994) for evidence on the relationship between personality and pay preferences of college students who were searching for a job.

and job satisfaction which supports the assumption that attracting such workers is beneficial for an organisation.

Previous research has linked risk preferences to incentive schemes. Bellemare and Shearer (2010) found that more risk tolerant employees sort into jobs with high incentives since incentive payments transfer the economic risk at least partially from the employer to the employee. Grund and Sliwka (2010) provided further evidence that more risk averse employees are less likely to work in jobs with incentive contracts. Risk, as an economic preference, has been identified as complementary to personality traits (Becker et al., 2012). However, individuals with a strong belief that their effort translates into a desired outcome could be willing to bear higher risks. Individuals scoring high in locus of control might perceive risks differently because they might believe that risks can be compensated by their own effort. Although this relationship has not been investigated empirically, firms could attract employees with higher risk tolerance through formal ties.

The empirical results indicate that openness to experience is positively related to both search via internet and job satisfaction. Therefore, firms that intend to find creative and open employees should utilise this channel to attract adequate applicants. No correlation was detected for neuroticism; hence, firms are not able to adjust their application process to be less visible for neurotic individuals.

5.5 Conclusion

The objective of the empirical analyses in this chapter was to gain a deeper knowledge of the determinants and outcomes of job search via social capital – and the role of personality traits in this context. In general, this study aimed at understanding if personality differences explain selection into source usage and/or determine post-hire outcomes. The analysis of the determinants of job search via certain channels revealed considerable personality differences between job searchers via formal and informal channels. The most important hypotheses regarding the selection process were supported by the findings. In the second step of the analysis, source and personality variables were included in regressions to analyse their relationship to wages and job satisfaction. No significant relation could be found between post-hire outcomes and recruitment sources. After including four correction terms as proposed by Bourguignon et al. (2007), the newspaper coefficient in the wage regression becomes significant. Hence, apart from this channel, self-selection might be a lesser concern with regard to post-hire outcomes of search channels. Personality variables could explain

differences in wages (LOC, agreeableness) and job satisfaction (openness, agreeableness, LOC), even when it is controlled for search channels and selection into channel usage.

The results of this study indicate that selection into job search channels is not only a matter of demographic or job-related factors. Differences in personality traits are able to explain why some people search via personal contacts and others prefer to utilise formal channels. Moreover, personality traits are less able to explain differences in wages; however, a relation between personality and job satisfaction could be found. In all steps of the analysis, locus of control has proven to be the strongest correlate of channel selection and job success. Hence, further studies should implement at least a measure of locus of control in order to control for an important determinant of individual behaviour. Future research should investigate the relationship between personality traits and the referring person and the long-term effects of personality as well as job search channels. For practice, the findings of this study indicate that individuals who found their jobs through formal channels are more internally oriented. Those employees are more responding to incentive schemes (Bowles et al., 2001), which might be relevant for firms in industries or for positions in which incentive schemes are more common (e.g. firms with foreign ownership or works councils, see Kurdelbusch, 2002; Heywood, Jirjahn, 2014).

Future research could draw on the theoretical illustrated in Chart 10 in order to investigate this complex relationship. Structural equation modelling could serve useful to estimate whether the theoretical model accurately describes the selection process into search channels and the determination of post-hire outcomes. Furthermore, this approach could directly incorporate the personality items instead of using aggregated measures as described in chapter 5.3.1. Structural equation modelling could be, thus, a powerful approach in order to investigate the job finding process as a whole and multiple stages could be modelled which has not been possible in a simpler two-stage model. Nevertheless, the reader should keep in mind that “no measurement can claim to capture the entire job-search process” (Lin, 2008: 53). Yet, the chosen two-stage approach represents an attempt to cover the search process better than previous studies. Furthermore, this study has incorporated personality measures in order to gain more robust estimates and to elucidate a dimension of individual differences that has been widely ignored in the past. Although additional research in this field deems necessary, this study can be regarded as a further step bringing personality into economic research. To say it with the words of Goldberg (1993: 32): “Once upon a time, we had no personalities. Is it not exciting to see their return?”

6 Pre-hire and Post-hire Outcomes of Search Activities of Unemployed Job Seekers

6.1 Introduction

Unemployment exposes huge monetary and non-monetary costs on individuals, such as forgone earnings (Feldstein, 1978), reduction in subjective well-being (Kassenboehmer, Haisken-DeNew, 2009; Helliwell, Huang, 2014), and negative effects on psychological and physical health (see e.g. McKee-Ryan et al., 2005; Paul, Moser, 2009). Hence, unemployed job seekers spend a significant amount of their time on job search activities (Krueger, Mueller, 2012). Job search can be conducted via different search channels, which are commonly divided into formal and informal channels. Formal channels comprise job search via newspaper or internet adverts as well as public and private employment offices. On the contrary, individuals could utilise their social ties to friends, relatives, or acquaintances as a source of information to find a new job (Zottoli, Wanous, 2000).

Based on the “strength of weak ties”-hypothesis (Granovetter, 1973), early research for the U.S. labour market finds evidence that social ties lead to better jobs as regards to wages and job satisfaction (Granovetter, 1995). Wanous (1978) explained the positive effects of social ties on post-hire outcomes by more realistic job expectations of applicants as their sources can provide the applicants with better information about the respective job. Furthermore, the incumbent disposes of information advantages about the skill requirements of the vacancy compared to the job seeker. Therefore, pre-screening by the incumbent assures that only high-skilled and well-fitting applicants receive information about the vacancy because frequent recommendation of low-skilled workers could harm the reputation of the recommender (Zottoli, Wanous, 2000). In contrast to this, Schwab (1982) denied the existence of any source effects and claims that different sources attract a different part of the job seeker population. Hence, wage and job satisfaction differences are rather a result of preferences of job searchers than of information benefits or pre-screening.

While the first three chapters of this thesis have investigated relationship between the channel the new job has been found through and post-hire outcomes in general, this chapter limits the investigation to unemployed job seekers. As visualised in Chart 2, this chapter investigates actual job search activities – which might be used simultaneously – and not job finding. Therefore, the fourth research question raised in the introduction is addressed. In his theoretical model on job search, Burdett (1978) distinguished on and off-the-job search (searching while being unemployed) as a search strategy. Unemployment is likely to affect everyday life in various ways, e.g. by more time available for job search (especially via

formal channels) and a loss of social ties to other employed individuals (Bramoullé, Saint-Paul, 2010). Unemployment could, therefore, coincide with job search via formal means. Yet, analyses in chapter 3 have shown that disadvantaged job seekers can benefit from job search via social ties. Those unemployed job seekers who are able to maintain their social network might be able to escape more quickly from unemployment and might be better off in terms of post-hire outcomes. Thus, the analysis of job search of unemployed job seekers could extend our understanding of how social ties translate into monetary and non-monetary benefits.

The contribution of this chapter is threefold. First, it is analysed whether job search via personal contacts serves as a promising means for escaping unemployment. In contrast to the two previous chapters, this analysis exploits rich data of the Socio-Economic Panel (SOEP) on unemployed job seekers. Hence, it is possible to observe search behaviour of unemployed job seekers (off-the-job search) and to match this information with job characteristics after finding a job. This approach should elucidate the dynamics and outcomes of job search via different channels. In a second step it is focussed on those individuals who found a job. For these successful job seekers, post-hire outcomes, i.e. wages, job satisfaction, and job security, can be estimated depending on the respective search activities during their unemployment spell. Third, this chapter explores whether search activities in unemployment are related to finding a job via one of the four channels (social ties, newspapers, employment agencies, and internet) which have been investigated throughout this dissertation.

This chapter is structured as follows: In the next chapter theoretical considerations on the particular relevance of social ties for unemployed job seekers are made and connected to the existing literature. At the end of this chapter, hypotheses are developed. Chapter 6.3 introduces the different datasets and methodologies used in order to address the three objectives of this chapter. The empirical evidence is presented in chapter 6.4 and these findings are discussed in 6.5. Chapter 6.6 concludes.

6.2 Theoretical Background and Related Literature

In chapter 2, different approaches to describe job search of unemployed job seekers have been discussed. In this case, the model proposed by Burdett (1978) is particularly relevant because on- and off-the-job search are differentiated explicitly. Although costs of off-the-job search are probably lower than while being employed (if forgone earnings are considered), search effectiveness is likely to differ between the two kinds of job search. Disadvantages of unemployed job seekers might derive from human capital depreciation during unemployment which is likely to increase with unemployment duration (Mincer, Ofek, 1982; Laureys, 2014).

Gibbons and Katz (1991) differentiated unemployed job seekers by the reason for their unemployment. They argue that individuals who lose their jobs due to layoffs are worse off than individuals who were dismissed due to plant closure because the former employer is better informed about the employee quality than other firms on the labour market. As firms, which have to dismiss only part of their staff, dispose of a certain room for manoeuvre, they are more likely to fire low-skilled workers and to keep high-skilled workers. Hence, being fired during a layoff serves as a signal for low quality for other employers resulting in longer unemployment duration and lower wages if a new job is found. For Germany, Grund (1999) did not find any differences between unemployed job seekers who were affected by layoffs or plant closure. He concluded that according to the German legislation (Betriebsverfassungsgesetz – industrial constitution law, §111), work councils have to be informed timely and extensively before a planned plant closing. As a result, high-skilled job seekers are likely to search and find a new job immediately, whereas, low-skilled job seekers are less likely to find a new job before the plant closure. Thus, unemployment might have a detrimental effect on the career regardless of the reason for job termination.

Vishwanath (1989) explained stigmatising from unemployment by statistical discrimination of firms. In a labour market with information asymmetries, firms interpret a job seeker's unemployment history as a signal for other – unobservable – factors, i.e. skills or motivation. Firms assume that high skilled or motivated job seekers are likely to be employed and, therefore, conclude that unemployed job seekers lack these attributes. Lockwood (1991) found that the size of the stigma effect varied with the relation between unemployment and vacancies. The lower the unemployment rate and the more vacancies were filled, the more unemployment served as a negative signal. Biewen and Steffes (2010) investigated this relationship empirically and found (weak) evidence for a stigma effect of unemployment. This stigma effect was significantly smaller in periods with high unemployment.

Moreover, Gallie et al. (2003) found evidence for a vicious circle of social exclusion and unemployment which explains the stigmatising effect of unemployment. Due to a lack of financial resources and the loss of social ties to employed acquaintances, jobless individuals are likely to withdraw themselves from social exchange. Social withdrawal, in turn, increases the likelihood of staying unemployed. Thus, along with depreciation of human capital, unemployment coincides with a loss of social capital which, otherwise, could be helpful in finding a job or to increase post-hire outcomes in case a new job is found.

In the light of such difficulties of unemployed job seekers, social capital, which is established by the quality and quantity of social relations, is likely to serve helpful in the job search process. In general, the two main hypotheses which describe the effectiveness of social ties in the job search process – information benefits and pre-screening (see chapter 2.5) – can be applied to unemployed job seekers. However, it is likely that the latter argument is particularly relevant in case of unemployed job seekers. Information asymmetries have been identified as a source for statistical discrimination which leads to stigmatisation of unemployed job seekers. Social ties between applicants and employers are likely to reduce information asymmetries because social ties exert pressure on both applicants and referees not to exploit their room for manoeuvre. As the referee's reputation is at stake, only those job seekers are referred which are particularly fit for the job. Frequent referrals of inadequate job seekers are harmful to the referrer's reputation and, thus, reduce the likelihood that future referrals will be considered (Zottoli, Wanous, 2000). Due to the loss of human capital during unemployment, referrals of unemployed job seekers are by far more risky for the referrer. Therefore, incumbents are only willing to suggest an unemployed job seeker to the employer if the probability of a successful referral is sufficiently high. As a result, finding a job via social ties might be able to overcome information asymmetries which are particularly meaningful in case of unemployed job seekers. While other positive effects of social ties such as improved performance due to better P-J or P-O fit remain similar, social ties are particularly helpful in alleviating stigma effects of unemployment.

The advantage of the data used in this chapter is that data on unemployed job seekers contains information on current search behaviour. In chapter 3 it has been highlighted that finding a job via social ties is most likely not the result of an active search strategy but of unintended (or passive) job search. Besides, passive search is probably correlated with off-the-job search as unemployed job seekers are more likely to invest time on active search. Hence, search behaviour of unemployed job seekers is likely to differ radically from on-the-job searchers. Data on channels utilised during the unemployment spell might, therefore, be helpful to understand (1) if unemployed job seekers use their ties actively as a means to find a job, (2) if active search via social ties increases the probability to find a job via social ties, and (3) how searching and finding a job via social ties affects post-hire outcomes. All three aspects of the research question include testable hypotheses. Hypotheses in this chapter refer to the actual search behaviour instead of finding a job through a certain channel.

Chapter 3 has provided impressive evidence on the relationship between active search and search channel usage. The vast majority of individuals who found a job via social ties were not actively searching for a job. Unemployed job seekers might use social ties – simultaneously – with other search activities. However, it is unlikely that social ties represent a search channel which is consciously used by job seekers. In line with previous evidence of this dissertation, it is assumed that:

H1 (Source choice): Job search via social ties is mainly unintended and, thus, individuals are more likely to search via formal means than via social ties.

Under the assumption that the first hypothesis is true, two alternative arguments regarding the effectiveness in terms finding a job as a pre-hire outcome of social ties derive. On the one hand, one can conclude that the most disadvantaged job seekers (e.g. long-term unemployed, single parents) are so desperate that they even use their social ties actively to find a job. In this scenario, job search via social ties is a means used by those with little chances to find a job. On the other hand, in line with the search model provided by Holzer (1988) in which search channels differ with regard to costs and effectiveness, social ties might be used by those job seekers who dispose of a large network of valuable ties. The active use of social ties might, in this case, indicate that the individual believes in the effectiveness of this channel (Bramoullé, Saint-Paul, 2010). As these two arguments are mutually exclusive, no clear hypothesis on the probability of finding a job can be formulated.

H2 (Employment Probability): Job search and probability of being employed: no clear hypothesis can be formulated.

With respect to post-hire outcomes, the two previous chapters showed that social ties are likely to improve non-monetary outcomes, though, monetary outcomes are negatively affected by finding a job via social ties. This is supported by Krug and Rebien (2012) who investigated the relationship between social ties and post-hire outcomes of low-skilled unemployed job seekers in Germany. Due to the arguments above, it is assumed that unemployed job seekers are likely to benefit particularly from social ties, at least regarding non-monetary outcomes. Yet, current research and evidence in the previous chapters have shown that job search via social ties is probably not related to wages. Therefore, it is concluded:

H3 (Wage): Job search and wages: no testable hypothesis can be formulated.

H4 (Job satisfaction): Job search via social ties is positively related to job satisfaction.

Job quality is multi-dimensional (OECD, 2013) and, thus, difficult to measure. In this chapter, job security, both objective and subjective, is interpreted as a proxy for job quality. It is assumed that most employees regard job security as a positive attribute of a future job and strive for a stable working relationship. In line with the realistic job preview and pre-screening arguments, job search via social ties should be positively related to job security. First, friends or relatives are able to provide realistic ex-ante information on job security which enables job seekers to detect insecure jobs. Job seekers who prefer a higher degree of job security are less likely to accept such an offer. Second, incumbents who are working for a company which offers solely highly insecurity jobs are not likely to promote jobs to their friends or relatives. Third, if employers dispose of better ex-ante information about employee quality, contracts with a higher level of security (e.g. permanent contracts) might be offered more frequently.⁷⁹ These three arguments explain how social ties might help job seekers to find a more secure job.

As mentioned earlier, job security can be measured objectively by differentiating between fixed-term (or temporary) and permanent contracts. Fixed-term contracts allow employers to dismiss employees (e.g. as a result of poor P-J or P-O fit) more easily because of a lower level of legal protection. Dismissals of employees with permanent contracts are more difficult for employers due to legal restrictions. Fixed-term contracts are, therefore, considered as a determinant of job insecurity. However, limited contracts do not necessarily involve a high degree of subjective insecurity since employers might be willing to provide fixed-term contracts especially to previously unemployed job seekers in order to learn more about their productivity or as an incentive. Employees who are performing well and who believe in the continuation of the contract beyond the fixed time are probably less concerned about losing their job. On the other hand, employees with permanent contracts can be fired due to poor performance, economic downturns, and layoffs. Hence, a subjective measure of job security is utilised in this chapter. To summarise this argumentation the following hypothesis is formulated

H5 (Job security): Job search via social ties is negatively related to both objective (fixed-term contracts) and subjective (perceived) job insecurity.

⁷⁹ This is especially the case when fixed-term contracts are used as a screening device (Portugal, Varejao, 2010). Employers who have better ex-ante information on employee quality might not have to rely on fixed-term contracts to screen new hires.

6.3 Dataset and Methodology

The empirical investigation is based on data of the German Socio-Economic Panel (SOEP), an annual representative survey of German households and individuals. The analysis is based on the waves four 2005 to 2008 as these years contain detailed information on job search behaviour and job search outcomes. More specifically, individuals are included who were registered unemployed and actively searching for a new job in the years 2005-2007. Information on whether a job has been found and on post-hire outcomes has been taken from the respective following year. After the elimination of observations with missing data, the full dataset includes 1,348 individuals that report 2,401 unemployment spells.⁸⁰ Further analyses reduce the number of observations, e.g. when only successful job seekers are investigated.

Based on the full sample the two first hypotheses are addressed. First, descriptive evidence reveals which search channels are commonly used by unemployed job seekers. Second, it is analysed whether job search activities are related to find a job (pre-hire outcome). The empirical model estimates the probability of an individual i to be *employed* in t , conditioned on being unemployed in $t-1$, and can be described as follows:

$$\Pr(\text{Employed}_{it} = k) = \alpha + \text{SearchAct}'_{it-1} \cdot \beta + \text{Control}'_{it-1} \cdot \gamma + \text{Demo}'_{it} \cdot \delta + \varepsilon, \quad (k = 0, 1), \quad (6.1)$$

$$\text{with } k = \begin{cases} 0 & \text{no (unemployed)} \\ 1 & \text{yes (employed)} \end{cases}$$

where *SearchAct* represents various variables describing the search activities in $t-1$, *Control* comprises control variables measured in $t-1$ (working time preferences, subjective belief of employment probability), *Demo* includes demographic variables such as age, gender, education, family status and health. ε is the error term. The findings can be interpreted as pre-hire outcomes of job search, i.e. the probability of being employed one year later as a result of the usage of certain search channels.

⁸⁰ Individuals who found a job in the agricultural sector were excluded. Additionally, individuals who escaped unemployment by becoming self-employed were excluded as well. Further observations are lost due to missing data in the variables "Subjective probability to find a job" and desired working hours.

Table 39: Variables for pre-hire outcomes estimations

Variable	Obs.	Mean	Std. Dev.
Variables in t-1			
<u>Job search activities (multiple answers)</u>			
Public employment office (1=yes)	2,401	0.610	0.488
Private employment agency (1=yes)	2,401	0.129	0.335
Search job adverts (1=yes)	2,401	0.602	0.490
Search on the internet (1=yes)	2,401	0.393	0.488
Insert job adverts (1=yes)	2,401	0.473	0.499
Search via friends/relatives (1=yes)	2,401	0.531	0.499
Impulse applications (1=yes)	2,401	0.209	0.407
<u>Desired working time</u>			
Full-time (1=yes)	2,401	0.490	0.500
Part-time (1=yes)	2,401	0.234	0.424
Both (1=yes)	2,401	0.259	0.438
Does not know yet (1=yes)	2,401	0.016	0.125
<u>Difficulties finding a new job</u>			
Easy (1=yes)	2,401	0.032	0.177
Difficult (1=yes)	2,401	0.641	0.480
Almost impossible (1=yes)	2,401	0.326	0.469
Variables in t			
Employed in t (1=yes)	2,401	0.544	0.498
Gender (1=female)	2,401	0.563	0.496
Age	2,401	11.423	2.203
Years of education	2,401	41.603	11.168
Married (1=yes)	2,401	0.494	0.500
Children in household (1=yes)	2,401	0.554	0.497
Immigrant (1=yes)	2,401	0.135	0.342
Total years of unemployment	2,401	4.346	3.841
East Germany (1=yes)	2,401	0.448	0.497
Regional unemployment rate (in %)	2,401	12.703	4.461
<u>Subjective health</u>			
Very good (1=yes)	2,401	0.077	0.266
Good (1=yes)	2,401	0.379	0.485
Satisfactory (1=yes)	2,401	0.349	0.477
Poor (1=yes)	2,401	0.157	0.364
Bad (1=yes)	2,401	0.037	0.190

Table 39 provides a brief overview of the variables in the pre-hire outcome regressions. The dependent variable in the pre-hire regressions is the *employment status in t* according to the

ILO (1982) definition.⁸¹ Independent variables of interest are *search activities* of unemployed job seekers in $t-1$. Participants who noted that they were actively searching for a new job in the last four weeks were asked: “What have you undertaken within the last four weeks in order to find a (different) job?” Participants could mark various formal channels (e.g. public and private employment agencies, newspaper or internet adverts), impulse applications, and “job search through acquaintances, friends, relatives”.⁸² 61 percent of the job seekers contacted public employment agencies, whereas, private employment agencies were used by around 13 percent. 60 percent of the unemployed spent time searching job adverts. Job search on the internet (39 percent) and insertion of job adverts (47 percent) were used less frequently. About half of the job seekers tried to find a job via social ties. One fifth approached employers directly. Further control variables describe the kind of job sought (*full-time vs. part-time*) and the *subjective probability to find an adequate job* (easy, difficult, almost impossible). Variables of the year after contain *employment status* (see above; 54 percent employed), demographic characteristics (as in the previous chapters), an *East/West* dummy and the *regional unemployment rate* measured on the federal state level, and a subjective measure for *health* (5 categories).

Apart from finding a job, job quality might depend on search effort and the usage of certain search channels. If individuals are able to convey more trustworthy information about their quality through informal channels, they might earn higher wages if they utilised friends or acquaintances during their search. Furthermore, information benefits might allow a better informed decision whether to apply for as well as to accept a certain job offer. Personal contacts could provide better information so that ex-ante expectations and ex-post experiences are more likely to match. Therefore, job search via social capital could increase job satisfaction. The estimated models can be described by

$$\begin{aligned} \text{Log}(Wage)_{it} = & \alpha + \text{SearchAct}'_{it-1} \cdot \beta + \text{Control}'_{it-1} \cdot \gamma + \text{Demo}'_{it} \cdot \delta + \text{JobChar}'_{it} \cdot \eta + \text{Reg}_{it} \cdot \theta \\ & + \varepsilon \end{aligned} \quad (6.2)$$

⁸¹ The interpretation of the employment status as pre-hire outcome is non-trivial. On the one hand, finding a job can be clearly interpreted as a pre-hire outcome. But since the SOEP data provides information on the employment status on yearly basis, it cannot be excluded that job seekers were employed for a few months between the two waves. Therefore, the correct interpretation of the employment dummy should be: Participant found a job and was still employed in the time of the next interview.

⁸² Note that – different to the previous chapters – multiple answers were possible. Whereas previous chapters dealt with the effectiveness of the channel the job was found through, in this chapter the actual search activities are investigated.

with $\log(wage)$ as the dependent variable. *JobChar* summarises job characteristics such as firm size, branch, and working hours, whereas *Reg* comprises a dummy for East Germany and a measure of the unemployment rate on the federal state level. The other variables contain the same measures as described above.

The second post-hire outcome regression can be described by

$$JobSat_{it} = \alpha + SearchAct'_{it-1} \cdot \beta + Control'_{it-1} \cdot \gamma + Demo'_{it} \cdot \delta + JobChar'_{it} \cdot \eta + Reg_{it} \cdot \theta + \varepsilon \quad (6.3)$$

where a single item measure of *job satisfaction* (11-item Likert scale) serves as the dependent variable.

Furthermore, two measures of job quality are investigated in this chapter – fixed-term contracts and a subjective measure of job security. Fixed-term or limited contracts can be interpreted as an objective measure of job insecurity since employer-employee relations can be terminated more easily. The model can be formalised as

$$\Pr(Limited_{it} = k) = \alpha + SearchAct'_{it-1} \cdot \beta + Control'_{it-1} \cdot \gamma + Demo'_{it} \cdot \delta + \varepsilon, \quad (k = 0, 1), \quad (6.4)$$

$$\text{with } k = \begin{cases} 0 & \text{no (permanent contract)} \\ 1 & \text{yes (limited contract)} \end{cases}$$

where *Limited* represents a binary measure which takes the value 1 if the new job has a fixed-term contract and 0 if the contract is permanent. A logistic regression approach is chosen to calculate the relationship between search channels and fixed-term contracts.

A three-item measure of perceived security is used to estimate whether job search activities affect subjective job security. The model is estimated by

$$\Pr(PerSec_{it} = k) = \alpha + SearchAct'_{it-1} \cdot \beta + Control'_{it-1} \cdot \gamma + Demo'_{it} \cdot \delta + \varepsilon, \quad (k = 0, 1), \quad (6.5)$$

$$\text{with } k = \begin{cases} 1 & \text{very concerned} \\ 2 & \text{somewhat concerned} \\ 3 & \text{not concerned at all} \end{cases}$$

where *PerSec* stands for a three-item measure of subjective job security. Since these three options are of ordinal nature, an ordered logistic regression approach is chosen. The other variables contain the previously described measures.

As only observations of individuals who found a job in t are used for the regressions, the number of observations shrinks to 519. Summary statistics about the reduced data set are given in Table 40. First, descriptive statistics on the four dependent variables are given. On average, new hires earned 1,368 euros (in prices of 2010) and report a level of job satisfaction of 6.7. 44 percent of the newly employed individuals have a fixed-term contract. Only one quarter is not concerned at all about losing the current job; whereas 75 percent are at least somewhat concerned (one third being very concerned).

Three variables have been measured in $t-1$ – job search effort, desired working time and perceived difficulties in finding a new job. Most individuals used more than one search channel. Public employment offices have been contacted of more than 70 percent of those who found a job. Private employment agencies, in turn, are less important with a share of 15 percent. 76 percent of the successful job seekers were searching job adverts, 58 percent were searching for jobs on the internet. Two thirds inserted job adverts. Social ties as a job search method have been used by 63 percent. About one third applied directly to employees. Most successful job seekers were searching for a full-time job (57 percent), 18 percent were searching for a part time job. One quarter of the job seekers were indifferent regarding working hours. The vast majority of job seekers reported difficulties in finding a new job (75 percent) and serious difficulties (21 percent). Only 4 percent of the job seekers considered finding a job being easy.

Demographic and job related characteristics have been taken from the year the new job has been found in. Successful job seekers are slightly more likely to be female (52 percent), about 39 years old with about 12 years of education. Half of the job new hires are married and 60 percent live with children below 18 in the household. Immigrants account for 13 percent of the individuals who found a job. On average, each individual has experienced 3 years of unemployment. East German job seekers are overrepresented in the data with 37 percent. The average (unweighted) regional unemployment rate is about 12 percent. More than 90 percent of the new hires rate their health as at least satisfactory. 75 percent of the job seekers found their jobs in small companies with less than 200 employees. The average working time per week is 34 hours. 12 percent found their jobs in the public sector. Trade, industry, and service each account for around 25 percent of jobs found. New jobs are less often found in manufacturing and finance with 12 percent each.

Table 40: Variables for post-hire outcomes regressions

Variable	Obs.	Mean	Std. Dev.	Variable	Obs.	Mean	Std. Dev.
Dependent variables (in t)				Variables in t			
Gross income (€)	519	1,367.72	854.81	Gender (1=female)	519	0.518	0.500
Job satisfaction	519	6.686	2.330	Years of education	519	11.860	2.316
Limited contract (1=yes)	519	0.435	0.496	Age	519	38.609	10.440
<u>Perceived job security</u>				Married (1=yes)	519	0.499	0.500
Very concerned (1=yes)	519	0.333	0.472	Children in household (1=yes)	519	0.584	0.493
Somewhat concerned (1=yes)	519	0.422	0.494	Immigrant (1=yes)	519	0.131	0.338
Not concerned at all (1=yes)	519	0.245	0.430	Total years of unemployment	519	2.904	3.024
				East Germany (1=yes)	519	0.370	0.483
							4.404
Variables in t-1							
<u>Job search activities (multiple answers)</u>				<u>Subjective health</u>			
Public employment office (1=yes)	519	0.711	0.454	Very good (1=yes)	519	0.116	0.320
Private employment agency (1=yes)	519	0.150	0.358	Good (1=yes)	519	0.437	0.497
Search job adverts (1=yes)	519	0.759	0.428	Satisfactory (1=yes)	519	0.353	0.478
Search on the internet (1=yes)	519	0.578	0.494	Poor (1=yes)	519	0.081	0.273
Insert job adverts (1=yes)	519	0.655	0.476	Bad (1=yes)	519	0.013	0.115
Search via friends/relatives (1=yes)	519	0.632	0.483				
Impulse applications (1=yes)	519	0.368	0.483	<u>Firm size</u>			
				less than 20 (1=yes)	519	0.418	0.494
				20 to 199 (1=yes)	519	0.329	0.470
				200 to 1,999 (1=yes)	519	0.156	0.363
				more than 2,000 (1=yes)	519	0.096	0.295
<u>Desired working time</u>				Working hours per week			
Full-time (1=yes)	519	0.574	0.495	Public sector (1=yes)	519	0.118	0.322
Part-time (1=yes)	519	0.183	0.387				
Both (1=yes)	519	0.237	0.426	<u>Branch</u>			
Does not know yet (1=yes)	519	0.006	0.076	Industry (1=yes)	519	0.239	0.427
				Manufacturing (1=yes)	519	0.129	0.336
<u>Difficulties finding a new job</u>				Trade (1=yes)	519	0.268	0.443
Easy (1=yes)	519	0.044	0.206	Finance (1=yes)	519	0.123	0.329
Difficult (1=yes)	519	0.748	0.435	Services (1=yes)	519	0.241	0.428
Almost impossible (1=yes)	519	0.208	0.406				

At last, it is investigated how search effort, i.e. the use of certain search activities, determines the source through which the job seeker is finally successful. This regression is assumed to provide further evidence on the how unemployed job seekers find their jobs and whether job search via social ties is rather unintended (as postulated in chapter 3) or if unemployed job

seekers actively use their social ties to escape unemployment. A multinomial logistic regression approach is utilised to estimate the probability of finding a job via one of the four channels described in chapter 3.3. The specified model can be summarised as

$$Pr(SOURCE = k) = \alpha + SearchAct'_{it-1} \cdot \beta + Control'_{it-1} \cdot \gamma + Demo'_{it} \cdot \delta + \varepsilon, \quad (k = 1, 2, 3, 4) \quad (6.6)$$

with $k = \begin{cases} 1 & \text{friends/relatives} \\ 2 & \text{newspaper adverts} \\ 3 & \text{(public) employment agencies} \\ 4 & \text{internet adverts} \end{cases}$

in which SOURCE indicates the channel the job has been found through and all independent variables are the same as given above. However, due to missing information on how the specific job was found, the number of observations is reduced to 392. Therefore, firm-specific variables (branch, size, job classifications) are not considered in this regression.

Table 41 provides an overview of the variables used in this last regression. Informal and the three formal channels together are about equally relevant for unemployed job seekers. Social ties helped 48 percent of the job seekers to find a job. 19 percent found a job via newspaper adverts. Employment agencies placed 24 percent of the job seekers into jobs. 10 percent found their job via internet adverts. These figures are rather comparable to the figures in Table 5 (for the whole dataset). For unemployed job seekers, though, employment agencies are more likely to be helpful in finding a job. Most variables describing search activities in t-1 and demographic statistics from t are similar to the figures in the previous table.

Table 41: Variables for determinants of job finding regressions

Variable	Obs.	Mean	Std. Dev.
Dependent variable (in t)			
<u>Recruitment source (one answer)</u>			
Friends/relatives (1=yes)	392	0.477	0.500
Newspaper (1=yes)	392	0.189	0.392
Employment office (1=yes)	392	0.235	0.424
Internet (1=yes)	392	0.099	0.300
Variables in t-1			
<u>Job search activities (multiple answers)</u>			
Public employment office (1=yes)	392	0.735	0.442
Private employment agency (1=yes)	392	0.140	0.348
Search job adverts (1=yes)	392	0.778	0.416
Search on the internet (1=yes)	392	0.599	0.491
Insert job adverts (1=yes)	392	0.651	0.477
Search via friends/relatives (1=yes)	392	0.658	0.475
Impulse applications (1=yes)	392	0.385	0.487
<u>Desired working time</u>			
Full-time (1=yes)	392	0.548	0.498
Part-time (1=yes)	392	0.209	0.407
Both (1=yes)	392	0.240	0.428
Does not know yet (1=yes)	392	0.003	0.051
<u>Difficulties finding a new job</u>			
Easy (1=yes)	392	0.038	0.192
Difficult (1=yes)	392	0.717	0.451
Almost impossible (1=yes)	392	0.245	0.431
Variables in t			
Gender (1=female)	392	0.551	0.498
Years of education	392	11.830	2.263
Age	392	39.219	10.858
Married (1=yes)	392	0.497	0.501
Children in household (1=yes)	392	0.566	0.496
Immigrant (1=yes)	392	0.117	0.322
Total years of unemployment	392	3.028	3.118
East Germany (1=yes)	392	0.383	0.487
Regional unemployment rate (in %)	392	11.982	4.445
Working hours per week	392	0.128	0.334
Public sector (1=yes)	392	32.402	14.438

6.4 Empirical Evidence

In this chapter, the results of the regressions mentioned above are presented. The structure follows the order of the previous chapter. Therefore, pre-hire outcomes are presented first and then post-hire outcomes are displayed. Finally, determinants of finding a job through a certain channel are described.

6.4.1 Pre-hire Outcomes

In the first regression, the question is investigated whether certain job search activities increase the probability of being employed in the following year. Table 42 depicts three regression models and marginal effects of the third estimated model. Model (1) solely includes search activities in $t-1$ and reveals that job search via employment agencies is negatively related to being employed in t . Impulse applications are positively related to the employment probability. All other search activities are not statistically significant. When demographic characteristics are introduced in Model (2), the results remain rather stable. Solely the employment agency dummy becomes insignificant as well. This indicates that job search via employment agencies does not reduce the probability to be employed but that mainly individuals who are disadvantaged by their demographic characteristics utilise public employment agencies. In the last regression Model (3), further control variables from the year of the unemployment spell and from the following year are added. Regarding job search activities, the results do not differ in comparison to Model (2). Interestingly, the relationship between employment probability and age is u-shaped with a minimum at 42 years. Married job seekers are more likely to be employed; whereas, more years of unemployment experience are negatively related to being employed in t . Residing in East Germany and being in a bad health condition also affect employment probability negatively. The last column contains marginal effects of the last model. The coefficients show that impulse applications can be regarded as a promising means to improve the employment probability by 12 percentage points. Only living in East Germany and a bad health condition have stronger impact on the employment probability.

Table 42: Probability of being employed in t

DV: Employed in t	Model (1)		Model (2)		Model (3)		Marginal Effects (3)	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Job search activities</u>								
Public employment office (1=yes)	-0.293**	(0.097)	-0.138	(0.100)	-0.084	(0.102)	-0.021	(0.025)
Private employment agency (1=yes)	-0.113	(0.140)	-0.131	(0.141)	-0.101	(0.142)	-0.025	(0.035)
Search job adverts (1=yes)	0.050	(0.105)	0.085	(0.107)	0.095	(0.108)	0.023	(0.027)
Search on the internet (1=yes)	0.180	(0.105)	0.064	(0.109)	0.056	(0.109)	0.014	(0.027)
Insert job adverts (1=yes)	0.099	(0.104)	0.116	(0.105)	0.102	(0.106)	0.025	(0.026)
Search via friends/relatives (1=yes)	0.041	(0.097)	0.045	(0.098)	0.061	(0.099)	0.015	(0.024)
Impulse applications (1=yes)	0.503***	(0.116)	0.487***	(0.115)	0.486***	(0.115)	0.120***	(0.029)
<u>Desired working time (ref.: Full-time)</u>								
Part-time (1=yes)					-0.037	(0.132)	-0.009	(0.033)
Both (1=yes)					-0.028	(0.109)	-0.007	(0.027)
Does not know yet (1=yes)					0.422	(0.429)	0.101	(0.098)
<u>Difficulties finding a new job (ref.: Easy)</u>								
Difficult (1=yes)					-0.459	(0.262)	-0.109	(0.059)
Almost impossible (1=yes)					-0.508	(0.274)	-0.122	(0.062)
Gender (1=female)			0.060	(0.095)	0.073	(0.103)	0.018	(0.026)
Years of education			0.014	(0.021)	0.021	(0.022)	0.005	(0.005)
Age			-0.108***	(0.033)	-0.105**	(0.033)	-0.026**	(0.008)
Age squared/100			0.129***	(0.039)	0.128**	(0.040)	0.032**	(0.010)
Married (1=yes)			0.232*	(0.102)	0.237*	(0.103)	0.059*	(0.025)
Children in household (1=yes)			0.031	(0.102)	0.007	(0.102)	0.002	(0.025)
Immigrant (1=yes)			0.042	(0.145)	-0.055	(0.148)	-0.014	(0.037)
Total years of unemployment			-0.074***	(0.014)	-0.058***	(0.015)	-0.014***	(0.004)
East Germany (1=yes)					-0.596**	(0.228)	-0.148**	(0.056)
Regional unemployment rate (in %)					0.032	(0.026)	0.008	(0.006)
<u>Subjective health (ref.: Very good)</u>								
Good (1=yes)					-0.253	(0.165)	-0.061	(0.039)
Satisfactory (1=yes)					-0.309	(0.174)	-0.075	(0.042)
Poor (1=yes)					-0.349	(0.195)	-0.085	(0.047)
Bad (1=yes)					-0.633*	(0.278)	-0.156*	(0.068)
Year dummies		yes		yes		yes		yes
Constant	-0.112	(0.090)	1.892**	(0.648)	2.166**	(0.759)	-	
McFadden Pseudo R ²	0.022		0.045		0.053		-	

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively.

6.4.2 Post-hire Outcomes

Post-hire outcomes cover monthly wages and non-monetary outcomes (job satisfaction, job security). Table 43 comprises regression results on determinants of monthly wages. The first model contains only recruitment activities. Internet search appears to be positively related to wages, all other search activity coefficients are statistically insignificant. In the second model, variables from t-1 are included. The internet search coefficient remains the only significant search activity variable. Part-time and both part-time and full-time job seekers earn lower wages, which is most likely because they work fewer hours after the job was found. Individuals with difficulties finding a job have also lower wages. Model (3) adds demographic characteristics and other individual information (subjective health). As a result, the positive internet coefficient becomes smaller and insignificant. Job seekers interested in part-time employment still earn less as well as job seekers with difficulties finding a job. Demographic characteristics show that females earn significantly lower wages and an inverted u-shaped relationship between wages and age is revealed. Individuals with longer unemployment experience earn significantly less. Regional factors and health do not affect wages. The fourth model includes firm specific information (firm size, branch) and details of the working contract (fixed-term, working hours). Once again, no search activity coefficient is significant. Since a measure of the actual working hours is included, the desired working time does not affect wages any more. Individuals who considered it difficult to find a job still earn considerably lower wages. The gender effect disappears after job and firm-specific variables are included which can be interpreted as gender-based labour market segregation.⁸³ In this regression, wages are not affected by age. Education, though, is positively related to wages. In East Germany wages are significantly lower than in West Germany. New hires earn higher wages when they work in larger companies or in the industry or manufacturing sector. Longer actual working hours increase starting wages.

⁸³ According to the European Commission (2009) occupational segregation might be caused by “comparative biological advantages, under-investment in human capital (schooling or training), differential income roles, preferences and prejudices, socialisation and stereotypes, entry barriers and organisational practices”.

Table 43: Wage regressions unemployed job seekers

DV: Log(Monthly Wage)	Model (1) OLS Base		Model (2) OLS Search		Model (3) OLS Demographics		Model (4) OLS Full	
<u>Job search activities</u>								
Public employment office (1=yes)	0.170	(0.089)	0.091	(0.088)	0.145	(0.082)	0.081	(0.063)
Private employment agency (1=yes)	0.123	(0.085)	0.084	(0.076)	0.045	(0.070)	0.030	(0.062)
Search job adverts (1=yes)	-0.103	(0.100)	-0.024	(0.096)	-0.075	(0.092)	0.003	(0.081)
Search on the internet (1=yes)	0.227*	(0.091)	0.198*	(0.083)	0.102	(0.078)	-0.020	(0.064)
Insert job adverts (1=yes)	0.054	(0.090)	0.064	(0.086)	0.093	(0.078)	0.043	(0.064)
Search via friends/relatives (1=yes)	0.030	(0.083)	-0.017	(0.078)	-0.073	(0.072)	-0.041	(0.059)
Impulse applications (1=yes)	0.050	(0.082)	0.005	(0.078)	0.031	(0.072)	0.029	(0.059)
<u>Desired working time (ref.: full time)</u>								
Part-time (1=yes)			-0.641***	(0.094)	-0.653***	(0.115)	-0.125	(0.099)
Both (1=yes)			-0.422***	(0.093)	-0.315***	(0.082)	-0.069	(0.067)
Does not know yet (1=yes)			-0.495	(0.475)	-0.194	(0.329)	0.302	(0.248)
<u>Difficulties finding a new job (ref.: easy)</u>								
Difficult (1=yes)			-0.131	(0.128)	-0.057	(0.110)	-0.073	(0.112)
Almost impossible (1=yes)			-0.540***	(0.152)	-0.366**	(0.134)	-0.307*	(0.128)
Gender (1=female)					-0.373***	(0.073)	0.004	(0.067)
Years of education					0.015	(0.013)	0.032**	(0.010)
Age					0.066**	(0.025)	0.027	(0.021)
Age squared/100					-0.078*	(0.031)	-0.029	(0.026)
Married (1=yes)					0.022	(0.081)	0.070	(0.061)
Children in household (1=yes)					-0.054	(0.075)	-0.027	(0.058)
Immigrant (1=yes)					0.042	(0.103)	-0.043	(0.078)
Total years of unemployment					-0.086***	(0.015)	-0.056***	(0.012)
East Germany (1=yes)					-0.105	(0.134)	-0.342**	(0.110)
Regional unemployment rate (in %)					-0.014	(0.014)	0.001	(0.012)
<u>Subjective health (ref.: very good)</u>								
Good (1=yes)					0.093	(0.091)	0.046	(0.073)
Satisfactory (1=yes)					0.074	(0.098)	0.006	(0.080)
Poor (1=yes)					-0.071	(0.153)	-0.091	(0.112)
Bad (1=yes)					0.166	(0.370)	-0.101	(0.288)
<u>Firm size (ref.: less than 20)</u>								
20 to 199 (1=yes)							0.133*	(0.061)
200 to 1,999 (1=yes)							0.299***	(0.077)
more than 2,000 (1=yes)							0.202*	(0.103)
Limited contract (1=yes)							0.100	(0.056)
Working hours per week							0.034***	(0.003)
Public sector (1=yes)							-0.049	(0.112)
<u>Branch (ref.: trade)</u>								
Industry (1=yes)							0.151*	(0.070)
Manufacturing (1=yes)							0.428***	(0.079)
Finance (1=yes)							0.079	(0.081)
Services (1=yes)							0.042	(0.090)
Year dummies		yes		yes		yes		Yes
Constant	6.692***	(0.093)	7.181***	(0.143)	6.268***	(0.462)	4.935***	(0.413)
R ²	0.044		0.186		0.340		0.585	
Δ R ²			0.143		0.154		0.245	

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Recruitment source: multiple answers possible.

Non-monetary post-hire outcomes can be measured by employee job satisfaction (see Table 44). Similar to the previous wage regressions, additional variables are included stepwise. Model (1) solely includes search activity coefficients, which are statistically insignificant apart from internet search. The same result is found for the second model. Furthermore, there is a positive relationship between the intention to work part-time and satisfaction in the new job. When demographic variables are included in model (3), all search coefficients become insignificant. Individuals who prefer to work part-time are more satisfied in their new jobs. All demographic and regional coefficients are statistically insignificant. Subjectively perceived worse health is generally associated with lower levels of job satisfaction. The last model includes further branch and firm coefficients. Again, search activities are not related to job satisfaction. Part-time working preference is still positively related to job satisfaction, although it is controlled for working hours. Immigrants and individuals with poor health report a significantly lower level of job satisfaction. Firm size is unrelated to job satisfaction. New hires with a higher income are more satisfied. Higher satisfaction is also reported by individuals in the finance sector.

Table 45 displays regression results on determinants of objective and subjective job security. In the first regression model, the probability of finding a job with a fixed-term contract is estimated. Again, all search activity coefficients are statistically insignificant. Job seekers without preferences regarding their working time are more likely to find a job with limited duration. Immigrants are less likely to find a job with a permanent contract. Higher wages and working in the public sector are positively related to finding a job with a fixed-term contract. Marginal effects given in the second column reveal that finding a job in the public sector and (.40) and immigrants (.32) are by far more likely to work in jobs with limited contracts.

The third model contains an ordered logistic regression with three categories of a subjective measure of job security as the dependent variable. Since the second cut-off between “somewhat concerned” and “not concerned at all” is not statistically significant, these two categories are collapsed together into the category “no or minor concerns” (Model 3). In this regression all search activity coefficients are insignificant. Higher education is associated with more subjective security. Individuals with longer unemployment durations feel less secure in their newly found job.

Table 44: Job satisfaction regressions of unemployed job seekers

DV: Job Satisfaction	Model (1) OLS Base		Model (2) OLS Search		Model (3) OLS Demographics		Model (4) OLS Full	
<u>Job search activities</u>								
Public employment office (1=yes)	-0.262	(0.239)	-0.002	(0.246)	-0.007	(0.252)	-0.067	(0.247)
Private employment agency (1=yes)	-0.388	(0.324)	-0.381	(0.319)	-0.340	(0.311)	-0.375	(0.310)
Search job adverts (1=yes)	-0.264	(0.283)	-0.249	(0.289)	-0.222	(0.297)	-0.168	(0.286)
Search on the internet (1=yes)	0.605**	(0.228)	0.517*	(0.225)	0.364	(0.243)	0.277	(0.243)
Insert job adverts (1=yes)	0.096	(0.246)	0.065	(0.245)	0.027	(0.238)	-0.061	(0.242)
Search via friends/relatives (1=yes)	-0.208	(0.226)	-0.219	(0.225)	-0.151	(0.222)	-0.090	(0.221)
Impulse applications (1=yes)	-0.326	(0.238)	-0.225	(0.237)	-0.297	(0.235)	-0.328	(0.232)
<u>Desired working time (ref.: full time)</u>								
Part-time (1=yes)			0.984***	(0.252)	0.958**	(0.314)	1.208***	(0.343)
Both (1=yes)			0.267	(0.253)	0.281	(0.262)	0.366	(0.251)
Does not know yet (1=yes)			1.441*	(0.630)	1.067	(0.619)	1.097	(0.823)
<u>Difficulties finding a new job (ref.: easy)</u>								
Difficult (1=yes)			-0.266	(0.493)	-0.129	(0.494)	-0.197	(0.494)
Almost impossible (1=yes)			-0.808	(0.536)	-0.450	(0.556)	-0.406	(0.556)
Gender (1=female)					-0.031	(0.242)	0.126	(0.240)
Years of education					-0.016	(0.047)	-0.053	(0.048)
Age					-0.026	(0.087)	-0.057	(0.089)
Age squared/100					0.026	(0.105)	0.061	(0.107)
Married (1=yes)					0.003	(0.248)	0.038	(0.244)
Children in household (1=yes)					0.184	(0.233)	0.173	(0.235)
Immigrant (1=yes)					-0.694	(0.360)	-0.828*	(0.353)
Total years of unemployment					-0.043	(0.041)	0.003	(0.044)
East Germany (1=yes)					-0.051	(0.454)	0.044	(0.460)
Regional unemployment rate (in %)					0.010	(0.049)	0.012	(0.048)
<u>Subjective health (ref.: very good)</u>								
Good (1=yes)					-1.010**	(0.375)	-1.072**	(0.376)
Satisfactory (1=yes)					-0.988**	(0.384)	-1.075**	(0.385)
Poor (1=yes)					-1.450**	(0.526)	-1.316*	(0.515)
Bad (1=yes)					-1.186	(0.771)	-1.220	(0.713)
<u>Firm size (ref.: less than 20)</u>								
20 to 199 (1=yes)							-0.170	(0.253)
200 to 1,999 (1=yes)							0.487	(0.293)
more than 2,000 (1=yes)							0.024	(0.399)
Log(Monthly Wage)							0.639***	(0.183)
Limited contract (1=yes)							0.258	(0.226)
Working hours per week							-0.011	(0.012)
Public sector (1=yes)							0.056	(0.334)
<u>Branch (ref.: trade)</u>								
Industry (1=yes)							0.276	(0.298)
Manufacturing (1=yes)							0.377	(0.377)
Finance (1=yes)							0.682*	(0.347)
Services (1=yes)							0.526	(0.344)
Year dummies		yes		Yes		yes		Yes
Constant	6.970***	(0.234)	6.929***	(0.496)	8.564***	(1.757)	4.926*	(2.053)
R ²	0.024		0.058		0.099		0.154	
Δ R ²			0.034		0.041		0.055	

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Recruitment source: multiple answers possible.

Table 45: Objective and subjective job security regressions of unemployed job seekers

DV:	Model (1)				Model (2)		Model (3)			
	Temporary contract				Subj. security		Subj. security			
	Logit Limited		Marginal Effects		OLogit Security		Logit Security		Marginal Effects	
<u>Job search activities</u>										
Public employment office (1=yes)	0.038	(0.246)	0.009	(0.060)	-0.314	(0.231)	-0.056	(0.251)	-0.012	(0.054)
Private employment agency (1=yes)	-0.332	(0.303)	-0.081	(0.074)	-0.093	(0.235)	-0.112	(0.276)	-0.024	(0.059)
Search job adverts (1=yes)	-0.391	(0.281)	-0.096	(0.069)	-0.087	(0.263)	0.072	(0.285)	0.016	(0.061)
Search on the internet (1=yes)	0.262	(0.240)	0.064	(0.059)	0.459*	(0.222)	0.342	(0.249)	0.074	(0.054)
Insert job adverts (1=yes)	0.255	(0.238)	0.063	(0.058)	-0.145	(0.222)	-0.210	(0.259)	-0.045	(0.056)
Search via friends/relatives (1=yes)	-0.084	(0.217)	-0.021	(0.053)	0.083	(0.209)	0.133	(0.228)	0.029	(0.049)
Impulse applications (1=yes)	-0.045	(0.215)	-0.011	(0.053)	0.193	(0.192)	0.112	(0.221)	0.024	(0.048)
<u>Desired working time (ref.: full time)</u>										
Part-time (1=yes)	0.086	(0.330)	0.021	(0.080)	0.787*	(0.353)	0.395	(0.379)	0.080	(0.073)
Both (1=yes)	0.615*	(0.260)	0.152*	(0.064)	-0.049	(0.235)	-0.046	(0.258)	-0.010	(0.057)
Does not know yet (1=yes)	-0.001	(1.075)	0.000	(0.256)	-0.083	(1.852)	-0.766	(1.215)	-0.184	(0.303)
<u>Difficulties finding a new job (ref.: easy)</u>										
Difficult (1=yes)	-0.191	(0.481)	-0.047	(0.120)	-0.520	(0.469)	-0.619	(0.622)	-0.114	(0.097)
Almost impossible (1=yes)	-0.237	(0.534)	-0.059	(0.133)	-0.743	(0.527)	-0.947	(0.668)	-0.187	(0.112)
Gender (1=female)	-0.272	(0.237)	-0.067	(0.058)	0.076	(0.212)	0.186	(0.244)	0.040	(0.053)
Years of education	-0.001	(0.052)	0.000	(0.013)	0.103*	(0.042)	0.131*	(0.056)	0.028*	(0.012)
Age	-0.145	(0.077)	-0.036	(0.019)	-0.075	(0.083)	-0.012	(0.084)	-0.003	(0.018)
Age squared/100	0.178	(0.094)	0.044	(0.023)	0.101	(0.102)	0.023	(0.103)	0.005	(0.022)
Married (1=yes)	-0.297	(0.236)	-0.073	(0.058)	0.318	(0.224)	0.430	(0.247)	0.092	(0.053)
Children in household (1=yes)	0.129	(0.231)	0.032	(0.057)	-0.088	(0.208)	-0.136	(0.232)	-0.029	(0.050)
Immigrant (1=yes)	1.297***	(0.318)	0.318***	(0.078)	-0.075	(0.303)	-0.109	(0.336)	-0.023	(0.072)
Total years of unemployment	0.036	(0.042)	0.009	(0.010)	-0.098*	(0.040)	-0.092*	(0.042)	-0.020*	(0.009)
East Germany (1=yes)	0.645	(0.483)	0.158	(0.118)	-0.447	(0.443)	-0.081	(0.486)	-0.017	(0.104)
Regional unemployment rate (in %)	-0.038	(0.054)	-0.009	(0.013)	-0.010	(0.050)	-0.047	(0.056)	-0.010	(0.012)
<u>Subjective health (ref.: very good)</u>										
Good (1=yes)	-0.058	(0.328)	-0.014	(0.081)	-0.084	(0.290)	-0.206	(0.342)	-0.044	(0.071)
Satisfactory (1=yes)	0.058	(0.349)	0.014	(0.086)	-0.028	(0.296)	0.061	(0.362)	0.012	(0.073)
Poor (1=yes)	-0.358	(0.482)	-0.085	(0.113)	-0.492	(0.407)	-0.535	(0.466)	-0.120	(0.105)
Bad (1=yes)	0.370	(0.826)	0.092	(0.205)	-1.041	(0.869)	-0.980	(0.875)	-0.230	(0.214)
Log(Monthly Wage)	0.445*	(0.179)	0.109*	(0.044)	-0.400*	(0.174)	-0.284	(0.185)	-0.061	(0.040)
Working hours per week	-0.018	(0.010)	-0.004	(0.003)	0.008	(0.011)	0.007	(0.010)	0.001	(0.002)
Public sector (1=yes)	1.638***	(0.331)	0.402***	(0.082)	-0.306	(0.266)	-0.066	(0.327)	-0.014	(0.070)
Year dummies	yes		yes		yes		yes		yes	
Constant	0.383	(1.914)					2.311	(2.103)		
Cut1					-4.346	(1.917)				
Cut2					-2.232	(1.907)				
McFadden Pseudo-R ²	0.105				0.089		0.089			

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Recruitment source: multiple answers possible.

6.4.3 Determinants of Job Search Channels

At last, in this chapter it is investigated how the choice of job search activities affects the source through which the new job was found. In Table 46 multinomial logistic regression

results shown how job search activities affect the job finding source relative to finding a job via friends or relatives. Regarding newspaper adverts, no significant difference could be detected. Neither job search activities nor demographic or regional determinants affect the probability of finding a job via newspaper adverts in comparison to the reference group. In the second column, determinants of finding a job with the help of employment agencies are displayed. In comparison to the reference group, job seekers are more likely to find a job via employment agencies when they have been actively searching for a job through this channel. Search via social ties significantly reduces the probability of finding a job via employment agencies. This indicates that friends and employment agencies serve rather as substitutes in the job search process. Married job seekers are less likely to find a job via employment agencies; whereas, more years of unemployment and finding a job in the public sector are positively related to employment offices. Those who found a job via internet adverts are more likely to have searched for a job on the internet and to have inserted job adverts. However, they are less likely to have searched for a new job via social ties. Other coefficients are statistically insignificant.

Table 46: Determinants of finding a job via certain search channels (unemployed job seekers)

DV: Recruitment source	Newspaper		Empl. office		Internet	
Ref.: Friends/relatives	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Job search activities</u>						
Public employment office (1=yes)	0.258	(0.377)	0.816*	(0.367)	0.157	0.564
Private employment agency (1=yes)	0.145	(0.413)	0.064	(0.423)	-0.210	0.569
Search job adverts (1=yes)	0.263	(0.432)	0.271	(0.376)	-0.804	0.677
Search on the internet (1=yes)	0.546	(0.383)	-0.121	(0.338)	3.302***	0.995
Insert job adverts (1=yes)	0.308	(0.377)	0.412	(0.331)	2.642***	0.776
Search via friends/relatives (1=yes)	-0.613	(0.377)	-0.960**	(0.313)	-1.411***	0.443
Impulse applications (1=yes)	-0.214	(0.321)	-0.301	(0.314)	-0.092	0.452
Gender (1=female)	0.038	(0.312)	-0.013	(0.298)	-0.622	(0.397)
Years of education	-0.024	(0.072)	-0.034	(0.077)	0.130	(0.088)
Age	0.191	(0.112)	0.129	(0.108)	0.167	(0.177)
Age squared/100	-0.240	(0.136)	-0.121	(0.133)	-0.187	(0.218)
Married (1=yes)	-0.266	(0.365)	-1.080***	(0.335)	-0.836	(0.484)
Children in HH (1=yes)	-0.082	(0.321)	-0.095	(0.304)	0.827	(0.465)
Immigrant (1=yes)	-0.701	(0.530)	-0.109	(0.520)	1.050	(0.611)
Total years of unemployment	-0.088	(0.078)	0.126*	(0.050)	-0.158	(0.126)
East Germany (1=yes)	-1.211	(0.747)	-0.645	(0.712)	-0.552	(0.998)
Regional unemployment rate (in %)	0.015	(0.083)	0.128	(0.084)	0.052	(0.128)
Public sector (1=yes)	-0.529	(0.404)	0.995*	(0.440)	0.557	(0.548)
Year dummies		yes		yes		yes
Constant	-3.660	(2.438)	-5.052*	(2.103)	-10.238*	(4.991)
Observations			403			
McFadden Pseudo-R ²			0.200			

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Recruitment source: multiple answers possible.

Table 47 contains marginal effects of the regression above. Regarding employment agencies, two job search activities (search via employment agencies and via social ties) are equally strong determinants. Whereas the first increases the probability of finding a job via employment agencies by .125, the latter decreases the probability by .128. More important are only being married (-.164) and working in the public sector (.183). The last column contains marginal effects of determinants of finding a job via internet adverts. Searching on the internet and inserting job adverts increases the probability of finding a job by .087 and .068 respectively. The friends/relative coefficient indicates that search through this channel reduces the probability of finding a job via internet adverts by .029, though statistically insignificant.

Table 47: Marginal effects of finding a job via certain search channels (unemployed job seekers)

DV: Recruitment source	Newspaper		Empl. office		Internet	
Ref.: Friends/relatives	Coeff.	SE	Coeff.	SE	Coeff.	SE
Job search activities						
Public employment office (1=yes)	0.006	(0.056)	0.125*	(0.059)	-0.002	0.015
Private employment agency (1=yes)	0.020	(0.060)	0.006	(0.067)	-0.007	0.015
Search job adverts (1=yes)	0.033	(0.062)	0.040	(0.060)	-0.025	0.021
Search on the internet (1=yes)	0.070	(0.056)	-0.061	(0.054)	0.087**	0.029
Insert job adverts (1=yes)	0.017	(0.055)	0.041	(0.054)	0.068**	0.026
Search via friends/relatives (1=yes)	-0.048	(0.054)	-0.128**	(0.050)	-0.029	0.017
Impulse applications (1=yes)	-0.020	(0.046)	-0.041	(0.050)	0.000	0.012
Gender (1=female)	0.009	(0.045)	0.000	(0.047)	-0.017	(0.014)
Years of education	-0.003	(0.010)	-0.006	(0.012)	0.004	(0.003)
Age	0.023	(0.016)	0.013	(0.017)	0.003	(0.004)
Age squared/100	-0.030	(0.020)	-0.010	(0.021)	-0.003	(0.005)
Married (1=yes)	0.006	(0.053)	-0.164**	(0.052)	-0.015	(0.016)
Children in HH (1=yes)	-0.013	(0.047)	-0.018	(0.049)	0.023	(0.018)
Immigrant (1=yes)	-0.107	(0.078)	0.003	(0.084)	0.033	(0.019)
Total years of unemployment	-0.017	(0.011)	0.025**	(0.008)	-0.005	(0.004)
East Germany (1=yes)	-0.154	(0.105)	-0.057	(0.111)	-0.005	(0.025)
Regional unemployment rate (in %)	-0.003	(0.012)	0.020	(0.013)	0.001	(0.003)
Public sector (1=yes)	-0.121*	(0.061)	0.183**	(0.069)	0.012	(0.014)
Year dummies		yes		yes		yes
Constant	-4.341	(2.312)	-4.602*	(1.932)	-9.303*	(4.406)
Observations				403		

Notes: Individually clustered standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Recruitment source: multiple answers possible.

6.5 Discussion

Since only few regressions above provide statistically significant results, this leaves plenty of room for discussion and interpretation. First, the findings above are discussed in connection with the several shortcomings of the analysis. Second, managerial implications of the findings are given.

6.5.1 Interpretation and Limitations

The previous chapter has shown that individual job search activities – interpreted as the use of different search channels – is in most cases unrelated to both pre- and post-hire outcomes. In this first analysis it has been detected that impulse applications in the sense of direct contacts and unsolicited walk-ins are positively related to being employed in the following year. All other search activities show no significant relation towards this pre-hire outcome. However, these results should not be interpreted as evidence that job search activities do not improve employment prospects in general. In this chapter, the previous findings are discussed against the background of several shortcomings of the used data.

In general, the search activity variables are likely to be biased due to three reasons. First, variables describe solely whether an individual has undertaken any of the given search activities in the last four weeks. Hence, these variables do not cover search intensity. Individuals who were just browsing few job offers on the internet are less likely to find a job compared to those who regularly and diligently search for new offers. An aggregated source measure (number of different search activities)⁸⁴ does not solve this problem since intensity differences cannot be covered this way. Furthermore, social desirability might play a role in this case. Since individuals are interviewed by a representative of the SOEP, respondents might overstate their search effort because unemployed job seekers are expected to search actively for a new job. As a result, most job seekers state that they have used multiple search channels during the last four weeks. This might be particularly meaningful regarding search channels that are easily accessible, such as browsing job adverts or searching for jobs on the internet. On the contrary, it appears less likely that individuals overstate their effort regarding impulse applications because this channel requires active and planned communication with potential employers. As a consequence, search activity coefficients of internet search or job adverts are potentially downward biased.

The missing intensity measure is particularly problematic, when intensity differs systematically between individuals. If job seekers are considered as rational and utility maximising individuals, job search intensity might differ between individuals with good chances of finding a job and individuals who are less likely to find a job. Demotivated job seekers who do not believe in finding a job might use a certain search activity but not as intense or target-oriented as more motivated job seekers. Hence, a measure of individual

⁸⁴ See e.g. Kanfer and Hulin (1985) or Barber et al. (1994).

employment prospects⁸⁵ is interacted with each job search activity but did not show any significant relations.

A second approach was applied in order to investigate the potential proxy nature of impulse applications. In a separate regression, impulse applications are interacted with each search activity. Thereby, two distinct measures of each search channel are created: searching with low effort (no impulse applications) and searching with high effort (with impulse applications). Interestingly, only one interaction term is negative and statistically significant: social ties interacted with impulse applications. A possible interpretation of this finding is that job seekers who exert more effort on job search and actively search via social ties are less likely to be employed in the following year. This can be understood as additional evidence that active and intensive job search via social ties is mainly conducted by disadvantaged job seekers.

Moreover, the regressions cover only a relatively short window of four weeks prior to the interview. This serves to ensure that respondents are able to provide reliable answers but also limits the job search process to a rather short period. Especially in case of long-term unemployed job seekers this might affect the results because job search intensity and channel usage might change over time. For example, Barber et al. (1994) found that search intensity decreases with unemployment duration and that job seekers shift their search activities from formal to informal channels. This is also in line with results of chapter 3 that especially disadvantaged job seekers find a job via social ties. As a result, long-term unemployed, who might suffer from low education or stigmata, are more likely to search actively via social ties. Due to their individual characteristics and lower career chances, the friends/relatives coefficient might be downward biased.

Another problem is the interpretation of the search activity coefficients. Multivariate regressions enable a *ceteris paribus* comparison of the coefficients. Therefore, it can be concluded how the use of a certain channel separately affects pre- or post-hire outcomes but not how the combination of certain channels is related to search success. Additionally, the use of certain search activities does not cover through which channel the job was actually found. For example, the use of impulse applications might serve as a proxy for higher search

⁸⁵ Unemployed respondents were asked whether they find it “easy”, “difficult” or “almost impossible” to find a new job.

intensity in general. This could mean that job seekers who search via impulse applications also put more effort in other search activities.

All in all, it can be assumed that search activity coefficients are likely to be underestimated. Due to several limitations of the given data, most findings are statistically insignificant; yet, several arguments have been provided which explain why search coefficients are likely to be downward biased.

Another interesting result has been detected in the final regression. In chapter 6.4.3 it has been analysed whether search activities determine the source the job has been found through. Particular focus has been laid upon the relationship between search via friends and relatives and finding a job through this channel since most job seekers do not actively search to find a job via social ties. The results show that unemployed individuals who actively search via social ties are less likely to be successful via formal means compared to social ties. This indicates that active search via social ties is actually possible. As Barber et al. (1994) found out, job seekers shift their search activities from formal to informal channels with increasing unemployment duration. If unemployed job seekers reduce search effort in formal channels they are obviously more likely to find a job via social ties. This finding is in line with chapters 4 and 5, which highlighted that job search via social ties is not necessarily related to higher income. All in all, although the findings of this chapter do not appear to show strong and reliable results on job search via social ties, most results do not differ from previous findings of this dissertation and, therefore, mainly confirm prior research.

6.5.2 Managerial Implications

Since this chapter has dealt with job search of unemployed job seekers, managerial implications draw on the question how employers should search on the labour market if they are willing to hire unemployed job seekers.⁸⁶ First evidence on pre-hire outcomes shows that impulse applications increase the probability of being employed. Employers could benefit from those job seekers because they seem to invest more effort in job search than other job seekers. If search effort and effort in employment are related, employees found via impulse applications are likely to be more productive than other job seekers.

⁸⁶ This implies that this chapter cannot answer the question whether employers should hire unemployed job seekers at all. Yet, employers might be willing or forced to consider hiring unemployed job seekers in an – at least largely – competitive labour market in an ageing society.

Furthermore, personality traits have not been investigated in this chapter. As the previous chapter has shown that personality traits are at least partially related to how job seekers found their jobs, the same might be possible for search activities. Particularly, impulse applications and job search via social ties are more likely to be used by job seekers who are more extraverted and open to experience. If firms search for job seekers with these characteristics, they should consider searching via informal means.

For job seekers, the results indicate that an active shift towards job search via social ties is possible and increases the probability of finding a new job through this channel. Although monetary post-hire outcomes are commonly not affected by finding a job via friends or relatives, a positive effect on non-monetary outcomes has been found repeatedly.

6.6 Conclusion

This chapter has analysed the relationship between search activities of unemployed job seekers and their pre- and post-hire outcomes. To this end, the rich data of the Socio-Economic Panel on unemployed job seekers has been used. Observations from two consecutive years have been used to match data from the time in unemployment and the year after. The results show that impulse applications are positively correlated with being employed in the following year. It has been argued that this activity might be interpreted as a proxy for search intensity. Post-hire outcomes are not determined by certain search activities. Hence, the results of this chapter are in line with current research on the effectiveness of social ties in the job search process which shows mixed or rather negative relations between social ties and monetary outcomes. Furthermore, it has been found that unemployed job seekers actively contact their social ties in order to find a job. This has implications for job seekers who might benefit from searching via social ties through a higher job satisfaction after the job change (see chapter 4).

7 Social Capital and Labour Market Success – The Role of Leisure Time Activities

7.1 Introduction

So far, in this thesis the role of social ties in the job search process has been investigated. In line with current research (see chapter 4.1), it has been detected that social capital does not increase starting wages but finding a job via social ties is positively related to job satisfaction. Nevertheless, the results suffer from limitations in the underlying data which has been mentioned repeatedly in the previous chapters. In this chapter two major shortcomings of the previous analyses (and question 5 of the introduction) are addressed: (1) uniformity of social ties and (2) the focus on job changers which are described henceforth.

First, in the discussion parts of the previous chapters it has been frequently criticised that social ties – in contrast to formal search channels – could not be differentiated. This might cause a severe problem because some ties might be more valuable than others. For example, Granovetter (1973) distinguished strong and weak ties⁸⁷ and argued that weak ties are more helpful in finding a better job. Although strongly connected individuals have a greater incentive to help each other, weak ties grant access to a larger number of non-redundant ties. Being connected to individuals who can provide new information is particularly important in case of job search. Hence, this chapter aims at untangling the complex relationship between social ties, which constitute one's social capital, and labour market success with a special emphasis upon the role of weak ties. Ties, both weak and strong, are formed or maintained between to individuals as a consequence of time spent together. Yet, different ways of spending one's time, e.g. with close friends or with weakly tied acquaintances could affect social capital accumulation and, thus, labour market success.

The second shortcoming derives from the focus on job changers. Most analyses, apart from turnover regressions (see chapter 4), suffer from a short term perspective because post-hire outcomes are measured in the year of the job change.⁸⁸ However, employers might not be willing or able to pay higher wages for individuals who entered the firm via social ties.⁸⁹ If

⁸⁷ According to the determinants of tie strength (see chapter 2.4), weakly tied individuals spend less time together, their relationship is marked by less emotional intensity and intimacy, and individuals act less reciprocally.

⁸⁸ In chapter 4.5.2 it has been argued that long-term effects of job changes are difficult to measure. Using wage or job satisfaction two (three, four, five) years after the job change as a dependent variable is likely to lead to biased estimates since this measure already includes turnover. Those individuals who changed their jobs due to low wages or dissatisfaction would not be part of the sample, leaving those who stayed in the job. Job stayers could either be satisfied enough to stay or not likely to find another job on the labour market and, therefore, stay.

⁸⁹ In Germany, wage postings are more common compared to free wage bargaining (Brenzel et al., 2014). Wage bargaining is more likely in case of higher educated individuals and in tight labour markets.

social ties, especially weak ties, are helpful in finding a better job, general career chances should be improved which is likely to pay off in future years. It can be assumed that individuals who better match the respective job requirements or are simply more able to perform well in a certain job are more likely to be promoted. Hence, long-term career success might be affected by entering the right company which creates the best P-O or P-J fit. Therefore, the analyses are based on a dataset including employees, regardless if they recently changed their job or not.

Unfortunately, the Socio-Economic Panel does not provide more detailed data on the social tie the current job was found through. Therefore, this analysis focusses on certain leisure time activities or group memberships in which social ties are formed. It is assumed that activities differ in terms of the type of social capital they generate. Some activities or group memberships might be responsible for forming mainly weak ties, whereas more intimate relationships with friends or family members increase the number of strong ties. In accordance to Granovetter (1973), it is hypothesised that weak ties are more likely to be beneficial for one's career in comparison to strong ties. Activities which generate weak ties should, thus, be positively related to post-hire outcomes (wages, job satisfaction, job security).

The contribution of this chapter to the existing literature is threefold. First, so far, this study is the first to investigate the joint influence of leisure time activities on labour market success.⁹⁰ Since time is a limited resource, individuals have to decide how to spend their time on alternative activities. Hence, by choosing a certain option, other options cannot be embraced in the same intensity. Studies which focus on a single dimension of activities therefore neglect that individuals who do not engage in the activity under investigation might spend their time with another beneficial activity. Particularly time consuming activities, e.g. volunteering, might prevent individuals from being involved in one or more other activities. Furthermore, activities might not be independent from one another. Belonging to a voluntary group might trigger other joint activities through which social capital could be increased (Warde et al., 2005). By utilising a broad array of different activities, this effect should be better covered than in other leisure time studies.

Second, this study addresses the problem of endogeneity by exploiting the household data of the SOEP. The relation between leisure time activities and labour market success is non-

⁹⁰ Hermann and Marianna (2011) simultaneously used three different measures for social capital in their study (membership in associations, contact with friends, contact with relatives). Other leisure time activities, e.g. attending cultural or popular events, are not considered in their analysis.

trivial, since it is not clear whether individuals earn higher wages due to their activities or whether they engage in certain activities because they dispose of more financial resources. This problem is tackled by using household income as a control variable. Unlike other studies (e.g. Day, Devlin, 1998), this chapter focusses on households with more than one member, otherwise household income and individual income (as the dependent variable) would be highly correlated. As the results will show, this approach reduces endogeneity in the relationship between activities and income.

Third, this analysis is based on data from the Socio-Economic Panel which provides more than 23,000 observations, including several socio-demographic control variables. Furthermore, job stayers and job changers are distinguished in order to detect long-term and short-term effects of leisure time activities. Additionally, apart from Seibert et al. (2001), the relationship between social capital and non-pecuniary outcomes (job satisfaction) has not been investigated. In addition to this, perceived job security is considered as a non-pecuniary measure of career success which is related to various other outcomes, such as mental and physical health (see e.g. Sverke, Hellgren, 2002; Ferrie et al., 2005; László et al., 2010).

The remainder of this chapter is structured as follows: Chapter 7.2 describes the theoretical background of leisure time activities as a means to generate social capital. Additionally, empirical findings are summarised which investigate the use of leisure time activities to generate social capital and to improve labour market outcomes. In chapter 7.3 the dataset and estimation strategy are explained, followed by the empirical findings in chapter 7.4. The findings are discussed in chapter 7.5. Chapter 7.6 concludes.

7.2 Theoretical Background and Related Literature

7.2.1 Social Capital and Labour Market Success

Social capital is defined as the “aggregate of the actual or potential resources [...] of a durable network of more or less institutionalised relationships” (Bourdieu, 1986: 248). More specifically, social capital is generated by memberships in different groups which might have a rather formal (constitutionalised organisations) or informal (friends, acquaintances) character. In analogy to human capital, social capital can be defined as a set of helpful ties that facilitates economic activities as it establishes a norm of reciprocity (Diekmann, 2004) and creates a resource to enhance options and to gather information (Campbell et al., 1986).⁹¹

⁹¹ This chapter draws on the concept of accessible social capital proposed by Lin (2008), see chapter 2.3.2.

As a result, social capital ensures reciprocal cooperation in form of a public good for all members of the network as well as the generation of individual advantages (Horiuchi et al., 2013). Such individual advantages are particularly relevant in labour markets with mutual asymmetric information for both employers and employees. Network members could be able to provide reliable information on job vacancies or could use their own power or further contacts to increase promotion perspectives. Those information advantages could increase career success, commonly measured as salary and job satisfaction.

In chapter 2, potential benefits of social ties in the job search process have been explained thoroughly. Therefore, this chapter concentrates on describing how social capital might affect monetary and non-monetary career outcomes in the long run. First, long-term wage and job satisfaction differentials might be a result of information benefits in the job search process. Due to Realistic Job Previews (Wanous, 1978) or pre-screening (Zottoli, Wanous, 2000), job seekers are able to find a better job or a job that provides a better P-J or P-O fit. Yet, it is dubious whether these positive effects are long-lasting in the sense of a permanent wage or job satisfaction gap or if this gap is narrowed the longer the work relation lasts. On the contrary, previous research in this thesis could not find short-term monetary benefits of job search via social ties. It has been argued that employers might not be willing to grant different wages to individuals found via different sources, particularly in jobs where wage postings are more common than wage bargaining (Brenzel et al., 2014).

Nevertheless, there are arguments why social capital might be helpful in the long term. Apart from finding a better job, social capital might also be an important means in climbing the internal career ladder of an organisation, which can be explained by two main arguments. First, a better P-O or P-J fit is likely to increase promotion perspectives because a better fit increases performance and job satisfaction and reduces the intention to quit an organisation (Kristof-Brown et al., 2005). Promotions, in turn, are usually connected to an increase in remuneration and social status which might be related to job satisfaction. Furthermore, promotions serve as a signal of job security as employers do not promote individuals that should be dismissed in the near future. Second, empirical evidence suggests that social ties to network members with high occupational status are positively related to one's own career chances (Lin et al., 1981a; 1981b). Hence, ties to other people in high positions are likely to increase career chances, especially in the case of promotions. Empirical evidence for this is provided by Seibert et al. (2001). Analysing a sample of 448 alumni of an U.S. private university, the authors found that social capital (measured as the number of people who were

helpful during one's career) was positively related to career success, such as salary, promotions, and general career satisfaction. Their structural equation model showed that this relationship was mediated by network benefits like access to information, access to resources, and direct career sponsorship.

The concepts and empirical evidence above have elucidated that individuals who dispose of more valuable social ties are likely to be more successful in their career. Hence, theoretical concepts mainly try to explain why individuals differ with regard to their social capital. Lin (2001) argued that such individual differences, which can be understood as inequality, can derive from two causes: (1) capital deficits and (2) return deficits. Individuals with capital deficits dispose of relatively less social capital (quality and quantity) caused by lower investment or fewer opportunities. Return deficits, in turn, mean that two individuals *ceteris paribus* (given a certain amount of social capital) differ regarding their ability to transform their social capital into career outcomes. Researchers have repeatedly found that individual differences in social capital determine gender or racial inequality (see e.g. Ibarra, 1995; Parks-Yancy, 2006). Ibarra (1993) proposed a conceptual model of organisational networks of females and minorities. Homophily, the tendency of being surrounded by peers similar to oneself, creates an access boundary for minorities and females to more valuable social networks. To overcome such boundaries, Burt (1998) stressed that females and members of minorities have to gain legitimacy in social networks, e.g. by establishing a social tie to a core agent of a network.⁹²

Social capital is formed via activities which connect different individuals. Social exchange during leisure time activities is essential in order to maintain existing ties. Through interaction with others who have not been known before, new ties are created and the accessible capital (the stock of social capital) is increased. Glaeser et al. (2002) described a theoretical model in which individuals deliberately invest into their social capital by joining and staying in different organisations. In this chapter, the focus is shifted from membership in organisations to all types of leisure time activities which are able to generate social ties and could be understood as investment into social capital. The next chapter briefly summarises theoretical approaches which explain social capital formation via leisure time activities.

⁹² Current research on the relationship between career success and social capital perceives immigrants as a disadvantaged group with limited access to financial resources or a lack of human capital, see e.g. Aguilera and Massey (2003), Behtoui (2008), and Behtoui and Neergaard (2010).

7.2.2 Leisure Time Activities and Social Capital

Recently, researchers have identified leisure time activities as sources of social capital generation;⁹³ however, most studies focus on group membership in leisure time groups while ignoring activities which involve a lower degree of organisation and provide mainly theoretical considerations on the social outcomes of social capital for the community (e.g. Arai, Pedlar, 2003; Blackshaw, Long, 2005; Glover, Hemingway, 2005). Theoretical literature on the generation of social capital is rather scarce. Adler and Kwon (2002) found that researchers agree on the notion that social capital is generated in social relations between individuals. However, it remains rather dubious under which conditions social interaction transforms into a social tie. Granovetter (1973) named amount of time spend together, emotional intensity, intimacy, and reciprocal behaviour as determinants of tie strength. Nevertheless, it is not clear how much interaction is necessary in order to constitute a (weak) tie and when a weak tie turns into a strong tie. It seems reasonable that little interaction is required to form a tie (accessible capital) but not every weak tie might be mobilised if needed. Furthermore, the potential of mobilised capital might differ with regard to the intended purpose. Individuals who dispose of a given social network might find it easier to mobilise their ties for receiving simple (more general) information but less networks members might be willing or able to provide information on job vacancies.⁹⁴ Hence, a certain tie strength might be necessary in order to constitute a beneficial (weak) tie. On the contrary, too many strong ties might be less helpful because of redundant information and network ties (Granovetter, 1973). In addition, individuals (in particular full-time employees) have limited time resources to allocate to certain leisure time activities. Thus, spending too much time on a certain activity might prevent individuals to engage in other activities which could offer new ties. Hence, an inverted u-shaped relationship can be assumed for the relationship between socialising activities and network benefits. A certain amount of investment in leisure time activities could be necessary in order to generate enough helpful ties, yet, investment might have decreasing or even negative marginal returns at some point of the payoff function.

⁹³ Kando and Summers (1971) drew on multiple aspects of how leisure and work might affect each other. For example, the authors stated that leisure time activities are affected by social class (e.g. working class vs. managers). Furthermore, they discussed whether leisure activities are likely to be complimentary to or compensating for work activities (e.g. if individuals with physical jobs enjoy physical activities in their leisure time). This chapter, though, draws on the potential socialising effects of leisure time activities.

⁹⁴ However, in their analysis of determinants of helping behaviour, Latané and Darley (1970) provided experimental evidence that bystanders are more likely and more quickly to help a person in need when the bystander and the victim shortly met before the experiment.

Leisure time activities might differ in terms of their potential to generate social capital. Van Ingen and Van Eijck (2009) mentioned two main characteristics of leisure time activities which determine the effectiveness in social capital generation. First, the type of company during the activities is considered. In their article household members are differentiated from non-household members (labelled “other companions”). Other companions are likely to enlarge an existing network and confront the individual with new ideas and information. Hence, the distinction of companions is closely related to the “strength of weak ties”-hypothesis (Granovetter, 1973). Second, the type of activities itself influences the amount of social capital created. It is argued that passive activities (e.g. watching television) do not enhance social capital, whereas activities which encourage and enable interaction between individuals are more helpful in establishing social ties. A similar distinction has been suggested by Putnam (2000) who differentiated consumptive activities like watching television from productive activities.⁹⁵ Consumptive activities are expected to have no or a negative impact on social capital because of reduced social interaction whereas productive activities enhance individual skills and/or social capital.

In the following subchapters, nine activities covered in the SOEP data and their potential effects on social capital generation are described. Particular attention is paid to the potential of creating strong or weak ties. If single activities are similar to others – e.g. attending cultural and popular events, the hypothesised relation between engaging in such activity and social capital is jointly described in one chapter. The activities under investigation broadly cover the activities and organisations described in “Bowling Alone” (Putnam, 2000), from political and civic communities to informal connections. At the end of each chapter, hypothesis regarding the potential correlation between leisure time activities and post-hire outcomes (wages, job satisfaction, subjective and objective job security) are formulated. The hypotheses are formed under the premise that weak ties are more helpful in one’s career as hypothesised by Granovetter (1973).

⁹⁵ Van Ingen and Van Eijck (2009: 198) suggested the following definition for consumptive respectively productive activities: “Productive activities are characterized by an active dedication of the participant and working (together) towards a certain goal. This goal can be instrumental, but also expressive or creative. Consumptive activities are a passive form of spending time, characterized by the ‘utilization’ of certain goods (consumption in its narrow meaning), but also of experiences.” This definition differs from the terminology used in gerontology. Klumb (2004), for example, distinguished productive from consumptive behaviour by applying the third-party criterion (Reid, 1934), i.e. that the activity can be carried out by a third person and still provides the same amount of utility.

7.2.2.1 Attending cultural and popular events

The first two leisure activities are cultural and popular events. While the first one comprises visits of concerts, theatre plays, and talks or lectures, the latter contains going to the cinema, pop-music concerts, discos, or sports events. Theoretical conceptualisations or empirical evidence regarding the labour market effects of these two activities do not exist. Only Van Ingen and Van Eijck (2009), as mentioned above, distinguished productive and consumptive activities and find a positive relationship between productive activities on their measures of social capital (civic engagement and helping). However, the study does not consider what kind of social capital has been created, in particular whether strong or weak ties are established or maintained. Evidence regarding single activities is existent for visits of museums. Based on qualitative research of visitors of the *Kunsthistorisches Museum* in Vienna, Roberson (2011: 78) argued that museums “provide a safe and beautiful space where people can spend free time and engage in personal and social contemplation” which is used not only as a means to spend free time but also for self-development and learning. Visitors of museums commonly belong to a distinct sector of the population (Gurt, Torres, 2007) and are in general higher educated (Smithsonian Institution, 2001) so that helpful ties could be formed between homogeneous individuals. Still, due to little interaction between visitors of cultural events – apart from friends or relatives who are attending such an event together – the generation of social capital is rather small.

Apart from social capital, cultural events or musical activities could increase the so-called cultural capital (Bourdieu, 1986) which includes education (mainly accumulated via social learning) that cannot be exploited in the economic sense. Cultural capital of a society can be understood as a cultural “ecosystem” in which actors behave in certain ways (Throsby, 1999). Individuals who acquire or enhance their cultural capital, e.g. by attending cultural events or other cultural activities, might be able to learn social behaviour that opens the gates to higher society classes with access to more valuable social capital.

Popular entertainment is more likely to be understood as a consumptive activity. Nevertheless, individuals are able to create and maintain ties to others, yet, these ties are more likely to be strong ties. Individuals are usually attending such events with others to whom they are closely connected. Therefore, it is assumed that popular entertainment activities are not able to generate beneficial weak ties but to maintain strong ties. Under the assumption that weak ties are more likely to be linked to career success, it is assumed that:

H1: The frequency of attending cultural events is positively related to post-hire outcomes.

H2: The frequency of attending popular events is negatively related to post-hire outcomes.

7.2.2.2 Artistic and Musical Activities

Individuals who engage in artistic or musical activities are able to enrich their lives in multiple ways. Most research deals with the effect of childhood musical activities on child development, such as improved reading skills (Standley, 2008) or communication (Kraus, Slater, 2015) because playing musical instruments permanently affects the anatomy and function of the brain (Skoe, Kraus, 2012).⁹⁶ Several studies report a positive relation between musical education and IQ (Hille et al., 2011). Schellenberg (2004) found that children (N=144) showed a larger increase in IQ when they received music lessons compared to two control groups (drama lessons, no lessons). Hence, it is not surprising that students who were active in music studies performed better in non-musical courses, too (Cabanac et al., 2013).

Furthermore, individuals who spend their time with musical or artistic activities are likely to interact with other individuals of their drama group, music school, band or other association. However, most of these groups are rather small or are even carried out alone so that ties can be characterised as strong rather than weak (if ties are established at all). Even when individuals are part of an artistic or musical group, both activities require hours of single learning (e.g. playing an instrument, learning the text of a drama). As a result, the effect on social capital (and thus labour market success) should be rather small or equal to zero.

H3: No testable hypothesis can be formed.

7.2.2.3 Meeting and helping friends

Two variables in the dataset describe the frequency of interaction with friends: meeting respectively helping friends. Meeting friends describes how often individuals are in direct contact with friends. According to Granovetter (1973), such interaction should rather establish strong ties. However, Burt (1992) argued that strong ties could help to bridge structural holes to other networks which provide access to further ties. These structural holes could be spanned by frequently meeting friends or other individuals. Helping, in turn, is more likely

⁹⁶ Kamiyama et al. (2010) found that musical education improved working memory which might explain higher IQ.

between individuals who are closely related.⁹⁷ An individual who is helping someone usually invests time on a certain activity without being paid. Harrison et al. (2011) stated that cooperative behaviour which involves bearing costs for others is positively related to tie strength.⁹⁸ Therefore, frequent helping should serve as a proxy for strong ties (even more than just meeting others) which should not be positively related to career success – even a negative relation could emerge from excessive helping. Hermann and Marianna (2011) found support for the “strength of weak ties”-hypothesis by estimating income effects of frequency of contact with friends (weak and strong ties) and relatives (strong ties). Therefore, two corresponding hypotheses can be formulated:

H4: The frequency of meeting friends is positively related to post-hire outcomes.

H5: The frequency of helping friends is negatively related to post-hire outcomes.

7.2.2.4 Volunteering in Charity Organisations and Engagement in Citizens’ Groups

Charitable organisations serve a non-profit purpose and their “activity is dedicated to the altruistic advancement of the general public in material, spiritual or moral respects” (Section 52(1) of the Fiscal Code of Germany, 2014). Volunteers offer their time and skills to a non-profit organisation and exercise a planned activity in the name of the organisation (Rodell, 2013). Since volunteering is time-consuming but usually not paid (at least not at market prices), Menchik and Weisbrod (1987) described a consumption and an investment model of volunteer work which both predict a negative relationship between volunteering hours and wage. Investment in this case is understood as a means to gain on-the-job experience which should prepare individuals for the labour market or increase their human capital. On the contrary, individuals who are already integrated into the labour market do not need to volunteer and, thus, reduce their volunteer time. The consumption argument interprets volunteering as one leisure time activity among others that increases individual utility. Individuals who are working in well-paid jobs and who regard volunteering as a pure consumption good reduce their volunteering time since opportunity costs increase along with wages. Menchik and Weisbrod (1987) found in their study evidence for a negative wage elasticity. Furthermore, researchers have stressed that volunteering is a source of meaningfulness (Clary et al., 1998). However, not every employee strives for the same

⁹⁷ In contrast to pure helping behaviour, volunteering entails “more commitment than spontaneous assistance but narrower in scope than the care provided for family and friends” (Wilson, 2000: 215).

⁹⁸ In this study, members of an existing social group were exposed to physical discomfort through which they could earn money for themselves and other members. Individuals were willing to endure higher levels of discomfort for others when the relationship between them was reciprocal.

amount of meaning through volunteering. Rodell (2013) provided empirical evidence that individuals who do not find meaning in their work domain volunteer in order to compensate for this lack.⁹⁹ Bauer et al. (2013) investigated determinants of volunteering and donations. They found that both kinds of charitable actions were positively correlated, though, individuals with higher opportunity costs (full-time employees, individuals with young children) were less likely to work in volunteer associations while there was no reduction in monetary donations.¹⁰⁰

Whereas these arguments propose a negative correlation between wages and volunteering, positive effects of non-profit labour might be explained by social capital theory. Working in charitable organisations brings individuals into contact with other volunteers, members of other organisations or beneficiaries of the organisation. Evidence shows that one motif to join a voluntary organisation is to make friends and, hence, to increase one's social capital (Prouteau, Wolff, 2008). Social exchange of this kind could eventually yield in valuable ties. Apart from such unintended career effects, volunteers might be deliberately motivated to join an organisation in order to increase one's career success by generating valuable contacts or boosting one's résumé.¹⁰¹ Polidano et al. (2009) mentioned further channels through which volunteering could improve labour market outcomes. First, volunteering could serve as a signal (Spence, 1973) which conveys unobservable characteristics to new employers who cannot assess these characteristics due to asymmetric information. Second, psychological well-being might be affected by volunteering because social participation is supposed to increase inclusion and recognition while reducing anxiety and self-preoccupation (Moen et al., 1992).

Empirical evidence on labour market returns of volunteering is rather mixed. For example, Prouteau and Wolff (2006) found a positive correlation between volunteering and wages in the public sector but a negative correlation in the private sector. Hence, the authors concluded that the consumption motive dominates the career motive in case of volunteering. Day and

⁹⁹ Rodell referred to the literature of spill-over effects between the work and the family domain (Lambert, 1990; Edwards, Rothbard, 2000) in order to explain spill-over effects between paid-work and volunteer-work domains.

¹⁰⁰ Brown and Taylor (2015) investigated personality traits as another explanation for differences in volunteering. They found that higher degrees of conscientiousness and neuroticism were negatively related to donations of time and money, whereas openness to experience proved a strong positive correlate of charitable behaviour.

¹⁰¹ This dimension is covered in the Volunteer Functions Inventory (VFI) which has been designed to measure intentions for volunteering (Clary et al., 1998). Five additional factors describe motives, such as protection seeking, expression of values, social pressure/desire for social interaction, gaining a deeper understanding of unfamiliar tasks or oneself, and self-enhancement.

Devlin (1998), in turn, detected a positive relationship between volunteering and wages which they interpreted as proof for the investment motive. Hackl et al. (2007) investigated a sample of 421 Austrian volunteers and non-volunteers and control for a potential selection into volunteering. By doing so, the authors found a strong positive correlation between volunteering and wages. In line with this, Cozzi et al. (2013) revealed a strong positive effect of volunteering¹⁰² on wages. While wage effects are rather small in the pooled OLS sample, the introduction of rainfall as an instrument revealed much larger returns of volunteering. The authors concluded a negative sorting into volunteering, meaning that less able individuals (with lower wages) were more likely to work in non-profit organisations. This might be explained by higher opportunity costs of volunteering of more high-income individuals.

Ruiter and De Graf (2009) provided the most thorough and robust evidence on labour market benefits of volunteering. Based on data from the “Family Survey of the Dutch Population” from 2000 (FSDP2000), the authors investigated the relationship of memberships in voluntary associations respectively volunteering in these associations on occupational status,¹⁰³ wages, and the probability of starting a new job. Voluntary associations comprised all kinds of political, musical, religious, sports or welfare organisation. The data was gathered in face-to-face interviews in which participants and their partners were questioned about their membership(s) in voluntary associations during their life course. Therefore, it has been possible to reduce endogeneity biases.¹⁰⁴ The results showed that pure membership in a voluntary association increased the probability of starting a new job and that this job was related to higher wage and occupational status. Actual volunteering, though, is not related to these three measures. The opposite has been detected for job starters (who found their first job), which means that actual volunteering but not membership per se is positively correlated with occupational status. Furthermore, the authors found partial support for their hypothesis that associations with higher status provide more benefits for their members. The study provides ample evidence on the positive effects of membership and volunteering in associations. However, the composite measure for membership (which comprises all kinds of

¹⁰² Volunteering in this study was measured as a bivariate dummy variable which took the value 1 if the respondent has participated in any kind of volunteering in the respective year or in the years before. Therefore, the volunteering dummy did not only cover recent experience but also experience in the past. This implies that the depreciation rate of volunteering is 0 and that volunteering more than once does not increase the volunteering effect.

¹⁰³ Jobs were coded according to the International Index of Occupational Status (ISEI) proposed by Ganzeboom et al. (1992) who assigned a prestige value to 271 job categories.

¹⁰⁴ In this case, it could be ruled out that participants joined a certain association after a new job was found (e.g. because of a higher obtained status or work contacts).

charitable and other organisations) does not consider heterogeneous effects for these organisations. As argued above, associations generally differ in their potential to establish weak ties and, thus, in their effectiveness in the labour market. Nevertheless, most voluntary associations are likely to provide room to form weak ties which could serve helpful during job search or one's career.

Furthermore, membership in a citizens' group, which may be a political party or other kind of local organisation, is distinguished from pure volunteering. The main difference between these activities, however, is not the way individuals might get into contact with each other but the purpose of the organisation. While volunteer groups aim to provide help for others, citizens' groups or political party rather focus on their influence in (local) politics or the welfare of their members. Potential altruistic behaviour is not excluded since political parties or other organisations might, at least partially, invest their time and effort in order to improve overall welfare. Regardless of the purpose of the organisation, citizens' groups should be able to bring people together from different backgrounds or from different organisations. As a result, a similar effect like for volunteering is assumed for memberships in citizens' groups. Thus, the following hypotheses are formed:

H6: The frequency of volunteering is positively related to post-hire outcomes.

H7: The frequency of attending citizens' groups is positively related to post-hire outcomes.

7.2.2.5 Sports Activities

Whereas some studies consider sports activities as charitable behaviour,¹⁰⁵ it is rather questionable if pure membership in a sports club has similar effects compared to memberships in traditional welfare organisations. This is particularly the case when membership in a sports club does not involve any charitable behaviour but solely sporting activities. Hence, it is not the contact to other organisations or local politicians through which social ties are established but interaction between club members or health effects. Both channels are discussed briefly.

Medical literature has repeatedly found that physical activity improves general health or alleviates several diseases (Powell et al., 2011) and improves mental health (Biddle, Asare, 2011). Based on SOEP data, Lechner (2009) showed that sports activities have a long-term

¹⁰⁵ Membership in sports clubs can be interpreted as charitable behaviour if the individual is working as a trainer or representative for the sports club. For example, Hackl et al. (2007) and Ruiter and De Graf (2009) used membership in organisations (e.g. sports clubs) for their volunteering dummy.

effect on both monetary and non-monetary labour market outcomes. Investigating a sample of 80,000 employees, Lechner and Downward (2013) found sizeable labour market benefits of sports activities, especially for individuals who engage in team sports.¹⁰⁶

The social dimension of sports is well recognised in sociological research. Downward and Rasciute (2012) proposed a theoretical concept in which the membership in sports clubs increases individual social capital (as well as human capital) which affects the degree of social inclusion respectively exclusion (Silver, 1994). Moreover, this model is not free from endogeneity since more integrated individuals are more likely to find a sports club. For the career effects of sports activities it is important whether such activities generate weak or strong ties (Granovetter, 1973). Downward and Riordan (2007) found that sports activities connect rather similar individuals (homophily).¹⁰⁷ According to the authors, individuals doing sports together do not increase their social capital but social capital determines whether two or more individuals are doing sports together. As a result, existing social ties are strengthened through joint activities, which is a clear sign for strong ties.

H8: The frequency of sports activities is negatively related to post-hire outcomes.

7.2.2.6 Attending Church or Religious Events

Individuals express their religious beliefs by attending church or other religious events. Little attention, though, has been paid to labour market effects of religious events. Drawing on Coleman's approach to social capital, priest, sociologist, and novelist Andrew Greeley concluded that "religion is (at least potentially) a powerful and enduring source of social capital (...), and indeed of social capital that has socially and ethically desirable effects" (Greeley, 1997: 392f.). Labour market outcomes might be affected by the religion itself (and the frequency of attending religious ceremonies might represent a proxy for the intensity of one's belief) or by the formation of social capital within religious groups. Regarding the first issue, religion might determine labour market success in various ways. Religions often shape the understanding of gender roles (Lehrer, 1995), i.e. whether female labour force participation is appropriate or not. For the case of Germany, where Roman Catholics and Protestants each account for around 30 percent of the population (Statistische Ämter des Bundes und der Länder, 2014), Heineck (2004) showed that women who were frequently

¹⁰⁶ Later regressions contain a measure for subjective physical health in order to control for this channel.

¹⁰⁷ Nichols et al. (2013) argued that sports clubs hesitate to recruit volunteers outside the club due to a desire for similarity. Homophily does not only cover demographic characteristics but mainly degree of shared values. This might be particularly relevant in organisations which express and, thus, require certain common values.

involved in religious activities or females whose husbands displayed a strong religious belief were less likely to join the labour force. More recently, though, Fischer and Pastore (2015) replicated this result for the period of 1981-1996 but did not find a relation between religion and labour market entry of females between 1997 and 2013. Since this study concentrates on full-time employed individuals, labour market success cannot be affected through this channel.

Other studies investigate the impact of religion on labour market success. Ewing (2000) proposed two alternative explanation for a catholic wage premium which has been detected repeatedly in the US. First, being raised in a Catholic community might increase human capital, e.g. by attending catholic schools.¹⁰⁸ Second, employees who were raised in Catholic families and attended Catholic schools signal soft-skills which are associated to Catholic belief (e.g. discipline, honesty etc.). The author found a positive wage premium for Catholics. However, the study solely uses a dummy variable to identify the respondents' religion in childhood and youth but not in the year under investigation. Furthermore, the degree of religiousness differs between individuals and the effects of religions might be biased.¹⁰⁹

Additionally, religious events are likely to enhance social capital of attendants. Individuals who are regularly attending religious events are likely to interact with other people and to establish new ties. Religious groups, in particular the two large Christian religions, commonly gather enough people in order to create new ties. Apart from pure religious service, churches provide room for additional gatherings, social groups or other communities and individuals who are attending religious events eventually are more likely to be a member of such groups. Individuals are, thus, able to create and maintain strong and weak ties by church visits and being part of other church related events. Bradley (1995), replicating findings of Ellison and George (1994), found that individuals who frequently attended religious events disposed, in average, of larger social networks, more direct and indirect (telephone) contact, and perceived their relationships as more helpful compared to less frequent attendants. Therefore, it is hypothesised:

¹⁰⁸ Neal (1997) found that the catholic schools increased education attainment of minorities in urban areas, while positive effects were considerably smaller for urban whites or suburban students.

¹⁰⁹ This might be especially the case if religiousness and the relation between religiousness in youth and adulthood differ between religions. If individuals who were raised Catholic are more likely to remain active members of the religious society than individuals of other religions, the wage effect of other religions might be underestimated. Hence, the wage premium of Catholics could be overestimated.

H9: The frequency of attending religious events is positively related to post-hire outcomes.

Table 48, additionally, contains hypotheses on the most probable kind of ties which are formed in this activity. Strong ties are established in intimate and close relationships between people that meet regularly (Granovetter, 1973). As a result, meeting and helping friends should rather improve or maintain strong ties. A similar logic applies in case of attending cultural or popular events. Since individuals do not go to such events alone, but most likely with friends, these activities rather strengthen strong ties. Sports activities might establish both strong and weak ties, depending on the kind of activity (team sports vs. individual activities). Artistic or musical activities are usually performed in small groups or alone, which makes it more probable that strong ties are maintained or formed. Volunteer work or engagement in other local groups is likely to build connections between a large number of different individuals. Religious events or communities could help establishing both strong and weak ties. In line with Granovetter (1973) it is hypothesised that weak ties are more helpful in generating labour market benefits than strong ties. Thus, activities which mainly provide weak ties should be more beneficial for employees.

Table 48: Description of leisure time variables

Variable name	Variable description	Hypothesised tie strength
Attending cultural events	Respondent attends cultural events, such as concerts, theatre plays, lectures, etc.	Strong ties
Attending popular entertainment events	Respondent goes to the movies, pop music concerts, dancing, disco, sports events	Strong ties
Active sporting activities	Respondent does sports himself/herself	Strong and weak ties
Artistic or musical activities	Respondent plays music or sings, dances, acts, paints, photographs	Strong ties
Meeting friends, relatives, neighbours	Respondent meets friends, relatives neighbours	Strong ties
Helping friends, relatives, neighbours	Respondent helps out friends, relatives neighbours	Strong ties
Volunteer work (clubs/social services)	Respondent volunteers in clubs (e.g. sports) or social services	Weak ties
Involvement citizens'/political group	Respondent is involved in a citizens' group, political party or in a local government	Weak ties
Attending church, religious events	Respondent attends church or other religious events	Strong and weak ties

7.3 Dataset and Methodology

The empirical investigation is based on data of the German Socio-Economic Panel (SOEP) and limited to the waves 2005-2011 because information on free time activities is available in

the four odd years. Leisure time activities are assumed to be rather stable; therefore, this information is also used in the even years. Since leisure time activities are likely to depend on the amount of disposable free time, only full-time employees are considered. It seems reasonable that unemployed or part-time employees have different leisure time usage patterns compared to full-time employees. Furthermore, single households are excluded in order to control for household income as a determinant of leisure time activities.¹¹⁰ As a result, the dataset includes 23,524 observations of 7,226 individuals. Further analyses focus on job changers, hence, the number of individuals decreases to 1,116 which account for 1,444 job changes in the observation period.

Three dependent variables are used in this chapter. First, monetary outcomes of leisure time activities are estimated by using the logarithmised *monthly gross labour income* (in prices of 2010) as the dependent variable. Second, *job satisfaction*, measured by an 11-item Likert scale is utilised as the dependent variable. The last dependent variable is a subjective measure for *perceived job security*. Respondents were asked whether they are either “very concerned”, “somewhat concerned”, or “not concerned at all” about losing the current job.

The independent variables of interest describe nine different free time activities that could generate or maintain social capital through mutual exchange. Leisure time activities are available in the waves 2005, 2007, 2009, and 2011 of the SOEP.¹¹¹ Since leisure time activities seem to be rather stable over time (little within variation even with one year gap in between), leisure time activities are used in the respective following year (2006, 2008, 2010). Summary statistics show that this assumption is not too strong and that the between variance is much larger than the within variance. These measures include activities such as attending *cultural events* (concerts, theatre), *popular events* (cinema, pop concerts, disco), and *sports or musical* activities (see Table 48). Furthermore, the frequency of contacts to friends and relatives is measured as active *helping* or *meeting friends*. Participation in *voluntary work* or political or *civil organisations* is included as well. Finally, the data contains information on

¹¹⁰ Household income has been identified as an important determinant of leisure time activities. Since leisure time activities usually require financial resources, ignoring this endogeneity would lead to biased estimates. In order to demonstrate this effect, regressions with both household income and without are provided in the next chapter. Naturally, in single households income from labour and household income are highly correlated so that single households have to be excluded from the regressions.

¹¹¹ The 2008 wave of the SOEP contains even more leisure time activities. However, the questions differ in terms of wording and content so that the variables are not identical. For example, in an additional question participants were asked about their frequency of visiting restaurants or bars. It is most likely that this variable includes a form of interaction between individuals since most people go to such places with or in order to meet other people. Furthermore, participants had a fifth response option of “daily”.

the frequency of attending *religious ceremonies*. For all activity variables, frequency is given as “every week”, “every month”, “less frequent”, or “never”. In all estimations, the latter serves as the base outcome in order to measure the positive or negative effect of engaging in this activity more frequently.

Apart from socio-demographic control variables (which have been used in the previous chapters), logarithmised *household income* is included in order to reduce potential endogeneity. A similar approach has been applied by Ateca-Amestoy et al. (2008) who used both household income and capacity to spend money for leisure time activities in their life satisfaction regression. Since household income comprises income from work, single households are excluded from this analysis due to a high correlation between household income and work income in single households.

The estimation strategy exploits the rich data on the individual and the household level. As mentioned above, three individual labour market outcomes are chosen as dependent variables: wages, job satisfaction, and subjective job security. The estimated wage model based on an OLS regression can be described as follows:

$$\text{Log}(Wage_{it}) = \alpha + Act'_{it} \cdot \beta + DemChar'_{it} \cdot \gamma + HHChar'_{it} \cdot \delta + JobChar'_{it} \cdot \epsilon + Reg_{it} \cdot \zeta + \eta \quad (7.1)$$

where *Act* represents variables with information on the frequency of free time activities related to social capital, *DemChar* includes demographic characteristics such as age, gender, education, family status and health, *HHChar* stands for household characteristics like household income and household size, *JobChar* contains information on branch, occupation and firm size. Additional regional (*Reg*) control variables are an East/West dummy and the unemployment rate on the federal state level. ζ is the error term.

The job satisfaction model is estimated accordingly. As argued above, OLS regressions are used for reasons of simplicity and easier interpretation of the findings (see chapter 4.3). The model can be described by

$$JS_{it} = \alpha + Act'_{it} \cdot \beta + DemChar'_{it} \cdot \gamma + HHChar'_{it} \cdot \delta + JobChar'_{it} \cdot \epsilon + Reg_{it} \cdot \zeta + \eta \quad (7.2)$$

where independent variables are the same as described above.

To account for the nature of the dependent variable, both multinomial as well as ordered logistic regression models are applied to estimate the relationship between social capital and perceived job security (*JobSec*). The estimated model can be formalised as follows:

$$\text{Pr}(JobSec_{it} = k) = \alpha + Act'_{it} \cdot \beta + DemChar'_{it} \cdot \gamma + HHChar'_{it} \cdot \delta + JobChar'_{it} \cdot \epsilon + Reg_{it} \cdot \zeta + \eta \quad (7.3)$$

$$\text{with } k = \begin{cases} 1 & \text{very concerned} \\ 2 & \text{somewhat concerned} \\ 3 & \text{not concerned at all (base outcome)} \end{cases}$$

where except *JobChar* all variables are defined as above. In this estimation, *JobChar* contains an additional variable on the unemployment rate on the state level. This variable serves as an objective measure for job security so that the direct relationship between social capital and subjective job security can be estimated.

Table 49 provides an overview of the variables used in this chapter. First, dependent variables are summarised. Participants averagely earned 3,000 euros (in prices of 2010) and reported a level of job satisfaction of 6.96, which is similar compared to the previous analyses. Different patterns in leisure time activities can be observed. Few individuals (less than 1 percent) visit cultural or popular entertainment events every week. Most individuals attend this kind of events less than every month. About one third are engaged in weekly sport activities, 9 percent exercise sports at least on a monthly basis. Around half of the respondents are less frequently (24 percent) or never (31 percent) involved in sports activities. Only 15 percent of the respondents engage in musical or artistic activities once per week (8 percent) or once per month (7 percent) while the rest does not regularly participate in such activities. The vast majority of respondents meet their friends regularly, 38 percent every week, 42 percent every month. Virtually no individual never meets friends. Individuals are less frequently helping than just meeting friends or acquaintances. About 10 percent help others every week, 35 percent every month. Hence, more than half of the sample helps other people less than once per month. 20 percent engage in voluntary work, 10 percent each weekly or monthly. Two out of three do not perform any voluntary work. Involvement in citizens' groups is not common, since 90 percent of the individuals never engage in such activities. More than half of the respondents do not attend religious events at all, whereas, one third participates in such events less frequently than once per month. About 14 percent attend church or other religious feasts at least once per month or once per week.

Demographic variables reveal details on sample composition. The sample contains 31 percent females¹¹² and the average age of respondents is 44 years with 12.8 years of education. 73

¹¹² This share is considerably smaller compared to previous regressions. Since the analyses concentrate on full-time employees who are living in non-single households, this results is not surprising. Evidence for Germany shows that female labour market participation is lower than male participation and that females are more likely to work in part-time jobs (Bundesagentur für Arbeit, 2015).

percent are married and 54 percent live with at least one child in the household. Average household income accounts for 3,300 euros and the average household consists of 3 members. Non-German natives make up 9 percent of the sample and respondents were 0.4 years of their lives unemployed. Most individuals report that their health is in a good (49 percent) or satisfactory (33 percent) condition. 42 percent of the individuals are not concerned about losing their job; whereas, 44 percent are somewhat and 15 percent are very concerned.

Job-related variables show that about one third of the individuals each work in the industry or service sector. Regarding firm size, individuals are rather equally distributed across the four categories. Respondents are working in all nine job categories, with professionals (level 2), technicians (3) and craft and related trade-workers (6) being the most important. 8 percent of the individuals are working in the highest job positions, elementary occupations account for 5 percent of the observations. One quarter works in the public sector. The average weekly working time is 44 hours (including overtime). Only 4.5 percent of the individuals dispose of a limited contract, which is considerably less than in chapter 3 (18 percent) in which it has been focussed on job changers. The unweighted average regional unemployment rate is 10.13 percent. 28 percent of the individuals in the dataset live in East Germany.

In addition to the estimates for the whole sample, chapter 7.4.2 provides information on the outcomes of leisure time activities of job changers which reduces the sample size to 1,444 observations. Since job changers account for a specific part of the employee population, they differ regarding several characteristics compared the whole sample (Table 50). The differences described here do not incorporate statistical tests between the samples and are entirely descriptive. Slight differences between the two samples are prevalent in terms of wages and job satisfaction. Job changers' average income is more than 600 euros lower than income of respondents in the whole sample, yet, they report a higher level of job satisfaction. Regarding leisure time activities, job changers do not differ substantially from individuals in the whole sample. Solely meeting friends appears to be more frequent among job changers.

Considerable differences, though, can be observed concerning demographic characteristics. Job changers are about 8 years younger and the share of females is higher among them. In line with this, job changers are less likely to be married and report shorter overall unemployment spells. Additionally, job changers are more likely to be of very good and good health compared all employees. With respect to job characteristics, differences between the two samples are rather small. Only the probability of having a fixed-term contract is considerably higher in case of job changers in comparison to the whole sample.

Table 49: Variable overview full sample

Variable	Obs.	Mean	Std. Dev.	Variable	Obs.	Mean	Std. Dev.
Gross Income	23,524	3,303.46	1,884.08	Demographic variables			
Job Satisfaction	23,524	6.960	1.885	Gender (1=female)	23,524	0.310	0.463
Leisure Time Activities				Age	23,524	43.759	9.975
<u>Attending cultural events</u>				Years of education	23,524	12.761	2.703
Every week (1=yes)	23,524	0.009	0.096	Married (1=yes)	23,524	0.730	0.444
Every month (1=yes)	23,524	0.127	0.333	Children in household (1=yes)	23,524	0.535	0.499
Less frequently (1=yes)	23,524	0.622	0.485	Household income	23,524	3,327.23	1,633.95
Never (1=yes)	23,524	0.241	0.428	Household size	23,524	3.047	1.051
<u>Attending popular entertainment events</u>				Immigrant (1=yes)	23,524	0.088	0.283
Every week (1=yes)	23,524	0.050	0.217	Total years of unemployment	23,524	0.387	1.030
Every month (1=yes)	23,524	0.197	0.398	<u>Subjective Health</u>			
Less frequently (1=yes)	23,524	0.594	0.491	Very good (1=yes)	23,524	0.084	0.277
Never (1=yes)	23,524	0.160	0.366	Good (1=yes)	23,524	0.485	0.500
<u>Active sporting activities</u>				Satisfactory (1=yes)	23,524	0.326	0.469
Every week (1=yes)	23,524	0.364	0.481	Poor (1=yes)	23,524	0.095	0.293
Every month (1=yes)	23,524	0.093	0.290	Bad (1=yes)	23,524	0.010	0.100
Less frequently (1=yes)	23,524	0.235	0.424	<u>Perceived job security</u>			
Never (1=yes)	23,524	0.308	0.462	Very concerned (1=yes)	23,524	0.148	0.356
<u>Artistic or musical activities</u>				Somewhat concerned (1=yes)	23,524	0.436	0.496
Every week (1=yes)	23,524	0.081	0.273	Not concerned at all (1=yes)	23,524	0.415	0.493
Every month (1=yes)	23,524	0.072	0.259	Job-related variables			
Less frequently (1=yes)	23,524	0.313	0.464	<u>Branch</u>			
Never (1=yes)	23,524	0.534	0.499	Industry (1=yes)	23,524	0.329	0.470
<u>Meeting friends, relatives, neighbours</u>				Manufacturing (1=yes)	23,524	0.070	0.255
Every week (1=yes)	23,524	0.379	0.485	Trade (1=yes)	23,524	0.177	0.382
Every month (1=yes)	23,524	0.419	0.493	Finance (1=yes)	23,524	0.127	0.333
Less frequently (1=yes)	23,524	0.191	0.393	Services (1=yes)	23,524	0.296	0.457
Never (1=yes)	23,524	0.010	0.100	<u>Firm size</u>			
<u>Helping friends, relatives, neighbours</u>				less than 20 (1=yes)	23,524	0.221	0.415
Every week (1=yes)	23,524	0.098	0.297	20 to 199 (1=yes)	23,524	0.291	0.454
Every month (1=yes)	23,524	0.352	0.478	200 to 1999 (1=yes)	23,524	0.242	0.429
Less frequently (1=yes)	23,524	0.503	0.500	more than 2000 (1=yes)	23,524	0.246	0.431
Never (1=yes)	23,524	0.047	0.212	<u>ISCO job classification</u>			
<u>Volunteer work (clubs/social services)</u>				Legisl., sen. officials, managers (1=yes)	23,524	0.077	0.267
Every week (1=yes)	23,524	0.107	0.309	Professionals (1=yes)	23,524	0.200	0.400
Every month (1=yes)	23,524	0.101	0.301	Technicians & associate prof. (1=yes)	23,524	0.236	0.425
Less frequently (1=yes)	23,524	0.138	0.345	Clerks (1=yes)	23,524	0.101	0.302
Never (1=yes)	23,524	0.654	0.476	Service workers (1=yes)	23,524	0.067	0.251
<u>Involvement citizens/political group</u>				Craft and related trade workers (1=yes)	23,524	0.181	0.385
Every week (1=yes)	23,524	0.013	0.113	Plant and machine operators (1=yes)	23,524	0.091	0.287
Every month (1=yes)	23,524	0.020	0.141	Elementary occupations (1=yes)	23,524	0.046	0.210
Less frequently (1=yes)	23,524	0.066	0.248	Public sector (1=yes)	23,524	0.260	0.439
Never (1=yes)	23,524	0.901	0.299	Working hours per week	23,524	44.114	7.574
<u>Attending church, religious events</u>				Limited contract (1=yes)	23,524	0.045	0.207
Every week (1=yes)	23,524	0.058	0.234	Regional variables			
Every month (1=yes)	23,524	0.077	0.267	Regional unemployment rate (in %)	23,524	10.13	4.22
Less frequently (1=yes)	23,524	0.313	0.464	East Germany (1=yes)	23,524	0.277	0.447
Never (1=yes)	23,524	0.552	0.497				

Table 50: Variable overview job changers

Variable	Obs.	Mean	Std. Dev.	Variable	Obs.	Mean	Std. Dev.
Gross Income	1,444	2,666.73	1,596.89	Demographic variables			
Job Satisfaction	1,444	7.226	1.977	Gender (1=female)	1,444	0.368	0.483
Leisure Time Activities				Age	1,444	35.668	9.883
<u>Attending cultural events</u>				Years of education	1,444	13.258	2.823
Every week (1=yes)	1,444	0.011	0.105	Married (1=yes)	1,444	0.518	0.500
Every month (1=yes)	1,444	0.109	0.312	Children in household (1=yes)	1,444	0.502	0.500
Less frequently (1=yes)	1,444	0.632	0.483	Household income	1,444	3,101.40	1,557.79
Never (1=yes)	1,444	0.248	0.432	Household size	1,444	2.999	1.057
<u>Attending popular entertainment events</u>				Immigrant (1=yes)	1,444	0.085	0.279
Every week (1=yes)	1,444	0.073	0.261	Total years of unemployment	1,444	0.544	1.160
Every month (1=yes)	1,444	0.286	0.452	<u>Subjective Health</u>			
Less frequently (1=yes)	1,444	0.525	0.500	Very good (1=yes)	1,444	0.130	0.336
Never (1=yes)	1,444	0.116	0.320	Good (1=yes)	1,444	0.535	0.499
<u>Active sporting activities</u>				Satisfactory (1=yes)	1,444	0.260	0.439
Every week (1=yes)	1,444	0.371	0.483	Poor (1=yes)	1,444	0.070	0.255
Every month (1=yes)	1,444	0.105	0.306	Bad (1=yes)	1,444	0.006	0.074
Less frequently (1=yes)	1,444	0.244	0.430	<u>Perceived job security</u>			
Never (1=yes)	1,444	0.280	0.449	Very concerned (1=yes)	1,444	0.170	0.376
<u>Artistic or musical activities</u>				Somewhat concerned (1=yes)	1,444	0.443	0.497
Every week (1=yes)	1,444	0.091	0.288	Not concerned at all (1=yes)	1,444	0.386	0.487
Every month (1=yes)	1,444	0.086	0.280	Job-related variables			
Less frequently (1=yes)	1,444	0.310	0.463	<u>Branch</u>			
Never (1=yes)	1,444	0.512	0.500	Industry (1=yes)	1,444	0.277	0.448
<u>Meeting friends, relatives, neighbours</u>				Manufacturing (1=yes)	1,444	0.077	0.266
Every week (1=yes)	1,444	0.506	0.500	Trade (1=yes)	1,444	0.198	0.399
Every month (1=yes)	1,444	0.342	0.475	Finance (1=yes)	1,444	0.157	0.363
Less frequently (1=yes)	1,444	0.142	0.349	Services (1=yes)	1,444	0.292	0.455
Never (1=yes)	1,444	0.010	0.101	<u>Firm size</u>			
<u>Helping friends, relatives, neighbours</u>				less than 20 (1=yes)	1,444	0.276	0.447
Every week (1=yes)	1,444	0.110	0.313	20 to 199 (1=yes)	1,444	0.323	0.468
Every month (1=yes)	1,444	0.375	0.484	200 to 1999 (1=yes)	1,444	0.219	0.414
Less frequently (1=yes)	1,444	0.461	0.499	more than 2000 (1=yes)	1,444	0.183	0.387
Never (1=yes)	1,444	0.055	0.227	<u>ISCO job classification</u>			
<u>Volunteer work (clubs/social services)</u>				Legisl., sen. officials, managers (1=yes)	1,444	0.059	0.235
Every week (1=yes)	1,444	0.088	0.283	Professionals (1=yes)	1,444	0.240	0.427
Every month (1=yes)	1,444	0.078	0.268	Technicians & associate prof. (1=yes)	1,444	0.247	0.431
Less frequently (1=yes)	1,444	0.136	0.343	Clerks (1=yes)	1,444	0.087	0.282
Never (1=yes)	1,444	0.698	0.459	Service workers (1=yes)	1,444	0.083	0.276
<u>Involvement citizens/political group</u>				Craft and related trade workers (1=yes)	1,444	0.158	0.365
Every week (1=yes)	1,444	0.007	0.083	Plant and machine operators (1=yes)	1,444	0.071	0.257
Every month (1=yes)	1,444	0.008	0.087	Elementary occupations (1=yes)	1,444	0.055	0.229
Less frequently (1=yes)	1,444	0.045	0.207	Public sector (1=yes)	1,444	0.183	0.387
Never (1=yes)	1,444	0.940	0.237	Working hours per week	1,444	44.307	7.976
<u>Attending church, religious events</u>				Limited contract (1=yes)	1,444	0.305	0.460
Every week (1=yes)	1,444	0.046	0.210	Regional variables			
Every month (1=yes)	1,444	0.048	0.215	Regional unemployment rate (in %)	1,444	9.802	4.157
Less frequently (1=yes)	1,444	0.274	0.446	East Germany (1=yes)	1,444	0.27	0.44
Never (1=yes)	1,444	0.631	0.483				

7.4 Empirical Evidence

In this chapter, the empirical results will be presented, first for the whole pooled sample, second for job changers only.

7.4.1 Leisure Time Activities and Career Success

Table 51 displays four regression models in which the logarithmised monthly wage income serves as the dependent variable. The first model contains solely leisure time activities and the two household variables (household size and household income). The results show that a higher frequency of attending cultural events is associated to higher wages. On the contrary, popular entertainment is negatively correlated with wage income. Individuals who are actively engaged in sports earn higher wages; whereas, helping friends is negatively related to earnings. Individuals who are volunteering or engaging in citizens' groups also earn higher wages. Finally, attending religious events seems to be positively correlated with wages as well. Since individual labour income is part of the total household income, a high correlation between these two measures is detected.

In Model (2), individual demographic characteristics and a measure for subjective health are added. As a consequence, the cultural events and volunteering coefficients become insignificant. Popular entertainment events are still negatively related to wages, though the coefficient becomes smaller and is only significant for individuals who attend such events every week. Similarly, the coefficients of active sports become smaller but are still positive and statistically significant. Individuals who help friends regularly earn substantially lower wages. Frequent visits to religious events are positively related to wages. All demographic variables show the expected relationship frequently found in Mincerian wage regressions, i.e. an inversed u-shaped relation between wages and age, a positive relation between wages and education, and a considerable gender wage gap. Subjective health status is unrelated to wages.

In the third model, job-related variables are introduced. The results show that job characteristics, such as branch, firm size, and occupation are statistically significantly related to wages and, consequently, leisure time coefficients become smaller and most of them insignificant. Controlling for a large variety of socio-demographic and job-related characteristics, individuals who regularly attend cultural events earn higher wages. Furthermore, active sports minimum once per weeks are associated to higher earnings. Surprisingly, weekly engagement in volunteer groups is related to lower wages. Individuals who are less frequently active in citizens' groups also earn lower wages. Meeting and helping friends as well as attending religious events are not related to wages in this specification. All

socio-demographic coefficients are similar to the ones in Model (2). Job-related coefficients show the expected correlations, i.e. individuals in larger firms higher and in higher positions earn higher wages. Individuals with a limited contract also earn lower wages. Wages increase with working hours. Employees in East Germany earn lower wages and a higher regional unemployment is negatively correlated with wages as well.

The last model displays how the coefficients change if it is not controlled for household size and household income. As expected, the household income variable reduces endogeneity in the regression. This is particularly visible in case of cultural events since higher income households are more likely to attend such events. Therefore, coefficients are likely to be over-estimated if the household income variable is omitted. Similar results are found for the popular entertainment coefficients. Helping friends and volunteering is also negatively related to wages which indicates that households with lower incomes are more engaged in helping friends. The negative coefficient of weekly volunteer work becomes even larger and is highly significant. All other coefficients remain similar compared to Model (3).

In order to investigate whether the relationship between leisure time activities and wages differs for different points in the wage distribution, quantile regressions were run and results are displayed in Table 52. Regression results reveal that wage effects of leisure time activities differ between income groups. Attending cultural events, which has been identified as a strong predictor of wages is positively related to only for the upper quantiles (.75 and .9) of the wage distribution. The native wage effect of attending popular entertainment events once per week is statistically significant only for the .1-quantile of the wage distribution. Being actively engaged in sports, at least once per week, is positively related to wages for all but the .9-quantile group. The frequency of meeting friends or relatives is positively related to wages in all quantiles, however, statistically insignificant. Helping friends, as an indicator for strong ties, is negatively related to wages, statistically significant only for the .5 and .75-quantiles. Individuals who volunteer at least once per week earn lower wages, statistically significant for the .25, .5, and .75-quantiles. Individuals in the two highest wage quantiles benefit from being active in citizens' groups at least once per week.

Table 51: Wage regressions – Effectiveness of leisure time activities

DV: Log(Wage)	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS Base		OLS Demographics		OLS Full Model		OLS Without Household	
<u>Cultural events</u>								
Every week (1=yes)	0.169***	(0.040)	0.062	(0.037)	0.071*	(0.036)	0.131***	(0.040)
Every month (1=yes)	0.091***	(0.016)	0.022	(0.014)	0.021	(0.012)	0.075***	(0.013)
Less frequent (1=yes)	0.045***	(0.010)	0.011	(0.009)	0.015*	(0.007)	0.038***	(0.008)
<u>Popular entertainment</u>								
Every week (1=yes)	-0.151***	(0.024)	-0.047*	(0.019)	-0.027	(0.018)	0.001	(0.019)
Every month (1=yes)	-0.072***	(0.015)	-0.004	(0.013)	0.004	(0.011)	0.026*	(0.013)
Less frequent (1=yes)	-0.013	(0.011)	-0.002	(0.010)	0.014	(0.009)	0.026*	(0.010)
<u>Active sports</u>								
Every week (1=yes)	0.074***	(0.011)	0.047***	(0.010)	0.018*	(0.008)	0.045***	(0.009)
Every month (1=yes)	0.056***	(0.014)	0.040**	(0.013)	0.010	(0.011)	0.025*	(0.012)
Less frequent (1=yes)	0.026*	(0.010)	0.021*	(0.009)	0.007	(0.008)	0.016	(0.009)
<u>Artistic/musical activities</u>								
Every week (1=yes)	-0.012	(0.016)	-0.012	(0.013)	-0.007	(0.012)	-0.022	(0.013)
Every month (1=yes)	-0.025	(0.016)	-0.002	(0.013)	-0.002	(0.012)	-0.001	(0.013)
Less frequent (1=yes)	-0.017	(0.009)	-0.012	(0.008)	-0.008	(0.007)	-0.015*	(0.007)
<u>Meeting friends, relatives, neighbours</u>								
Every week (1=yes)	-0.002	(0.042)	0.055	(0.038)	0.039	(0.032)	0.088*	(0.039)
Every month (1=yes)	0.010	(0.042)	0.025	(0.038)	0.032	(0.032)	0.075	(0.039)
Less frequent (1=yes)	0.011	(0.042)	0.009	(0.038)	0.019	(0.032)	0.051	(0.038)
<u>Helping friends, relatives, neighbours</u>								
Every week (1=yes)	-0.080***	(0.024)	-0.072***	(0.021)	-0.023	(0.018)	-0.059**	(0.020)
Every month (1=yes)	-0.050*	(0.021)	-0.058**	(0.019)	-0.026	(0.017)	-0.060***	(0.018)
Less frequent (1=yes)	-0.024	(0.020)	-0.033	(0.018)	-0.018	(0.016)	-0.040*	(0.017)
<u>Volunteer work</u>								
Every week (1=yes)	0.040**	(0.014)	-0.013	(0.013)	-0.030**	(0.011)	-0.040**	(0.012)
Every month (1=yes)	0.033*	(0.014)	-0.002	(0.013)	-0.003	(0.011)	-0.005	(0.012)
Less frequent (1=yes)	0.034**	(0.012)	0.014	(0.010)	0.012	(0.009)	0.010	(0.010)
<u>Citizens/political groups</u>								
Every week (1=yes)	0.143***	(0.033)	0.052	(0.035)	0.046	(0.031)	0.063	(0.036)
Every month (1=yes)	0.039	(0.030)	0.016	(0.025)	0.032	(0.022)	0.043	(0.024)
Less frequent (1=yes)	-0.016	(0.016)	-0.044**	(0.014)	-0.030*	(0.013)	-0.030	(0.014)
<u>Attending religious events</u>								
Every week (1=yes)	0.101***	(0.018)	0.069***	(0.016)	0.014	(0.014)	-0.018	(0.016)
Every month (1=yes)	0.035*	(0.017)	0.031*	(0.014)	-0.014	(0.012)	-0.021	(0.013)
Less frequent (1=yes)	0.040***	(0.009)	0.037***	(0.008)	-0.008	(0.007)	-0.011	(0.008)
Gender (1=female)			-0.259***	(0.009)	-0.194***	(0.009)	-0.191***	(0.010)
Age			0.057***	(0.003)	0.047***	(0.003)	0.050***	(0.003)
Age squared/100			-0.058***	(0.004)	-0.046***	(0.003)	-0.048***	(0.004)
Years of education			0.035***	(0.002)	0.024***	(0.002)	0.036***	(0.002)
Married (1=yes)			0.024*	(0.010)	0.022**	(0.008)	0.041***	(0.009)
Child in HH (1=yes)			0.100***	(0.010)	0.080***	(0.009)	0.035***	(0.008)
Log(Household income)	0.677***	(0.013)	0.563***	(0.013)	0.418***	(0.012)		
Household size	0.001	(0.004)	-0.057***	(0.005)	-0.038***	(0.005)		
Immigrant (1=yes)			0.046***	(0.014)	0.010	(0.013)	-0.010	(0.014)
Total years of unemployment			-0.050***	(0.005)	-0.037***	(0.004)	-0.048***	(0.004)

Table 51: Wage regressions – Effectiveness of leisure time activities (continued)

DV: Log(Wage)	Model (1) OLS Base		Model (2) OLS Demographics		Model (3) OLS Full Model		Model (4) OLS Without Household	
<u>Subjective health</u>								
Good (1=yes)			-0.013	(0.011)	-0.001	(0.009)	-(0.009)	(0.010)
Satisfactory (1=yes)			-0.010	(0.012)	-0.004	(0.010)	-0.021	(0.011)
Poor (1=yes)			-0.021	(0.014)	-0.023	(0.012)	-0.045***	(0.013)
Bad (1=yes)			0.011	(0.026)	-0.004	(0.024)	-0.061*	(0.028)
<u>Branch (reference: trade)</u>								
Industry (1=yes)					0.113***	(0.011)	0.135***	(0.012)
Manufacturing (1=yes)					0.101***	(0.015)	0.116***	(0.017)
Finance (1=yes)					0.126***	(0.014)	0.168***	(0.016)
Services (1=yes)					0.035**	(0.013)	0.060***	(0.014)
<u>Firm size (reference: less than 20)</u>								
20 to 199 (1=yes)					0.078***	(0.011)	0.090***	(0.012)
200 to 1999 (1=yes)					0.136***	(0.011)	0.160***	(0.013)
more than 2000 (1=yes)					0.177***	(0.011)	0.220***	(0.013)
Limited contract (1=yes)					-0.172***	(0.016)	-0.204***	(0.017)
Working hours per week					0.008***	(0.001)	0.010***	(0.001)
Public sector (1=yes)					0.002	(0.010)	0.000	(0.011)
<u>ISCO job class. (reference: legislators, senior officials, managers)</u>								
Professionals (1=yes)					-0.016	(0.016)	-0.037	(0.020)
Technicians & associate prof. (1=yes)					-0.085***	(0.016)	-0.130***	(0.019)
Clerks (1=yes)					-0.152***	(0.019)	-0.208***	(0.021)
Service workers (1=yes)					-0.252***	(0.021)	-0.331***	(0.024)
Craft & related trade workers (1=yes)					-0.202***	(0.017)	-0.285***	(0.020)
Plant & machine operators (1=yes)					-0.238***	(0.018)	-0.323***	(0.022)
Elementary occupations (1=yes)					-0.296***	(0.021)	-0.397***	(0.025)
East Germany (1=yes)					-0.178***	(0.016)	-0.247***	(0.018)
Regional unemployment rate (in %)					-0.004**	(0.002)	-0.004*	(0.002)
Year dummies		Yes		yes		yes		yes
Constant	2.469***	(0.116)	1.841***	(0.119)	2.993***	(0.115)	5.906***	(0.088)
(Adjusted) R ²	0.367		0.519		0.618		0.540	
Δ Adjusted R ²			0.153		0.098		-0.077	

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 23,524 observations.

Table 52: Median wage regressions – Effectiveness of leisure time activities

DV: Log(Wage)	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	0.1-Quantile		0.25-Quantile		0.5-Quantile		0.75-Quantile		0.9-Quantile	
<u>Cultural events</u>										
Every week (1=yes)	0.036	(0.040)	0.014	(0.025)	0.027	(0.023)	0.062*	(0.025)	0.105**	(0.035)
Every month (1=yes)	-0.002	(0.015)	0.015	(0.010)	0.019*	(0.009)	0.032***	(0.009)	0.040**	(0.013)
Less frequent (1=yes)	0.020	(0.010)	0.022***	(0.006)	0.010	(0.006)	0.014*	(0.006)	0.018	(0.009)
<u>Popular entertainment</u>										
Every week (1=yes)	-0.055**	(0.021)	-0.020	(0.013)	-0.010	(0.012)	-0.023	(0.013)	-0.001	(0.018)
Every month (1=yes)	-0.012	(0.015)	-0.001	(0.009)	0.008	(0.008)	-0.004	(0.009)	0.010	(0.013)
Less frequent (1=yes)	0.001	(0.012)	0.012	(0.007)	0.022***	(0.007)	0.012	(0.007)	0.008	(0.010)
<u>Active sports</u>										
Every week (1=yes)	0.033***	(0.010)	0.026***	(0.006)	0.011*	(0.006)	0.013*	(0.006)	0.003	(0.009)
Every month (1=yes)	0.005	(0.015)	0.015	(0.009)	0.007	(0.008)	0.002	(0.009)	0.012	(0.013)
Less frequent (1=yes)	0.020	(0.011)	0.018**	(0.007)	0.008	(0.006)	-0.004	(0.007)	-0.018	(0.009)
<u>Artistic/musical activities</u>										
Every week (1=yes)	-0.005	(0.015)	-0.009	(0.009)	-0.012	(0.008)	-0.018*	(0.009)	-0.002	(0.013)
Every month (1=yes)	0.009	(0.015)	-0.003	(0.010)	-0.015	(0.009)	-0.015	(0.009)	0.011	(0.013)
Less frequent (1=yes)	-0.003	(0.009)	-0.006	(0.006)	-0.011*	(0.005)	-0.014**	(0.005)	0.000	(0.008)
<u>Meeting friends, relatives, neighbours</u>										
Every week (1=yes)	0.057	(0.039)	-0.001	(0.024)	0.017	(0.022)	0.040	(0.024)	0.051	(0.034)
Every month (1=yes)	0.054	(0.039)	-0.001	(0.024)	0.009	(0.022)	0.027	(0.024)	0.043	(0.034)
Less frequent (1=yes)	0.045	(0.039)	-0.006	(0.024)	-0.001	(0.022)	0.018	(0.024)	0.042	(0.034)
<u>Helping friends, relatives, neighbours</u>										
Every week (1=yes)	-0.005	(0.022)	-0.003	(0.014)	-0.022	(0.012)	-0.017	(0.014)	-0.024	(0.020)
Every month (1=yes)	-0.023	(0.019)	-0.013	(0.012)	-0.029**	(0.011)	-0.027*	(0.012)	-0.028	(0.017)
Less frequent (1=yes)	-0.001	(0.019)	-0.005	(0.012)	-0.021	(0.010)	-0.022*	(0.011)	-0.025	(0.016)
<u>Volunteer work</u>										
Every week (1=yes)	-0.023	(0.014)	-0.021*	(0.009)	-0.025***	(0.008)	-0.021**	(0.008)	-0.012	(0.012)
Every month (1=yes)	-0.011	(0.013)	-0.009	(0.008)	-0.004	(0.008)	0.005	(0.008)	-0.002	(0.012)
Less frequent (1=yes)	0.018	(0.012)	0.013	(0.007)	0.006	(0.007)	0.014	(0.007)	0.004	(0.010)
<u>Citizens/political groups</u>										
Every week (1=yes)	0.001	(0.034)	0.013	(0.021)	0.023	(0.019)	0.044*	(0.021)	0.062*	(0.030)
Every month (1=yes)	0.046	(0.027)	0.041*	(0.017)	0.028	(0.015)	0.021	(0.017)	0.004	(0.024)
Less frequent (1=yes)	-0.046**	(0.016)	-0.016	(0.010)	-0.019*	(0.009)	-0.017	(0.010)	-0.003	(0.014)
<u>Attending religious events</u>										
Every week (1=yes)	0.017	(0.017)	0.000	(0.011)	0.002	(0.010)	-0.010	(0.010)	0.008	(0.015)
Every month (1=yes)	-0.017	(0.015)	-0.020*	(0.009)	-0.011	(0.008)	-0.016	(0.009)	-0.003	(0.013)
Less frequent (1=yes)	-0.005	(0.009)	-0.006	(0.006)	-0.004	(0.005)	-0.008	(0.005)	0.011	(0.008)
Log(Household income)	0.355***	(0.011)	0.354***	(0.007)	0.392***	(0.006)	0.423***	(0.007)	0.455***	(0.010)
Household size	-0.047***	(0.005)	-0.039***	(0.003)	-0.033***	(0.003)	-0.027***	(0.003)	-0.022***	(0.004)
(Adjusted) R-squared / overall	0.3791		0.401		0.418		0.434		0.436	

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 23,524 observations. Also controlled for all other variables given in Table 51.

In analogy to the regression above, Table 53 depicts four regression models. In Model (1) to (3) variables are introduced stepwise, the fourth model contains a control regression without household variables. In Model (1), individuals who attend cultural events, exercise sports, and participate in religious events reveal higher job satisfaction. Additionally, the second model contains individual socio-demographic variables and, as a result, all activity coefficients become statistically insignificant. Apart from household income, subjective health and perceived job security are two major determinants of job satisfaction. Other demographic characteristics are insignificant, solely individuals with longer unemployment experience report lower job satisfaction. Model (3) then introduces further job-related variables but the results remain stable – only religious events seem to be related to job satisfaction. Socio-demographic characteristics do not have a large influence on job satisfaction. As in the previous regression, health and job security are main determinants of job satisfaction. Furthermore, individuals in higher positions are more satisfied. Surprisingly, individuals with limited contracts are also more satisfied with their jobs but the negative effect of fixed-term contracts might be also covered by the job security variable. Employees in East Germany are less satisfied with their jobs. In regions with higher unemployment rate, employees report higher job satisfaction. The control Model (4), in which household variables are excluded, does not reveal meaningful differences between the two last regressions.

Table 53: Job satisfaction regressions - Effectiveness of leisure time activities

DV: Job Satisfaction	Model (1)		Model (2)		Model (3)		Model (4)	
	OLS Base		OLS Demographics		OLS Full Model		OLS Without Household	
<u>Cultural events</u>								
Every week (1=yes)	0.373*	(0.173)	0.144	(0.155)	0.136	(0.158)	0.157	(0.158)
Every month (1=yes)	0.221***	(0.064)	0.094	(0.059)	0.089	(0.059)	0.107	(0.059)
Less frequent (1=yes)	0.090*	(0.046)	0.023	(0.041)	0.021	(0.041)	0.028	(0.041)
<u>Popular entertainment</u>								
Every week (1=yes)	0.133	(0.088)	-0.008	(0.081)	-0.008	(0.080)	0.006	(0.080)
Every month (1=yes)	0.104	(0.066)	-0.051	(0.059)	-0.053	(0.059)	-0.047	(0.059)
Less frequent (1=yes)	0.019	(0.054)	-0.060	(0.048)	-0.062	(0.047)	-0.059	(0.047)
<u>Active sports</u>								
Every week (1=yes)	0.154**	(0.049)	-0.047	(0.043)	-0.046	(0.043)	-0.037	(0.043)
Every month (1=yes)	0.120*	(0.061)	-0.026	(0.055)	-0.023	(0.055)	-0.018	(0.055)
Less frequent (1=yes)	-0.020	(0.048)	-0.057	(0.043)	-0.055	(0.043)	-0.052	(0.043)
<u>Artistic/musical activities</u>								
Every week (1=yes)	-0.058	(0.066)	-0.096	(0.059)	-0.097	(0.059)	-0.104	(0.059)
Every month (1=yes)	-0.073	(0.061)	-0.061	(0.055)	-0.056	(0.055)	-0.054	(0.055)
Less frequent (1=yes)	-0.066	(0.039)	-0.049	(0.035)	-0.045	(0.035)	-0.0475	(0.035)
<u>Meeting friends, relatives, neighbours</u>								
Every week (1=yes)	0.127	(0.200)	-0.044	(0.176)	-0.043	(0.175)	-0.028	(0.176)
Every month (1=yes)	-0.032	(0.199)	-0.081	(0.174)	-0.087	(0.174)	-0.072	(0.175)
Less frequent (1=yes)	-0.246	(0.199)	-0.204	(0.174)	-0.206	(0.174)	-0.195	(0.175)
<u>Helping friends, relatives, neighbours</u>								
Every week (1=yes)	-0.021	(0.103)	0.102	(0.093)	0.102	(0.093)	0.091	(0.093)
Every month (1=yes)	0.047	(0.090)	0.105	(0.081)	0.109	(0.080)	0.097	(0.080)
Less frequent (1=yes)	-0.026	(0.087)	0.025	(0.077)	0.031	(0.077)	0.023	(0.077)
<u>Volunteer work</u>								
Every week (1=yes)	0.004	(0.066)	0.029	(0.059)	0.031	(0.059)	0.027	(0.059)
Every month (1=yes)	-0.025	(0.062)	0.022	(0.055)	0.024	(0.055)	0.025	(0.055)
Less frequent (1=yes)	-0.052	(0.051)	-0.021	(0.045)	-0.019	(0.045)	-0.019	(0.045)
<u>Citizens/political groups</u>								
Every week (1=yes)	0.057	(0.151)	-0.043	(0.141)	-0.044	(0.141)	-0.042	(0.141)
Every month (1=yes)	0.050	(0.121)	-0.033	(0.109)	-0.035	(0.108)	-0.029	(0.109)
Less frequent (1=yes)	0.084	(0.067)	0.087	(0.060)	0.089	(0.060)	0.090	(0.060)
<u>Attending religious events</u>								
Every week (1=yes)	0.137	(0.089)	0.057	(0.080)	0.072	(0.080)	0.069	(0.080)
Every month (1=yes)	0.182**	(0.064)	0.109	(0.058)	0.121*	(0.059)	0.125*	(0.058)
Less frequent (1=yes)	0.037	(0.040)	0.028	(0.035)	0.033	(0.036)	0.036	(0.036)
Gender (1=female)			-0.002	(0.038)	-0.002	(0.043)	-0.006	(0.043)
Age			-0.011	(0.013)	-0.003	(0.014)	-0.001	(0.014)
Age squared/100			0.011	(0.015)	0.003	(0.016)	0.001	(0.016)
Years of education			-0.010	(0.007)	-0.013	(0.009)	-0.008	(0.008)
Married (1=yes)			-0.010	(0.042)	-0.015	(0.042)	-0.003	(0.042)
Child in HH (1=yes)			0.064	(0.042)	0.055	(0.043)	0.066	(0.035)
Log(Household income)	0.351***	(0.047)	0.152***	(0.047)	0.153***	(0.048)		
Household size	0.040*	(0.018)	0.007	(0.021)	0.009	(0.021)		
Immigrant (1=yes)			0.068	(0.062)	0.076	(0.063)	0.072	(0.063)
Total years of unemployment			-0.039**	(0.015)	-0.042**	(0.015)	-0.045**	(0.015)

Table 53: Job satisfaction regressions – Effectiveness of leisure time activities (continued)

DV: Job Satisfaction	Model (1) OLS Base	Model (2) OLS Demographics	Model (3) OLS Full Model	Model (4) OLS Without Household
<u>Subjective health (ref.: very good)</u>				
Good (1=yes)		-0.491*** (0.048)	-0.494*** (0.048)	-0.497*** (0.048)
Satisfactory (1=yes)		-1.190*** (0.054)	-1.199*** (0.054)	-1.205*** (0.054)
Poor (1=yes)		-1.891*** (0.071)	-1.893*** (0.071)	-1.901*** (0.071)
Bad (1=yes)		-2.311*** (0.184)	-2.293*** (0.182)	-2.315*** (0.183)
<u>Perceived job security (ref.: not concerned at all)</u>				
Very concerned (1=yes)		-1.337*** (0.052)	-1.353*** (0.054)	-1.364*** (0.053)
Somewhat concerned (1=yes)		-0.558*** (0.030)	-0.564*** (0.031)	-0.568*** (0.031)
<u>Branch (reference: trade)</u>				
Industry (1=yes)			0.019 (0.069)	0.017 (0.069)
Manufacturing (1=yes)			-0.192*** (0.052)	-0.201*** (0.053)
Finance (1=yes)			-0.075 (0.056)	-0.068 (0.056)
Services (1=yes)			-0.055 (0.060)	-0.055 (0.060)
<u>Firm size (reference: less than 20)</u>				
20 to 199 (1=yes)			-0.137** (0.047)	-0.133** (0.047)
200 to 1999 (1=yes)			-0.103* (0.050)	-0.095 (0.050)
more than 2000 (1=yes)			-0.107* (0.051)	-0.092 (0.051)
Limited contract (1=yes)			0.272*** (0.072)	0.262*** (0.072)
Working hours per week			-0.003 (0.002)	-0.002 (0.002)
Civil servant (1=yes)			0.010 (0.052)	0.008 (0.052)
<u>ISCO job class. (reference: legislators, senior officials, managers)</u>				
Professionals (1=yes)			-0.166* (0.068)	-0.173* (0.069)
Technicians & associate prof. (1=yes)			-0.150* (0.065)	-0.166* (0.066)
Clerks (1=yes)			-0.169* (0.075)	-0.189* (0.075)
Service workers (1=yes)			-0.101 (0.091)	-0.131 (0.092)
Craft & related trade workers (1=yes)			-0.180* (0.072)	-0.208** (0.072)
Plant & machine operators (1=yes)			-0.091 (0.083)	-0.119 (0.083)
Elementary occupations (1=yes)			-0.284** (0.095)	-0.319*** (0.095)
East Germany (1=yes)			-0.199* (0.080)	-0.220** (0.080)
Regional unemployment rate (in %)			0.028*** (0.009)	0.028** (0.009)
Year dummies	Yes	yes	Yes	yes
Constant	3.843*** (0.421)	7.498*** (0.455)	7.478*** (0.494)	8.614*** (0.368)
(Adjusted) R-squared / overall	0.026	0.172	0.176	0.175
Δ Adjusted R-squared		0.146	0.004	-0.001

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 23,524 observations.

As the last table of this section, Table 54 comprises results of the job security regressions. Since the data provides three ordinal categories of perceived job security, an ordered logistic regression approach is applied first. However, the estimation shows that the first cutting point is not statistically significant and, hence, the two first categories are pooled together. Therefore, a new dummy variable is created which takes the value “0” if an individual is “very concerned” and “somewhat” and “1” if the individual is “not concerned at all”. Hence, positive coefficients show that certain activities increase the probability to work in a job with high perceived job security. Since the newly generated variable is bivariate, a logistic regression approach is applied.

Model (2) shows the base model with solely leisure time coefficients and household variables. The third column contains the fully specified model of which the marginal effects are shown in the last column. In the base model, employees who regularly attend cultural events report a higher level of job security, whereas the opposite can be observed for popular events. Active sports on a weekly basis are positively related to job security. Individuals who help friends or neighbours frequently work in less secure jobs. Volunteering, working in citizens’ groups, and attending religious events show a positive correlation with job security. When further demographic and job-related control variables are introduced in Model (3), the cultural events and sports coefficients become insignificant. Employees who meet friends at least once per week report higher job security while helping others is negatively related to security. Those who actively work in citizens’ groups every week feel safer in their current jobs.

Demographic characteristics reveal that females and immigrants report lower levels of job security. Furthermore, the relationship between age and security is u-shaped. Health is negatively related to job security. Jobs in the finance and service industry are perceived as more secure. Medium sized companies seem to provide less safe jobs. Employees with a fixed-term contract feel less job security, whereas working hours and a job in the public sector increase job security. East German employees are generally less likely to perceive their jobs as secure.

Marginal effects show that engaging in citizens’ groups increases the probability to be employed in a secure job (compared to jobs in which individuals are somewhat concerned or concerned about their jobs) by .12. Meeting friends every week increases this probability by .09. Individuals who are regularly helping others are less likely to work in a secure job by .14 and .07 (every week respectively every month).

Table 54: Perceived job security regressions – Effectiveness of leisure time activities

DV: Perceived Job Security	Model (1) Ordered Logit		Model (2) Logit Base		Model (3) Logit Full		Model (3) Logit Full – ME	
<u>Cultural events</u>								
Every week (1=yes)	0.121	(0.172)	0.456*	(0.187)	-0.038	(0.186)	-0.009	(0.044)
Every month (1=yes)	0.123	(0.071)	0.306***	(0.076)	0.049	(0.078)	0.012	(0.019)
Less frequent (1=yes)	0.088	(0.048)	0.141**	(0.051)	0.025	(0.052)	0.006	(0.013)
<u>Popular entertainment</u>								
Every week (1=yes)	0.003	(0.104)	-0.289**	(0.105)	-0.130	(0.111)	-0.032	(0.027)
Every month (1=yes)	0.085	(0.072)	-0.230**	(0.073)	-0.075	(0.078)	-0.018	(0.019)
Less frequent (1=yes)	0.029	(0.059)	-0.228***	(0.058)	-0.126*	(0.062)	-0.030*	(0.015)
<u>Active sports</u>								
Every week (1=yes)	0.069	(0.051)	0.219***	(0.054)	0.056	(0.056)	0.013	(0.014)
Every month (1=yes)	0.073	(0.066)	0.107	(0.072)	0.043	(0.075)	0.010	(0.018)
Less frequent (1=yes)	-0.048	(0.049)	-0.050	(0.053)	-0.077	(0.055)	-0.018	(0.013)
<u>Artistic/musical activities</u>								
Every week (1=yes)	-0.047	(0.073)	0.056	(0.080)	-0.075	(0.081)	-0.018	(0.019)
Every month (1=yes)	-0.106	(0.069)	-0.084	(0.077)	-0.119	(0.079)	-0.029	(0.019)
Less frequent (1=yes)	-0.030	(0.041)	0.003	(0.044)	-0.032	(0.046)	-0.008	(0.011)
<u>Meeting friends, relatives, neighbours</u>								
Every week (1=yes)	0.353	(0.188)	0.274	(0.181)	0.381*	(0.188)	0.092*	(0.044)
Every month (1=yes)	0.112	(0.186)	-0.003	(0.179)	0.095	(0.186)	0.022	(0.043)
Less frequent (1=yes)	-0.071	(0.185)	-0.132	(0.179)	-0.081	(0.185)	-0.019	(0.043)
<u>Helping friends, relatives, neighbours</u>								
Every week (1=yes)	-0.580***	(0.104)	-0.695***	(0.108)	-0.605***	(0.112)	-0.143***	(0.027)
Every month (1=yes)	-0.297***	(0.092)	-0.418***	(0.092)	-0.302**	(0.096)	-0.074**	(0.024)
Less frequent (1=yes)	-0.154	(0.087)	-0.221*	(0.087)	-0.148	(0.091)	-0.036	(0.023)
<u>Volunteer work</u>								
Every week (1=yes)	0.061	(0.073)	0.223**	(0.074)	0.129	(0.076)	0.031	(0.019)
Every month (1=yes)	-0.071	(0.064)	-0.032	(0.070)	-0.118	(0.072)	-0.028	(0.017)
Less frequent (1=yes)	-0.010	(0.053)	0.028	(0.059)	-0.047	(0.061)	-0.011	(0.015)
<u>Citizens/political groups</u>								
Every week (1=yes)	0.479*	(0.188)	0.756***	(0.178)	0.474*	(0.191)	0.117*	(0.048)
Every month (1=yes)	0.231	(0.147)	0.364**	(0.141)	0.228	(0.160)	0.056	(0.040)
Less frequent (1=yes)	0.054	(0.073)	0.161*	(0.078)	0.077	(0.079)	0.019	(0.019)
<u>Attending religious events</u>								
Every week (1=yes)	0.082	(0.096)	0.343***	(0.097)	0.090	(0.103)	0.022	(0.025)
Every month (1=yes)	-0.040	(0.072)	0.052	(0.080)	-0.109	(0.083)	-0.026	(0.020)
Less frequent (1=yes)	-0.046	(0.044)	0.052	(0.046)	-0.067	(0.049)	-0.016	(0.012)
Gender (1=female)	-0.200***	(0.051)			-0.184***	(0.057)	-0.044***	(0.014)
Age	-0.131***	(0.016)			-0.152***	(0.017)	-0.037***	(0.004)
Age squared/100	0.170***	(0.018)			0.197***	(0.020)	0.047***	(0.005)
Years of education	0.026*	(0.011)			0.022	(0.012)	0.005	(0.003)
Married (1=yes)	-0.008	(0.050)			-0.005	(0.056)	-0.001	(0.014)
Child in HH (1=yes)	0.124*	(0.049)			0.168**	(0.056)	0.040**	(0.013)
Log(Household income)	0.406***	(0.055)	0.856***	(0.056)	0.387***	(0.061)	0.093***	(0.015)
Household size	-0.061*	(0.025)	-0.128***	(0.021)	-0.074**	(0.028)	-0.018**	(0.007)
Immigrant (1=yes)	-0.429***	(0.077)			-0.369***	(0.087)	-0.089***	(0.021)
Total years of unemployment	-0.040	(0.021)			-0.049	(0.026)	-0.012	(0.006)

Table 54: Perceived job security regressions – Effectiveness of leisure time activities (continued)

DV: Perceived Job Security	Model (1) Ordered Logit		Model (2) Logit Base		Model (3) Logit Full		Model (3) Logit Full – ME	
<u>Subjective health</u>								
Good (1=yes)	-0.415***	(0.061)			-0.462***	(0.065)	-0.115***	(0.016)
Satisfactory (1=yes)	-0.795***	(0.067)			-0.818***	(0.072)	-0.199***	(0.017)
Poor (1=yes)	-1.038***	(0.084)			-0.896***	(0.087)	-0.217***	(0.021)
Bad (1=yes)	-1.334***	(0.187)			-1.040***	(0.179)	-0.248***	(0.039)
<u>Branch (reference: trade)</u>								
Industry (1=yes)	0.041	(0.080)			0.007	(0.095)	0.002	(0.022)
Manufacturing (1=yes)	0.139*	(0.062)			0.128	(0.071)	0.029	(0.016)
Finance (1=yes)	0.236***	(0.068)			0.223**	(0.077)	0.052**	(0.018)
Services (1=yes)	0.667***	(0.073)			0.684***	(0.080)	0.166***	(0.019)
<u>Firm size (reference: less than 20)</u>								
20 to 199 (1=yes)	-0.194***	(0.056)			-0.150*	(0.062)	-0.036*	(0.015)
200 to 1999 (1=yes)	-0.201***	(0.060)			-0.216***	(0.068)	-0.052***	(0.016)
more than 2000 (1=yes)	-0.031	(0.063)			0.024	(0.069)	0.006	(0.017)
Limited contract (1=yes)	-1.021***	(0.083)			-0.933***	(0.096)	-0.224***	(0.023)
Working hours per week	0.010***	(0.003)			0.013***	(0.003)	0.003***	(0.001)
Civil servant (1=yes)	0.655***	(0.064)			0.677***	(0.069)	0.163***	(0.017)
<u>ISCO job class. (reference: legislators, senior officials, managers)</u>								
Professionals (1=yes)	-0.006	(0.086)			0.011	(0.094)	0.003	(0.023)
Technicians & associate prof. (1=yes)	-0.158	(0.083)			-0.147	(0.091)	-0.036	(0.022)
Clerks (1=yes)	-0.299**	(0.095)			-0.283**	(0.105)	-0.068**	(0.025)
Service workers (1=yes)	-0.005	(0.105)			-0.002	(0.114)	0.000	(0.028)
Craft & related trade workers (1=yes)	-0.262**	(0.091)			-0.277**	(0.101)	-0.067**	(0.024)
Plant & machine operators (1=yes)	-0.343***	(0.103)			-0.342**	(0.113)	-0.082**	(0.027)
Elementary occupations (1=yes)	-0.138	(0.114)			-0.128	(0.127)	-0.031	(0.031)
East Germany (1=yes)	-0.651***	(0.098)			-0.812***	(0.109)	-0.195***	(0.026)
Regional unemployment rate (in %)	0.008	(0.011)			0.019	(0.012)	0.005	(0.003)
Year dummies	yes		yes		yes		yes	
Constant			-6.987***	(0.473)	-1.050	(0.633)		
McFadden Pseudo-R ²	0.097		0.047		0.126			
Cut 1	-0.780	(0.576)						
Cut 2	1.625**	(0.576)						

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 23,524 observations.

In addition to these analyses, separate regressions – displayed in Table 55 – were run in order to investigate gender differences in the effectiveness of leisure time activities. Wage regressions reveal that especially men benefit from attending cultural events while no significant correlation has been detected for females. Helping friends is negatively related to wages, yet, coefficients are larger and at least partially significant for men in comparison to women. Negative wage effects of volunteering are only significant for males. Interestingly, females benefit from volunteering in terms of job satisfaction while this correlation is negative but insignificant for men. Females are less satisfied with their job when they engage in citizens' groups at least once per month. All other coefficients in the job satisfaction regressions are insignificant. The last two columns contain regression results with perceived

job security as the dependent variable. Females who attend popular events weekly report significantly lower job security. A negative correlation for both genders is found for individuals helping others at least once per week. Women who participate in citizens' groups on a weekly basis report higher job security.

Table 55: Effectiveness of leisure time activities, separated by gender

DV:	Log(Wage)		Job Satisfaction		Perceived job security		
	Gender	Males	Females	Males	Females	Males	Females
<u>Cultural events</u>							
Every week (1=yes)		0.092*	0.024	0.309	-0.180	-0.147	0.255
Every month (1=yes)		0.027	0.000	0.084	0.132	-0.025	0.196
Less frequent (1=yes)		0.022**	0.000	0.018	0.035	0.002	0.080
<u>Popular entertainment</u>							
Every week (1=yes)		-0.034	0.008	0.045	-0.149	-0.022	-0.512*
Every month (1=yes)		-0.001	0.014	-0.029	-0.104	-0.008	-0.246
Less frequent (1=yes)		0.012	0.016	-0.080	-0.022	-0.124	-0.136
<u>Active sports</u>							
Every week (1=yes)		0.018	0.008	-0.066	0.003	0.064	0.031
Every month (1=yes)		0.001	0.028	0.002	-0.078	-0.012	0.142
Less frequent (1=yes)		0.014	-0.012	-0.040	-0.079	-0.071	-0.091
<u>Artistic/musical activities</u>							
Every week (1=yes)		-0.005	-0.006	-0.133	-0.039	-0.080	0.006
Every month (1=yes)		0.001	-0.006	-0.056	-0.063	-0.153	-0.016
Less frequent (1=yes)		-0.004	-0.015	-0.066	-0.008	0.007	-0.070
<u>Meeting friends, relatives, neighbours</u>							
Every week (1=yes)		0.053	0.014	-0.017	-0.171	0.306	0.672
Every month (1=yes)		0.041	0.019	-0.060	-0.213	0.036	0.339
Less frequent (1=yes)		0.034	-0.009	-0.166	-0.355	-0.113	0.071
<u>Helping friends, relatives, neighbours</u>							
Every week (1=yes)		-0.036	-0.022	0.139	0.056	-0.642***	-0.523**
Every month (1=yes)		-0.042*	-0.010	0.175	-0.023	-0.308*	-0.289
Less frequent (1=yes)		-0.030	-0.010	0.113	-0.129	-0.194	-0.047
<u>Volunteer work</u>							
Every week (1=yes)		-0.029*	-0.034	-0.043	0.314**	0.110	0.177
Every month (1=yes)		-0.008	0.007	-0.003	0.108	-0.177*	0.000
Less frequent (1=yes)		0.020*	-0.002	-0.030	-0.009	-0.044	-0.092
<u>Citizens'/political groups</u>							
Every week (1=yes)		0.065	0.038	-0.010	-0.116	0.290	1.671***
Every month (1=yes)		0.042	0.010	0.136	-0.588**	0.273	0.043
Less frequent (1=yes)		-0.028*	-0.007	0.080	0.162	0.025	0.145
<u>Attending religious events</u>							
Every week (1=yes)		0.003	0.045	0.075	0.057	0.092	0.168
Every month (1=yes)		-0.015	-0.021	0.100	0.129	-0.084	-0.187
Less frequent (1=yes)		-0.017*	0.006	0.021	0.071	-0.096	-0.011
Log(Household income)		0.486***	0.331***	0.189**	0.103	0.349***	0.447***
Household size		-0.031***	-0.068***	0.005	0.034	-0.084*	-0.022
Observations		16,228	7,296	16,228	7,296	16,228	7,296
(Pseudo-)R ²			0.548	0.184	0.171	0.136	0.126

Notes: Robust standard errors estimated but not displayed in the table. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 23,524 observations. Also controlled for all other variables given in Table 51.

7.4.2 Leisure Time Activities and Post-hire Outcomes of Job Changers

As argued in the previous chapters of this thesis, social capital – and therefore activities that generate social capital – should be particularly helpful for job seekers, which is investigated in this chapter. Table 56 displays evidence on the determinants of wages, job satisfaction, and perceived job security of job changers. In the first column, determinants of logarithmised monthly earnings are shown. Apart from weekly attending popular events, none of the leisure time activities is related to wages. Attending popular events at least once a week is negatively related to wages. All other control variables in this Mincerian wage regression are similar to previous findings (e.g. in chapter 7.4.1). In the job satisfaction regression only monthly sports activities are negatively related to satisfaction. The last regression does not yield any statistically significant leisure time coefficients. In consideration of the number of observations regarding job changers, no further quantile regressions or subgroup analyses are conducted.

When the regressions are rerun without household variables, the results remain very similar, indicating that endogeneity is a minor problem in case of individuals who just have found a new job.

Table 56: Post-hire outcomes of leisure time activities of job changers

DV:	Model (1) Log(Wage)		Model (2) Job Satisfaction		Model (3) Job Security	
<u>Cultural events</u>						
Every week (1=yes)	0.080	(0.093)	-0.052	(0.438)	0.092	(0.487)
Every month (1=yes)	0.041	(0.047)	0.085	(0.241)	-0.053	(0.261)
Less frequent (1=yes)	0.001	(0.029)	0.163	(0.149)	-0.032	(0.170)
<u>Popular entertainment</u>						
Every week (1=yes)	-0.136*	(0.063)	0.060	(0.288)	-0.517	(0.356)
Every month (1=yes)	-0.044	(0.043)	-0.047	(0.230)	0.159	(0.288)
Less frequent (1=yes)	-0.015	(0.037)	-0.192	(0.200)	0.012	(0.255)
<u>Active sports</u>						
Every week (1=yes)	-0.017	(0.030)	-0.143	(0.154)	0.190	(0.172)
Every month (1=yes)	0.010	(0.044)	-0.467*	(0.227)	0.094	(0.249)
Less frequent (1=yes)	0.038	(0.031)	-0.001	(0.156)	0.146	(0.188)
<u>Artistic/musical activities</u>						
Every week (1=yes)	0.029	(0.037)	0.110	(0.186)	0.001	(0.245)
Every month (1=yes)	-0.002	(0.046)	-0.206	(0.189)	-0.174	(0.243)
Less frequent (1=yes)	-0.008	(0.028)	-0.046	(0.132)	0.022	(0.153)
<u>Meeting friends, relatives, neighbours</u>						
Every week (1=yes)	0.228	(0.170)	0.051	(0.571)	0.901	(0.775)
Every month (1=yes)	0.203	(0.169)	0.170	(0.569)	0.533	(0.775)
Less frequent (1=yes)	0.202	(0.170)	0.037	(0.577)	0.511	(0.789)
<u>Helping friends, relatives, neighbours</u>						
Every week (1=yes)	-0.056	(0.058)	0.177	(0.265)	-0.570	(0.365)
Every month (1=yes)	-0.015	(0.050)	-0.012	(0.233)	-0.330	(0.327)
Less frequent (1=yes)	-0.012	(0.048)	-0.247	(0.221)	-0.126	(0.322)
<u>Volunteer work</u>						
Every week (1=yes)	-0.050	(0.041)	-0.0791	(0.174)	0.016	(0.253)
Every month (1=yes)	0.046	(0.045)	-0.018	(0.213)	0.010	(0.241)
Less frequent (1=yes)	-0.019	(0.036)	-0.153	(0.166)	-0.039	(0.201)
<u>Citizens/political groups</u>						
Every week (1=yes)	0.123	(0.111)	0.228	(0.619)	0.808	(0.668)
Every month (1=yes)	0.148	(0.156)	0.009	(0.268)	-0.041	(0.677)
Less frequent (1=yes)	-0.173	(0.071)	0.336	(0.227)	0.007	(0.318)
<u>Attending religious events</u>						
Every week (1=yes)	0.072	(0.050)	-0.133	(0.263)	0.158	(0.323)
Every month (1=yes)	-0.057	(0.063)	0.093	(0.258)	0.001	(0.287)
Less frequent (1=yes)	-0.012	(0.027)	0.052	(0.127)	-0.243	(0.156)
Gender (1=female)	-0.206***	(0.029)	-0.015	(0.137)	-0.549***	(0.159)
Age	0.075***	(0.010)	0.000	(0.043)	-0.003	(0.051)
Age squared/100	-0.081***	(0.012)	-0.022	(0.055)	-0.005	(0.064)
Years of education	0.028***	(0.006)	-0.031	(0.029)	0.054	(0.033)
Married (1=yes)	0.078**	(0.026)	0.049	(0.130)	0.119	(0.153)
Child in HH (1=yes)	0.01812	(0.033)	0.033	(0.149)	0.134	(0.178)
Log(Household income)	0.410***	(0.035)	-0.054	(0.162)	0.064	(0.180)
Household size	-0.058***	(0.016)	0.018	(0.075)	-0.039	(0.087)
Immigrant (1=yes)	-0.098*	(0.040)	0.135	(0.200)	-0.589*	(0.252)
Total years of unemployment	-0.031*	(0.010)	-0.012	(0.044)	0.053	(0.074)

Table 56: Post-hire outcomes of leisure time activities of job changers (continued)

DV:	Model (1) Log(Wage)		Model (2) Job Satisfaction		Model (3) Job Security	
<u>Subjective health</u>						
Good (1=yes)	-0.051	(0.034)	-0.237	(0.159)	-0.590***	(0.179)
Satisfactory (1=yes)	-0.062	(0.039)	-0.805***	(0.184)	-0.876***	(0.203)
Poor (1=yes)	-0.161*	(0.055)	-1.52***	(0.280)	-0.735*	(0.289)
Bad (1=yes)	-0.066	(0.069)	-0.952	(0.766)	1.775	(1.168)
<u>Perceived job security (ref.: not concerned at all)</u>						
Very concerned (1=yes)			-1.316***	(0.176)		
Somewhat concerned (1=yes)			-0.530***	(0.108)		
<u>Branch (reference: trade)</u>						
Industry (1=yes)	0.100**	(0.035)	-0.113	(0.227)	-0.005	(0.277)
Manufacturing (1=yes)	0.077	(0.041)	-0.244	(0.171)	0.014	(0.206)
Finance (1=yes)	0.096*	(0.039)	0.112	(0.166)	-0.129	(0.212)
Services (1=yes)	0.030	(0.042)	0.010	(0.190)	0.438	(0.227)
<u>Firm size (reference: less than 20)</u>						
20 to 199 (1=yes)	0.092***	(0.028)	0.115	(0.140)	0.026	(0.165)
200 to 1999 (1=yes)	0.138***	(0.032)	0.114	(0.156)	0.018	(0.192)
more than 2000 (1=yes)	0.130***	(0.039)	0.104	(0.180)	0.370	(0.197)
Limited contract (1=yes)	-0.153***	(0.027)	0.110	(0.122)	-0.722***	(0.148)
Working hours per week	0.009***	(0.002)	-0.007	(0.007)	-0.005	(0.009)
Civil servant (1=yes)	0.023	(0.040)	0.443*	(0.178)	0.385	(0.210)
<u>ISCO job classification (ref.: legislators, senior officials and managers)</u>						
Professionals (1=yes)	-0.102*	(0.046)	-0.412	(0.224)	-0.194	(0.296)
Technicians & associate prof. (1=yes)	-0.171***	(0.043)	-0.063	(0.220)	-0.048	(0.292)
Clerks (1=yes)	-0.177***	(0.055)	-0.424	(0.288)	0.037	(0.347)
Service workers (1=yes)	-0.339***	(0.059)	-0.133	(0.287)	0.073	(0.361)
Craft & related trade workers (1=yes)	-0.216***	(0.050)	-0.381	(0.266)	-0.565	(0.337)
Plant & machine operators (1=yes)	-0.272***	(0.053)	0.078	(0.292)	-0.049	(0.376)
Elementary occupations (1=yes)	-0.398***	(0.067)	-0.973**	(0.329)	-0.639	(0.426)
East Germany (1=yes)	-0.087	(0.055)	-0.277	(0.246)	-0.214	(0.310)
Regional unemployment rate (in %)	-0.013*	(0.006)	0.046	(0.029)	-0.017	(0.035)
Year dummies		yes		yes		yes
Constant	2.489***	(0.379)	9.158***	(1.707)	-1.065	(1.866)
(Adjusted) R ² / McFadden Pseudo-R ²		0.593		0.171		0.094

Notes: Robust standard errors in parentheses. *, **, and *** denote levels of significance at 5, 1, or 0.1 percent, respectively. Estimations based on 1,444 observations.

7.5 Discussion

In this chapter, the empirical findings of the regression analyses are discussed. First, the findings regarding the estimated leisure time coefficients are interpreted in order to explain why certain activities could serve helpful in the labour market while others do not. Findings of additional robustness analyses are described in chapter 7.5.2. Chapter 7.5.3 mentions some limitations of the analyses of this chapter.

7.5.1 Interpretation of the Empirical Results

The empirical results presented in the last chapter show that leisure time activities are related to career success, however, not as strongly as suggested in the theoretical and empirical

literature. In particular, leisure time activities do not seem to be related to short-term career success in the sense of post-hire outcomes after a job change but to long-term career success, especially in terms of wages. The results have shown that individuals who attend cultural events regularly earn higher wages – a finding which is still significant when it is controlled for household income and job categories (which can be interpreted as a status measure). Still, the comparison to the control model without household income shows that endogeneity is a severe problem for this measure which might not be entirely eliminated by including the household variables. Further factors, e.g. parental background, could also affect both the frequency of attending cultural events as well as wages. However, the strong and positive coefficients for weekly visits of museums or other cultural events could imply that these activities provide benefits for the individual. Individuals who attend such events at least once per week are likely to create or maintain a large number of weak ties. The ties formed at these occasions are likely to be particularly helpful throughout one's career because of the selection into these activities. Additional multinomial logistic regression results show that individuals who attend cultural events at least once per week have higher education, are in better health, are less likely to work in small firms, and work in higher positions according to the ISCO classification. Frequent interaction with other employees with these attributes could, hence, enhance social capital and career chances.

Another important result of the wage regressions is that individuals who actively engage in sports activities at least once per week earn higher wages. This effect is even larger and also significant for 'sports at least once a month' when household variables are not included. Findings from sociology imply that sports involvement is determined by social class. Already Bourdieu (1978) raised the question how socio-demographic factors determine sports participation and, in particular, the choice of sports activities. For the French society, he found that class is positively related to sports like skiing or tennis but negatively related to so-called 'prole' sports like boxing, rugby, bodybuilding, and football. Wilson (2002) detected that education (which he interprets as a proxy for cultural capital) and economic capital (income) were positively related to sports activities in general, yet, education was negatively related to 'prole' sports. Hence, sports activities are particularly helpful for upper class members because individuals are connected who dispose of more valuable resources and ties. Furthermore, more educated and wealthier individuals were more likely to engage in sports at all. Therefore, people who are very active in sports should be able to generate helpful social ties that enhance general career success. Hence, the results stand in contrast to Putnam (2000) who argued that the emergence of "new" sport activities, like running, skating or fitness, is

negatively related to social capital. These sports are assumed to be less social compared to “traditional” team sports, yet, the empirical evidence still shows positive effects for sports activities. However, team sports and single sports are not distinguished in the data.

The most surprising finding of this analysis is the negative coefficient of volunteering (once per week) and the insignificant coefficients for monthly or less frequent volunteering. Theoretical considerations and previous empirical evidence has suggested a clear advantage for volunteers in the labour market (see chapter 7.2.2.4). One explanation for this finding could be a measurement error in volunteering in the data. While the given frequencies should be sufficient to describe most leisure time activities, volunteering is not likely to be done on a monthly or on an even more infrequent basis. Most active volunteers offer their time at least once per week¹¹³ so that more detailed information on the time spent for volunteering is essential. Additional analyses of subgroups by education (according to ISCED categories, see chapter 4.4.3.3) shows that individuals with lower levels of education – in this case middle vocational education – experience a negative effect of volunteering on wages. For all other subgroups the volunteering coefficients are statistically insignificant. This can be understood as a hint for the segregation of the volunteer labour market, meaning that individuals with higher education are more likely to volunteer in organisations which require higher levels of human capital.

Furthermore, no correlation between the measure for religious involvement and labour market success has been found. This seems puzzling since theoretical considerations and empirical evidence (mainly in the U.S.) have found strong indications for a positive effect of religion on social capital. One reason for this finding could be a measurement error, yielding from the unclear relationship between religious activities and volunteering. Seifert et al. (2012) showed that the second largest group of volunteers are working for religious organisations. Among females, religious associations are even the most important providers for volunteer work. In line with this, Becker and Dhingra (2001) found a strong correlation between church attendance and volunteering. Therefore, the real effect of religious involvement might be covered in both variables. Furthermore, Coleman (2003) argued that religious associations mainly provide direct short-term support for their members in need which is limited in scope. These associations, therefore, mainly address disadvantaged members so that the potential to generate beneficial ties is limited. Religious social capital, Coleman (2003: 41) concluded, “is

¹¹³ The average monthly time spent on volunteering is 15.4 hours for individuals with lower and medium qualification, 18.2 hours for highly qualified volunteers (Seifert et al., 2012).

more open to the disadvantaged in our society than other forms of social capital”. Hence, the findings may show that religious social capital – even though it was created by weak ties – does not provide labour market benefits.

Previous research in this thesis has shown that job search via social ties is not or even negatively related to wages but positively with job satisfaction. This has been interpreted as a trade-off between wages and working conditions that match the job seeker’s preferences better than a randomly drawn job from the job offer distribution (see chapter 2.5.3). In this chapter, one single correlation (attending religious events once per month) between leisure time and job satisfaction is statistically significant.

Ateca-Amestoy et al. (2008) argued that the relationship between leisure time activities and job satisfaction could be influenced by two opposing effects. On the one hand, individuals with higher income are able to afford more leisure time activities. On the other hand, higher income is usually related to longer working hours which leave less time for non-work activities. This imbalance of work and non-work life (commonly referred to as work-life balance) is likely to affect both job and life satisfaction (Haar et al., 2014). Furthermore, life and job satisfaction seem to be directly related, which has been repeatedly found in the literature (see e.g. Tait et al., 1989; Judge, Watanabe, 1993).¹¹⁴ A direct relationship between leisure time activities and satisfaction with the work domain has not been found in the analyses which might be explained by the complex and interdependent relationship between these measures. As part of the robustness analyses, a measure of general life satisfaction has been included and the results are qualitatively the same.

Statistically significant correlations, though, have been found in the job security regressions. Interestingly, both popular entertainment activities and helping friends are negatively related to job security. First, this could be interpreted as evidence that strong ties are less valuable in the labour market – here in terms of non-monetary payoffs. However, this finding could also be interpreted in the light of the compensation hypothesis (Piotrkowski, 1979).¹¹⁵ Individuals who suffer high levels of insecurity could try to compensate this instability by attending popular events and forming close ties to friends. Particularly finding stability in interpersonal relationships could compensate for negative feelings that derive from job insecurity. Even

¹¹⁴ Van Praag et al. (2003) developed a theoretical model in which overall life satisfaction is related to domain satisfactions, i.e. health, financial situation, and job. The authors understand life satisfaction as an aggregate which comprises different domains of life.

¹¹⁵ Staines (1980) concluded that the spillover approach has received more support in the literature than the compensation hypothesis.

after controlling for job satisfaction in an additional regression this finding remains stable, which seems puzzling in the light of the strong positive correlation between job satisfaction and job security. This means that for a given level of job satisfaction helping friends and job security are still negatively related. Hence, the compensation motive does not appear convincing to explain this negative correlation. The frequency of helping others is likely to be based on strong ties¹¹⁶ which might be less helpful in getting a job. In contrast to other studies, this chapter has investigated the simultaneous correlation between multiple leisure time activities and labour market outcomes. As a result, the coefficients describe the negative effect of helping others while keeping general interaction with others constant. While interaction with friends or relatives is (partially) positively related to job security, even stronger ties through helping do not increase this correlation. Therefore, the two different variables – meeting respectively helping others – should be jointly interpreted.

In further regressions, the dataset has been restricted to job changers and the results are interesting for two reasons. First, this narrowed perspective allows an investigation of short-term effects of social capital generating activities. Second, while the previous analyses might still be biased due to reversed causality, individuals are less likely to change their whole leisure time activities after a job change. In contrast, the analyses have shown that leisure time activities are rather stable so that post-hire outcomes of job changes can rather be interpreted as consequences of leisure time activities than as causes. As a result, most coefficients become statistically insignificant. Wage regressions show only one statistically significant leisure time activity coefficient: Individuals who are attending popular events at least once per week earn significantly lower wages of around 15 percent. This can be understood as proof of the strength of weak ties hypothesis because people mainly attend these events with persons they are closely related to. However, this statistically significant and economically meaningful effect appears too large to be caused by strong ties. Therefore, it can be concluded that individuals who attend such events might dispose of unobserved characteristics that are negatively related to wages. Furthermore, it has to be considered that the number of leisure time activities is restricted by time constraints. Individuals who are frequently attending such events are not able to spend their time on other activities which might be positively related to wages. Most popular events take place in the late evening until late in the night which reduces

¹¹⁶ Leider et al. (2009) showed that individuals were more likely act altruistically when they interacted with friends compared to strangers.

the time available for other activities during the day. Interacting the frequency of attending popular events and age did not yield any statistically significant results.

Another statistically significant coefficient is found in the job satisfaction regression for individuals who engage in active sports at least once per month. For these participants a negative correlation between sports engagement and job satisfaction has been detected. Since this finding is against the expectation formulated in chapter 7.2.2.5, additional regressions were run in order to investigate this further. Particularly for individuals who found a new job, reversed causality can explain this finding. Individuals who state that they practice sports on a monthly basis might be dissatisfied because they would like to do sports more frequently. Starting a new job might limit their time to engage in sports activities which might lead to lower job satisfaction. In order to investigate this potential channel, another regression was run in which actual weekly working time and sports activities were interacted. The results show that, although all interaction coefficients are statistically insignificant, all activity coefficients become insignificant as well.

7.5.2 Robustness Analyses

While some robustness checks, mainly interaction effects or subgroup analyses, have been described above, some general robustness analyses have been conducted in order to investigate how far the findings change if core assumptions are relaxed or different estimation approaches are utilised.

At first, it has been argued that patterns of leisure time activities are rather constant and do not change substantially over time. Hence, information of years in which the frequency of leisure time activities has been part of the SOEP questionnaire has been used in years without observations. A robustness analyses has been applied to estimate the same regression models without these information and the results are broadly identical.

In an additional analysis, panel estimators have been applied. Fixed effects are able to eliminate biases due to unobserved and time-invariant factors. This might be useful to reduce potential biases in factors which both determine labour market outcomes and the frequency of leisure time activities. For example, labour market success is likely to be affected by intrinsic motivation which might also be related to the probability of becoming a member of formal organisations. Other individual factors, like sociability, could be related to the frequency of social exchange with individuals and in the labour market. Using fixed-effects regressions might reduce such bias. Since leisure time variables are only available for four years (see

chapter 7.3), the analysis has been restricted to these waves. However, for the leisure time variable the between variation exceeds the within variation. Individuals differ with regard to their leisure time behaviour but activities are rather time-invariant. This can be interpreted as proof of the assumption in chapter 7.3. Due to the small within variation, a common within estimator might cause an efficiency loss (Cameron, Trivedi, 2010). Hence, a between estimator has been applied which broadly replicates earlier OLS findings.

Furthermore, a seemingly unrelated regression (SUR) approach (Zellner, 1962; Zellner, Huang, 1962; Zellner, 1963) has been applied since both variables are determined by (mainly) similar coefficients and individual error terms might be correlated across estimations (Cameron, Trivedi, 2010). Yet, as in previous chapters, error terms are solely slightly correlated and the estimated coefficients do not differ much from the coefficients gained by OLS estimates.

As mentioned earlier, endogeneity is always an issue when outcomes of leisure time activities are analysed. Albeit some of the endogeneity concerns should be alleviated by using household income as a control variable, it is still questionable whether leisure time activities are beneficial for individuals. On the contrary, job changes in the past might have induced changes in salary which could have resulted in a change in leisure time activities. Therefore, two additional dummy variables have been included in the regressions which indicate whether an individual has changed his/her job in the two previous years. Although the job change coefficients are statistically significant in the wage regression (insignificant in the job satisfaction and job security regressions), leisure time coefficients remain unchanged. In additional regressions leisure time variables have been interacted with household income to allow for heterogeneous effects of household income in relation with leisure time activities. However, an R^2 of .9974 in the wage regression indicates that the model is overfit when interaction terms are included and, therefore, results are not displayed here.

In the descriptive statistics it has been mentioned that only few individuals stated that they “never” meet friends or relatives. Since this chapter deals with the outcomes of social capital, a concept that includes social relations to friends or relatives, results might be biased if individuals who show some degree of social withdrawal are part of the dataset. Therefore, these observations are excluded in order to gain estimates based on individuals who report at least a certain degree of sociability. As a result, in all regressions based on the whole sample, the frequency of meeting friends or relatives is positively related to wages, job satisfaction, and perceived job security. This strengthens the hypothesis that weak ties (meeting friends)

are more helpful in one's career in comparison to strong ties (helping friends). All other coefficients are qualitatively unchanged. Moreover, regression results regarding job changers do not show any changes if observations without contact to friends or relatives are excluded.

Finally, over-specification could be a problem since several variables are included which control for potential selection into jobs. However, it could be argued that social ties provide better jobs in terms of monetary and non-monetary payoffs because jobs in higher positions are systematically given to individuals who dispose of large social networks. Hence, controlling for job categories (in this case the rather nine broad ISCO main categories) might contain this selection effect. In order to investigate this relationship, all regressions are run without ISCO control dummies and the results are the same.

7.5.3 Limitations

One major limitation in the job seeker regressions is the relatively small sample size. Although the number of 1,444 observations does not appear considerably small, this might be misleading since the variables of interest are nine categorical variables with four items each. This leaves around 40 observations for each item which might explain why standard errors of the coefficients are relatively large and leave only few statistically significant coefficients.

The reader should keep in mind that – in distinction to other studies – this chapter has focussed on two or more person households. As a result, individuals already dispose of one or more strong ties within the household and the findings do not apply to single households.

The measurement of leisure time activities as available in the SOEP data causes several problems which are shortly reviewed here. Theoretical argumentation in chapter 7.2.2 has shown that most leisure time activities are able to create opportunities to form both strong and weak ties. This lack of clearness is, at least partially, found in the estimated coefficients. Two further aspects which are inherent in any kind of social ties but could not be observed are discussed in the following.

First, this study has drawn on the concept of accessible social capital in contrast to the amount of mobilised capital in order to improve one's career (see Lin, 2008). As a result, individual differences in the access to social capital could have been measured, return deficits (Lin, 2001), though, could not be accounted for. If individuals with similar patterns of leisure time activities and, thus, similar amount and quality of social ties, might differ in their ability to utilise their existing capital. If this ability is affected by unobserved characteristics, e.g. personality traits such as extraversion, the leisure time coefficients might be biased. Yet,

research in chapter 5 has shown that personality traits play a rather minor role in determining the use of social capital in the job search process.

The second aspect is that the activities under investigation mainly cover non-work relationships. Therefore, work-relationships between supervisor and subordinate or between employees from two different companies have been entirely neglected. Due to the nature of these ties, which are formed and maintained solely in the work environment, it is unlikely that they are expressed in variables that measure leisure time activities. Work-ties are likely to be extraordinarily helpful since the P-O or P-J fit can be better estimated by individuals who have access to this information. Antoninis (2006), for example, showed that individuals who were referred by others who have direct experience of their expertise were particularly beneficial in finding a better paid job. Hence, the reader has to keep in mind that this study solely provides evidence for ties that are generated or maintained in the private domain. In the labour market, especially vertical ties to supervisors could be helpful compared to horizontal ties, e.g. between co-workers. Horizontal ties are formed between members of a network who are in a similar position, while, vertical ties are formed between individuals of different hierarchy levels. Breuer et al. (2013), for example, showed that vertical social ties affect subjective performance evaluations in favour of the related subordinate. In many companies, the evaluations are linked to monetary bonuses or could increase promotion perspectives. Hence, activities through which vertical ties can be formed could account for positive labour market effects.

Furthermore, the use of observed frequency of leisure time activities could be criticised. Lloyd and Auld (2002) argued that researchers mainly use place-centred indicators (frequency of leisure time activities) and ignore person-centred criteria (e.g. subjective perception of leisure time activities) in predicting life satisfaction. In this case, additional information on how far effort (time allocated to a certain activity) and outcome (labour market success) are perceived as helpful by the individual. However, this approach might overestimate the degree to which an individual actually allocates one's leisure time in order to maximise labour market outcomes. Thus, place-centred indicators like the ones in this study should provide sufficient information in order to estimate robust coefficients.

In all regressions in this chapter, household income has been used as a control variable in order to reduce potential endogeneity. However, as most significant correlations between leisure time activities and post-hire outcomes have been found in the wage regressions, it is rather questionable whether this approach has eliminated endogeneity sufficiently. Thus, it

would be helpful to estimate the probability to engage in each activity for all individuals, determined by demographic factor and household income (as an exclusionary restriction). In a second step, the estimated probabilities could be utilised in order to estimate unbiased leisure time coefficients. However, since leisure time activities do not constitute a discrete choice between alternatives, a two stage estimator – for example in the form of the Bourguignon et al. (2007) estimator used in chapter 5 – cannot be applied. Agresti and Liu (2001) suggested marginal logit models that explicit allow for and model dependence between choices.¹¹⁷ However, to the best of my knowledge, this approach has not been applied yet in order to estimate choice probabilities in a two-stage model.

Finally, one further limitation addresses the lack of theoretical foundation of leisure time activities which complicates the interpretation of the estimated coefficients. First, leisure time variables can be either interpreted as stock or as flow measures (Glaeser et al., 2002). While stock measures remain unchanged if no further investment is made, flow measures require constant investment in order to maintain a certain level. Literature on leisure time activities lacks a consensus whether certain activities are rather stock or flow measures. For instance, Glaeser et al. (2002) argued that membership in organisations should rather be interpreted as a stock variable because joining an organisation is more difficult than staying within once you are in. This argument, though, is less likely to hold for friendships which need frequent interaction in order to be maintained. Hence, leisure time variables have to be interpreted according to their stock or flow character. While organisational memberships might be beneficial even with investing much further time, other leisure time activities have to be undertaken regularly in order to generate any benefits.

7.6 Conclusion

The analyses in this chapter have shown that leisure time activities are weakly related to labour market outcomes; yet, more statistically significant coefficients have been found for the whole sample compared to the restricted sample of job seekers. Part of this can be explained by the relatively small sample size in case of job seekers. Nevertheless, the analyses have revealed that reversed causality, respectively strong interdependence between leisure time activities and (monetary) labour market outcomes, affects the results. As a matter of fact, the findings are relatively weak and leave room for alternative interpretations. Therefore, all conclusions have to be taken with care.

¹¹⁷ See Deane et al. (2005) for an application of marginal logit models for investigating determinants of criminal activities which are not independent or mutually exclusive but correlated.

However, this study has enhanced the existing literature by two major aspects: First, it has been shown that including a measure for household income eliminates part of the reversed causality in the wage regressions. For further research it is, therefore, suggested to utilise this approach because coefficients might be biased upwards. Second, this chapter has shown that the effect of leisure time activities on wages has to be jointly estimated. Since total leisure time which can be allocated to certain activities is limited, coefficients might be biased when this relationship is neglected. This might explain why, in contrast to other studies (e.g. Hackl et al., 2007; Ruiter, De Graf, 2009), no positive correlation between volunteering and labour market outcomes has been detected.

Further research could investigate the relationship between leisure time activities and career success by using a more specific measure for leisure time activities: First, more detailed information on the frequency of certain leisure time activities (e.g. meeting friends) should be provided. For some activities it might not be enough to have a rather broad measure on a weekly basis. Second, some leisure time activities for which it is not clear whether they provide strong or weak ties should be divided into distinct measures. For example, participants could be asked how often they meet close friends or family members and how often they meet rather weakly connected acquaintances. This way, results on leisure time activities could be more pronounced and better suited to investigate the “strength of weak ties”-hypothesis (Granovetter, 1973).

Particularly surprising findings of this study refer to the labour market effects of volunteering which has been perceived as a source for labour market effects in previous studies. Further studies could address the question which types of volunteering can provide labour market benefits and which do not. For example, volunteering in the same profession as the current (or future) job could be helpful to generate ties.

A final question addresses the role of social ties in self-employment in comparison to employed workers. The economic literature has just begun to investigate the importance of social ties for entrepreneurs (Bauernschuster et al., 2010), yet, future research could aim at investing both kinds of work jointly.

8 Concluding Remarks

8.1 Summary of Empirical Findings

This thesis has provided a large number of analyses of the determinants and effectiveness of social ties in the job search process, especially in determining post-hire outcomes, such as wages, job satisfaction, and turnover. In chapter 2, theoretical arguments have been summarised which explain why social ties could be helpful for job seekers. Apart from pre-screening and Realistic Job Previews, classic job search theory has been utilised in order to explain potential positive effects of job search via social ties. Counter arguments based on the Individual Differences hypothesis question this positive effect of social capital. This chapter has revealed that labour market effects of social capital are still not fully understood.

Empirical analyses in the chapters 3 to 7 have addressed the five questions raised in the introduction. All analyses of this thesis are undertaken with data from the Socio-Economic Panel, a large representative survey for German households and individuals. Empirical investigations have exploited the data in various ways in order to generate new insights into the effectiveness of social ties.

The third chapter focussed on determinants of source choice (question 1) and, thus, has built the foundation for all further analyses. The analyses have detected that source choice is non-random but determined by demographic and job-related characteristics. Hence, this chapter suggested that correction for this selection effect is necessary in order to gain reliable coefficients.

The second question in the introduction expressed doubts about potential benefits of social capital, particularly regarding monetary outcomes, in the context of the German labour market. In the fourth chapter, several analyses investigating post-hire outcomes of social ties showed that individuals do not benefit from their ties in terms of monetary outcomes. Nevertheless, OLS estimates revealed that individuals who found their job via social ties were more satisfied with their current job. Little evidence has been found for a positive effect on turnover. It seems puzzling that employees are more satisfied with their new job, yet, they are not less likely to quit the new job. This has been interpreted as some kind of a socialisation benefit of new hires who are more satisfied due to better ex-ante information.

Question 3 of the introduction has highlighted the importance of individual personality in explaining social capital generation, job search behaviour, and labour market outcomes. Therefore, chapter 5 expanded previous analyses by adding personality traits and by

incorporating a two-step approach of Bourguignon et al. (2007) in order to address the selection problem that has been revealed in chapter 3. Personality traits were introduced in order to capture part of the unobserved characteristics that determine both source choice and post-hire outcomes. Empirical results of this chapter illustrate that locus of control, the degree to which someone believes to have an impact on one's life, has a strong influence on both job search via formal channels and post-hire outcomes. Regressions without correction terms merely replicate findings of chapter 4. However, when correction terms are included, all wage and job satisfaction coefficients become insignificant. This indicates that selection into search channels should be considered in order to gain more robust estimates. Furthermore, locus of control has proven to be an important factor in determining wages and job satisfaction, even when it is controlled for personality traits in the selection regression.

The two last chapters address two major shortcomings of the previous analyses. In chapter 6, the dataset is restricted to unemployed job seekers who differ in many regards from job-to-job changers as hypothesised in question 4. Unemployed job seekers were asked about their search effort and the channels used in order to find a job and this information has been matched with data from the following year (e.g. "being employed"). While previous chapters could only investigate how individuals found their current job, this chapter has provided additional evidence on the use of (multiple) search channels during job search. Important findings of this chapter are that unemployed job seekers actively use their social ties in order to find a job (which has not been found for on-the-job searchers) and that impulse applications are positively related to the probability of being employed in the next year. Regarding post-hire outcomes, no search channel has been identified as more helpful than others.

The previous chapter (7) has addressed the lack of differentiation between strong and weak ties (Granovetter, 1973). The lack of information regarding tie strength has been addressed in all previous chapters and in question 5 in the introduction. In this chapter, however, information on leisure time activities has been exploited in order to identify whether individuals dispose of many strong or weak ties. In terms of monetary post-hire outcomes, OLS results yielded some evidence that weak ties are positively related to wages. Regarding job satisfaction, this relationship could not be confirmed. A subjective measure of job security, though, is positively related to leisure time activities which are more likely to generate weak ties.

All in all, this thesis has enhanced the existing research in the following aspects. First, this thesis has highlighted that source choice is non-random but determined by demographic

factors and personality traits. Second, evidence has been generated that social ties do not per se help job seekers to find a better job. On the contrary, most regressions reveal a negative relationship between wages and job search via social ties, though, not statistically significant. Third, this thesis has shown that job seekers who found a job via social ties report higher job satisfaction. Fourth, this has been the first study based on a representative sample of employees which investigated turnover as a post-hire outcome of job search. Fifth, in chapter 5 a new approach to reduce selectivity biases has been applied, which has not been done before in the literature. Sixth, in a detailed analysis of unemployed job seekers it has been detected that unemployed job seekers actively utilise their social ties to search for jobs, however, this did not significantly affect post-hire outcomes. Seventh, the last chapter has added several methodological aspects to the investigation of leisure time activities, in particular to address endogeneity problems.

8.2 Limitations

Despite the scientific progress described above, all analyses are subject to restrictions caused by the nature of a large scale survey like the SOEP. One major shortcoming is that the SOEP variable “job search via social ties” did not distinguish different kinds of ties. Especially strong and weak ties could not be identified. This limitation has been addressed in chapter 7, however, a clear assignment of leisure time activities in activities generating merely strong respectively weak ties is restricted. Moreover, vertical or horizontal ties should be differentiated since ties to supervisors could be more helpful than to co-workers (Breuer et al., 2013).

One shortcoming of all job change analyses is that it has not been controlled for the reason why an individual was searching for a new job,¹¹⁸ in particular why an individual left the previous job. Individuals who were dismissed due to different reasons (single dismissal in comparison to mass layoffs) might differ from individuals who left the previous job in order to find a better job. Grund (1999), however, did not find a (monetary) stigma effect comparing dismissed employees with employees affected by layoffs. Nevertheless, this does not exclude a potential wage differences due to voluntary and involuntary turnover. Chadi and Hetschko (2015) investigated how job changes affect job satisfaction. They found that voluntary job changes were associated with an increase in life satisfaction; however, this effect diminished over time. Involuntary turnover had no effect on life satisfaction. The lack

¹¹⁸ In chapter 5 it has been controlled for “changing to a new employer”, “first job”, and “job search after break”.

of information on the reasons for termination of the previous job could distort the findings if this reason is correlated with search effort or search channel choice. Job changers who decided to leave the former employer voluntarily might have used their social ties in a different way (e.g. rather passive than active) compared to employees who were subject to a mass layoff. However, most of this effect should be covered in the active/passive search dummy or in the on-/off-the job search dummy.

Unfortunately, a representative dataset like the SOEP does not contain a reliable measure for job performance. A performance measure could be used in order to estimate whether individuals who found a job via informal means perform better in their new job. If this relation is positive, this could be understood as proof of the job matching theories described in chapter 2.2. However, the turnover variable used in chapter 4 can be understood as proxy for performance.¹¹⁹ In a meta-analysis, Zimmerman and Darnold (2009) found that job performance (both estimated by supervisor- and self-ratings) were correlated with an individual's intention to turnover. At least weak evidence on a reduction in turnover is presented in chapter 4. It is probably a too far-reaching interpretation that social capital is positively related to job performance. Yet, no negative correlation can be concluded which shows that those found via social ties are at least as good in their job as those recruited via formal ties. This attenuates the argument that social ties could place individuals into jobs they are not qualified for. Still, other determinants of turnover which do not lie in the respective person or the respective job have not been included into the analyses. Gregory-Smith and Main (2015) revealed that social comparisons (e.g. of wages) between managers can be a source for turnover when managers feel underpaid in comparison with their colleagues. It seems plausible that this effect is also possible between other employees outside the management. Social ties between new hires and incumbents could serve as a two-sided sword in this case. Connected individuals could receive detailed information on wage dispersions from their peers. Nevertheless, social ties could prevent individuals from leaving the respective firm because wage dispersions between closely connected individuals could be interpreted as fairer than dispersions between individuals who are not close. Future research could investigate which of these two opposing effects is dominating.

¹¹⁹ Allen and Griffeth (1999) provided a theoretical concept of the relationship between performance and turnover. They identified three potential channels through which performance might affect turnover. On the one hand, employees who perform well are less likely to quit their current job due to job higher satisfaction. On the other hand, employees who perform well should dispose of more outside options on the labour market. Finally, a sudden performance related shock (e.g. an unsolicited job offer or a salient performance appraisal) could induce turnover.

Last, the findings of this study investigate the effectiveness of social capital in Germany as a specific country. As described above, collective wage bargaining and wage posting are common wage setting mechanisms which leave less room for wage dispersions between employees recruited through different channels. In a cross-country analysis, Hermann and Marianna (2011) found evidence for a heterogeneous relationship between social capital and wages for country groups. In post-socialist countries social capital was positively related to wages while this correlation almost disappeared in Nordic countries. This implies that labour market regulations and social forces affect the way social capital can transform into labour market benefits. However, this limits the transferability of the findings on other countries.

8.3 Suggestions for Future Research

This dissertation should be understood as a first step to investigate the use and the effectiveness of social capital in the job search process. All in all, this thesis has found ample evidence for Esser's perception that "social Capital is a special case of capital." (Esser, 2008: 23) which leaves plenty of room for future research – both theoretical and empirical.

The literature review in chapter 2 has shown that so far no comprehensive theoretical model of job search via social ties exists which could explain the findings of this thesis. As a result, future researchers could formulate a model which describes the trade-off between monetary and non-monetary benefits of job search that has frequently been found in the analyses. Job seekers who utilise their social ties to find a new job might limit the number of considered alternatives which reduces the probability of finding a job with higher wages. Nevertheless, individuals find a job which provides a higher level of job satisfaction. A theoretical model should, therefore, regard job seekers as utility maximisers instead of income maximisers.

Researchers have up to now neglected how the recruitment of an employee through informal means affects the referrer. In his theoretical model, Winter (1997) argued that the referrer gains the job seeker's gratitude which increases the referrer's utility. In addition, it is also conceivable that employing a friend or relative positively affects performance and satisfaction of the incumbent. Incumbents could feel that their judgement on other employees is recognised and appreciated. Conducting a field experiment with 300 employees, Bradler et al. (2014) showed that recognition was positively related to performance. Yet, the increase in performance was mainly caused by those who did not receive recognition which the authors explained by the employees' preference for conformity. In the context of job search, this could mean that other incumbents apart from the referrer are affected as well if they strive to receive the same amount of recognition by suggesting other fitting job seekers. Moreover,

referrers who recently brought a new employee into the firm should be less likely to leave the firm subsequently so that referrals could decrease turnover.

Firms which make use of work teams could use their employees to find new members for existing teams. Under the assumption that social ties are mainly formed between similar individuals, this should affect team member diversity. A growing literature investigates the relationship between team heterogeneity and team performance and results are rather mixed (Haas, 2010). Diversity is regarded as a source for creativity and satisfaction but also as a source for conflict and a lack of social integration (Stahl et al., 2010). Team member similarity could affect how information in teams are shared (Gruenfeld et al., 1996; Wittenbaum, Stasser, 1996). If new hires and the referrer work together in a small team, information flow and social integration might be improved, which should be positively related to team performance. Future research could, therefore, investigate how team performance of work group is affected if new team members were recruited by informal means.

Research on labour market outcomes of social capital could also investigate how job search via social ties affects the willingness to apply for a certain job. Rynes et al. (1980) argued that apart from wages and other characteristics of a certain job, the applicant's decision to apply or to accept a job offer is affected by the HR staff and administrative practices and procedures. This process, however, could be different in case an individual is hired via informal means. Another important factor in the hiring process is perceived trustworthiness of information provided in the process. Acarlar and Bilgiç (2013) found that the perceived credibility of job adverts affected the willingness to apply for a certain job. In chapter 2.5.1 it has been argued that information on job characteristics conveyed via social ties might be perceived as more accurate and trustworthy (Rees, 1966). This increased credibility might derive from similarity between the referrer and the job seeker (Simons et al., 1970). Researchers could investigate how the hiring process itself differs when job seekers are found through different channels and how these procedural differences affect the attractiveness of a job and the willingness to apply for this job.

This argumentation shows that referral hiring should be interpreted in the broader context of the respective recruitment strategy. Research in this field should incorporate the referrer and the organisation as a whole in order to find out how employee hiring strategies affect firm performance or the performance of the referrer or other co-workers.

All chapters of this thesis utilised post-hire outcomes (chapter 6 also pre-hire outcomes) of job search via different channels as a comparative measure for source effectiveness. As a result, efficiency of certain channels could not be investigated. However, it has been argued that social ties yield applicants who are more satisfied with their current job but who do not receive higher wages. Furthermore, there are no reasons why the application and selection process should be more expensive for firms when employees are hired via social ties. On the contrary, firms could even save money by using their employees because the use of formal channels is usually not free of charge. Furthermore, the selection process might be faster and more efficient if employers can rely on the pre-screening abilities of their employees. Thus, it is most likely that social ties can be an efficient search channel, however, this has not been investigated and could be subject of future research projects.

With reference to current changes in society and expected changes in the labour market, it might be of interest how the large number of migrants – mainly as political refugees, affects the use of social ties as a job search instrument. Beaman (2012) showed that political refugees who have been randomly distributed across the USA benefit from a large network of tenured network members, whereas a larger number of new network members reduces network effectiveness. For the Italian labour market, Colussi (2015) found that socially connected immigrants benefit in terms of labour market outcomes if their peers are employed. Nevertheless, it is not clear how a large inflow of migrants (particularly from the most-affected middle-eastern countries like Syria) can be absorbed into existing social networks. Future research could, hence, investigate how an immigration shock (in the economic sense) affects social networking of immigrants from a certain country/region or of immigrants in general.

This thesis confirmed that hiring via informal means is not necessarily related to individual outcomes like wages but at least partially to non-monetary outcomes like job satisfaction. Yet, firms could benefit from using their employees or other ties to attract and select applicants. Social ties, thus, can serve as a powerful tool to face the problem of information asymmetries in the labour market – to reveal useful information on otherwise – to say it with the words of Ben-Porath (1980) – “faceless” applicants.

Appendix

Table 57: SOEP questions for the five-factor model

<u>Question</u>	<u>Score</u>	<u>Dimension</u>
I see myself as someone who ...	1 = does not apply to me at all 7 = does apply to me perfectly	
– does a thorough job	1-7	Conscientiousness
– is communicative, talkative	1-7	Extraversion
– is sometimes somewhat rude to others	1-7*	Agreeableness
– is original, comes up with new ideas	1-7	Openness
– worries a lot	1-7	Neuroticism
– has a forgiving nature	1-7	Agreeableness
– tends to be lazy	1-7*	Conscientiousness
– is outgoing, sociable	1-7	Extraversion
– values artistic experiences	1-7	Openness
– gets nervous easily	1-7	Neuroticism
– does things effectively and efficiently	1-7	Conscientiousness
– is reserved	1-7*	Extraversion
– is considerate and kind to others	1-7	Agreeableness
– has an active imagination	1-7	Openness
– is relaxed, handles stress well	1-7*	Neuroticism

Note: * indicates reversed items.

Table 58: SOEP questions for locus of control

<u>Question</u>	<u>Score</u>
The following statements apply to different attitudes towards life and the future. To what degree to you personally agree with the following statements?	1 = disagree completely 7 = agree completely
How my life goes depends on me.	1-7
Compared to other people, I have not achieved what I deserve.	1-7*
What a person achieves in life is above all a question of fate or luck.	1-7*
If a person is socially or politically active, he/she can have an effect on social conditions.	1-7
I frequently have the experience that other people have a controlling influence over my life.	1-7*
One has to work hard in order to succeed.	1-7
If I run up against difficulties in life, I often doubt my own abilities.	1-7
The opportunities that I have in life are determined by the social conditions.	1-7*
Inborn abilities are more important than any efforts one can make.	1-7*
I have little control over the things that happen in my life.	1-7*

Notes: Higher values appeal to internal locus of control. * indicates reversed items.

Table 59: SOEP questions for positive and negative reciprocity

Question	Score	Dimension
To what degree do the following statements apply to you personally?	1 = does not apply to me at all 7 = does apply to me perfectly	
<u>Positive reciprocity</u>		
If someone does me a favour, I am prepared to return it.	1-7	Positive
If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost.	1-7	Negative
If somebody puts me in a difficult position, I will do the same to him/her.	1-7	Negative
I go out of my way to help somebody who has been kind to me before.	1-7	Positive
If somebody offends me, I will offend him/her back.	1-7	Negative
I am ready to undergo personal costs to help somebody who helped me before.	1-7	Positive

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