

Empirical Studies of Unemployment: Search Behavior, Reintegration and Prevention

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Vorbemerkungen

Die vorliegende Dissertation ist eine kumulative Arbeit und wurde gemäß der Promotionsordnung des Fachbereichs Wirtschaftswissenschaft der Freien Universität Berlin vom 16. Juli 2008 und der Ausführungsvorschrift für kumulative Promotionsverfahren von September 2011 angefertigt.

Kapitel 1 erläutert den thematischen Zusammenhang und den wissenschaftlichen Beitrag der einzelnen Kapitel dieser Dissertation gemäß § 9 Absatz 2 Buchstabe b der Promotionsordnung. Darüber hinaus enthält Kapitel 1 in Bezug auf jedes Dissertationskapitel eine detaillierte Beschreibung jeweiliger Ko-Autoren, meines Eigenanteils und eine Auflistung aller Publikationen inklusive Diskussionspapieren in tabellarischer Form.

Hiermit versichere ich gemäß § 9 Absatz 4 der Promotionsordnung, dass ich die vorliegende Dissertation selbstständig verfasst habe.

Annabelle Krause

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Chapter 1

Introduction

This dissertation studies the search behavior and future labor market outcomes of the unemployed as well as ways to prevent unemployment, and includes the following questions: How do reservation wages of the unemployed evolve over migrant generations? Do economic preferences play a role when analyzing the reemployment probability of unemployed natives and second generation migrants? Does subjective well-being predict future reemployment and affect reentry wages? Do anonymous job applications affect interview invitation probabilities of possibly disadvantaged groups? If migrant and native children shared the same socioeconomic background characteristics, would the native-migrant education gap disappear?

Motivation

Mirrored by the evolution of newspaper headlines, the development of the German economy has ranged from the “sick man of the euro” in 1999, marked by relatively high unemployment rates, to “Europe’s engine” in 2010, with unemployment lower than before the Great Recession of 2008/2009.¹ Therefore, unemployment seems to have lost at least part of its threatening position in Germany. Besides the cyclical component, it had also become a structural issue since the 1970s, when unemployment rates did not fully recover following recessions. However, substantial labor market reforms implemented between 2002 and 2005 as well as firms’ reactions at the intensive margin prompting a relatively mild response to the Great Recession are considered as main reasons for the improvement and stability of recent labor market conditions (see, e.g., Rinne and Zimmermann, 2012; Burda and Hunt, 2011). The number of unemployed decreased to a level last experienced in 1991, with around 2.7 million individuals unemployed in Germany at the end of 2012, corresponding to an unemployment rate of 6.5 percent (Bundesagentur für Arbeit, 2012b). These successful developments will hopefully sustain in the future. However, Germany’s position is in contrast to the situation in other countries. For example, countries such as the United States, Ireland and Spain experienced rising unemployment rates from 2007 to 2009, ranging between 5 and 12 percentage points (Agnese and Salvador, 2011). Moreover, recent statistics highlight Spain and Greece as the tragic leaders regarding unemployment among OECD countries, with unemployment rates around 25 percent at the end of 2012 (OECD, 2012).

In theory, the equilibrium wage would equate supply and demand, and consequently the labor market would clear given competitive markets. However, given that this equilibrium does not occur, how does unemployment evolve? No single theory is entirely able to explain unemployment, although several explain particular aspects (Borjas, 1996). Some sort of frictional unemployment exists in every economy, whereby workers and firms are searching for a match. This takes time, but may create better matches and does not create a problem of structural unemployment. The latter may arise, first if the number of unemployed workers equals the number of vacancies, yet in different sectors, thus presenting a skill mismatch. Second, if there is an excess supply of workers and wages are sticky, they cannot adjust downward and vacancies cannot be filled. Sticky wages may arise through, e.g., efficiency wages and union wage bargaining (see, e.g, Layard et al., 2005). In this regard, both the incidence and duration of unemployment hold relevance: whereas the incidence refers to the probability of workers losing their jobs, duration refers to the situation when

¹“The sick man of the euro”, in: *The Economist* June 3rd 1999. “Europe’s engine”, in: *The Economist* March 11th 2010.

the difficulty to find jobs is high, thus prolonging unemployment spells. This may result in long-term unemployment which is typically defined as individual unemployment spells exceeding 12 months.

Certain institutional factors of the labor market contribute to (long-term) unemployment, relating to a consensus that has emerged among economists whereby reducing unemployment by triggering aggregate demand rather produces rising inflation (Layard, 2011). In this respect, three important factors are the unemployment insurance system, employment protection legislation and wage determination systems, which also largely explain differing unemployment rates between countries (see, e.g., Nickell and Layard, 1999). Whereas European labor markets were traditionally perceived as rigid labor markets with a provision of high unemployment benefits for a long period, high employment protection and strong unionization, the United States' labor market is rather flexible, though cutting benefits after 6 months. These institutions have differential effects on the unemployment rate. For instance, granting unemployment benefits for a long period increases the unemployment spell, given that individuals have less incentive to search, but periods of benefits that are too short may drive individuals in jobs of lower quality, thus resulting in inefficiencies. Policies are considered as most efficient when combining unemployment benefits with a monitoring system, job search support and other manpower policies, particularly targeted at long-term unemployed (Layard et al., 2005).² Northern European countries, and also since recently Germany, have introduced such policies. High hiring and firing costs prevent employers from adapting their labor force to economic conditions. Hiring fewer workers leads to more long-term unemployment, whereas firing fewer workers leads to less short-term unemployment, and on balance these two effects appear to cancel out and leave the level of unemployment unchanged (Nickell and Layard, 1999). Strong unionization is considered to be another institution resulting in unemployment. This system of wage determination only involves the firm and its existing workers (insiders), and by setting wages above the supply price of the unemployed outsiders, they are left unemployed.

Despite the successful developments in Germany, 2.7 million people are without work with the fraction of long-term unemployed still being slightly more than one third of all unemployed (Bundesagentur für Arbeit, 2012a). Therefore, what are the effects of unemployment? As early as the 1930s, a classic sociological study on an unemployed community in Austria revealed unemployment to have detrimental effects for individuals leading to passive resignation (Jahoda et al., 2009). Furthermore, Darity and Goldsmith (1996) review several studies reporting harmful psychological effects of unemployment. Moreover, studies on unemployment and crime suggest unemployment to increase the propensity

²See, e.g., Card et al. (2010) for a recent meta-analysis of active labor market policies.

of engaging in illegal activities (Fagan and Freeman, 1999; Raphael and Winter-Ebmer, 2001). During the past two decades, a whole new economic literature has evolved, proving individuals to suffer from non-pecuniary effects of unemployment by using data on subjective well-being, happiness or life satisfaction (e.g., Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998; Di Tella et al., 2001; Kassenboehmer and Haisken-DeNew, 2009). Besides psychic costs, unemployment also reduces output and aggregate income, increases inequality and erodes human capital (Layard et al., 2005).

Accordingly, unemployment constantly presents an important and serious subject for science and policy, and not only in times when unemployment rates are exceptionally high. Consequently, both reintegrating unemployed individuals back into the labor market and preventing unemployment are of particular importance. Whereas this notion is not new, this dissertation tackles it in an original way. By departing from traditional research avenues, under-researched fields are incorporated that will possibly become more important in the future and contribute to an increasingly thorough understanding of the behavior of the unemployed and barriers in the labor market. These include the importance of the reservation wage evolution over migrant generations, personality, subjective well-being, hiring discrimination and the education system.

Why do these aspects matter? Unemployment rates differ between groups. This has been very apparent for natives and migrants in Germany since the early 1970s. For instance, in 2011, the average unemployment rate of migrants was more than twice as high as that of natives (14.6 percent vs. 6.4 percent, Bundesagentur für Arbeit, 2012a). Additionally, native-migrant gaps in economic outcomes are relatively persistent over the two generations of migrants in Germany. Algan et al. (2010) highlight weak wage assimilation from one generation to the next, and relatively large native-migrant employment gaps in Germany that do not decrease over migrant generations, particularly for men. Given that employment biographies become increasingly unstable and fragmented, and labor markets in general become more flexible (Eichhorst et al., 2010), the importance of job search and the success of job finding are critical, where reservation wages display a central figure. Accordingly, differences between migrant generations in terms of job search behavior may partly explain the lack of intergenerational improvement.

Non-cognitive skills can influence economic outcomes above and beyond factors such as human capital or household composition (Borghans et al., 2008). However, research has only recently emerged concerning preferences and attitudes such as risk attitudes, time preferences, trust and reciprocity, – and more generally concerning personality traits – and their influence on economic outcomes, with further research required in this area. For instance, if there are non-cognitive differences between natives and second generation

migrants who become unemployed, such differences can (and indeed should) be taken into account when designing active and passive labor market policies. Consequently, a better understanding of these factors may help to improve the labor market integration of second generation migrants.

The study of subjective well-being has become increasingly important within the economic literature. There are now thousands of articles based on happiness surveys published in ‘mainstream’ journals (Graham, 2011). Such studies use tools and data to develop measures of welfare including traditional income determinants, yet also extend beyond these factors. While subjective well-being is primarily treated as an outcome variable within the economic literature, further evidence is required on whether subjective well-being is also a driver of behavior and outcomes. Therefore, the underlying question that emerges is whether society benefits from happier citizens. In particular, the relationship between the unemployed individual’s happiness and reemployment warrants further research attention, to better understand whether subjective well-being plays a sort of motivational role with respect to labor market outcomes.

Differences in (labor) market outcomes may also result from discrimination. For instance, “beauty” and thus attributes such as weight, size or attractiveness appear to matter for a broad range of labor market outcomes, including earnings, moreover explaining sorting behavior into different occupations (see, e.g., Hamermesh and Biddle, 1994; Biddle and Hamermesh, 1998). In this broader debate, the access to jobs represents a crucial dimension of labor market discrimination, given that unequal employment opportunities across population groups have important implications for both the short- and long-term labor market outcomes of affected individuals. Indeed, a large number of empirical studies document a substantial extent of discrimination in hiring decisions (Bertrand and Mullainathan, 2004; Carlsson and Rooth, 2007; Kaas and Manger, 2011). Discrimination in recruitment decisions is a market failure, because it should be in the employers’ interest to hire the most productive workers – irrespective of their gender, race or ethnicity. Anonymous job applications have gained attention and popularity as a potentially attractive policy intervention to reduce or even eliminate discrimination in hiring, yet empirical research on the effects of anonymous job applications is presently scarce.

However, if any structural differences exist between groups before entering the labor market or a new job, the goal of anonymous job applications cannot be accomplished. For example, is there equal access to education for individuals from minority groups? Why is education important in this respect? Two approaches illustrate the theoretical channels of education to labor market outcomes. On the one hand, human capital theory states that investments in human capital include factors such as education, training and medical

care, whereby Becker (1993) emphasizes education and training as the most important. Education increases the worker's productivity and consequently future income. On the other hand, Spence's (1973) signaling model suggests that education serves as a signal in the labor market, which is assumed to be correlated with the worker's underlying ability. In this model, education increases wages, but not the worker's productivity. Aside from the theoretical channels, education is regarded as crucial for later economic outcomes, marked by the risk of unemployment being highly correlated with education (see, e.g., Reinberg and Hummel, 2005, 2007, for Germany). Therefore, it represents an essential factor to investigate when studying unemployment.

The preceding discussions highlight the complexity of the study of unemployment, and also the diverse evolution of the literature. Thus, the problem requires an investigation from different perspectives. As the main policy goal with respect to unemployment comprises how to effectively get individuals (back) into employment, the overarching research questions of this thesis are the following: First, what affects the way out of unemployment? And second, which mechanisms might prevent unemployment in the first place? The following five chapters will provide empirical contributions on the search behavior, characteristics and future labor market outcomes of the unemployed, as well as on ways to prevent unemployment and enhance employment opportunities.

Contribution of this Thesis

The data employed for the empirical analyses are derived from several sources. Chapter 2, Chapter 3 and Chapter 4 are based on the *IZA Evaluation Dataset S*, which consists of survey information on individuals who entered unemployment in Germany between June 2007 and May 2008. In Chapter 5, data from a randomized experiment with job applications is used, while the empirical analysis in Chapter 6 is based on the *German Socio-Economic Panel Study (SOEP)*, a representative longitudinal study of private households in Germany. An overview of these chapters, including a description of co-authors, my own contribution to the respective chapters and a publication list is provided in Table 1.1.

The three chapters based on the *IZA Evaluation Dataset S* investigate the search behavior and reintegration into the labor market of entrants into unemployment. Chapter 2 is concerned with first and second generation migrants in Germany. The lack of migrant intergenerational improvement is somewhat puzzling, with studies tending to find conflicting results. Whereas such approaches have focused on the lack of intergenerational improvement in terms of economic outcomes, this chapter adopts a slightly different perspective in focusing on one important underlying mechanism in determining economic outcomes, namely the process of job search and the acceptance of a job offer. This chapter is the first

to empirically test the hypothesis that reservation wages of second generation migrants exceed those of first generation migrants, which may represent an explanation for the lack of migrants' intergenerational improvement. Two extensions of the basic model of job search provide theoretical justifications for this hypothesis. Changing frames of reference are identified as a channel through which the phenomenon of increasing reservation wages may arise. The data include self-reported reservation wages, which are otherwise rarely available. The empirical findings confirm the hypothesis of increasing reservation wages from one migrant generation to the next. In as far as German language skills or self-evaluated returns to characteristics reflect a person's frames of reference, this mechanism is empirically supported.

Table 1.1: Overview Dissertation Chapters

Title	Co-Authors	Contribution	Publication
Reservation Wages of First and Second Generation Migrants (Chapter 2)	Amelie F. Constant, Ulf Rinne and Klaus F. Zimmermann	25%	IZA Discussion Paper No. 5396
Economic Preferences and Attitudes of Unemployed Natives and Migrants (Chapter 3)	Amelie F. Constant, Ulf Rinne and Klaus F. Zimmermann	25%	<i>International Journal of Manpower</i> , 2011, 32(7), 825–851 ^a
Subjective Well-Being, Reemployment and Wages (Chapter 4)	–	100%	IZA Discussion Paper No. 7107
Anonymous Job Applications of Fresh Ph.D. Economists (Chapter 5)	Ulf Rinne and Klaus F. Zimmermann	33%	<i>Economics Letters</i> , 2012, 117(2), 441–444 ^a
Decomposing the Native-Migrant Education Gap (Chapter 6)	Ulf Rinne and Simone Schüller ^b	33%	IZA Discussion Paper No. 6696

Notes: ^a Refereed publication. ^b Simone Schüller is currently also a PhD student at the Free University of Berlin. One chapter in her dissertation will be based on the same article Krause, Rinne and Schüller (2012).

Chapter 3 extends one step further and investigates the reemployment probabilities of natives and second generation migrants, particularly analyzing the economic preferences of these two groups, namely risk attitudes, time preferences, trust and reciprocity. The contribution of this chapter is to provide novel and direct evidence on the relationship between economic preferences, attitudes and the labor market reintegration of natives and second generation migrants. Only early exits from unemployment are considered, which are very important because they prevent individuals from becoming long-term unemployed. If differences exist between the two groups in terms of economic preferences, they may at least partly explain the native-migrant gap in reemployment probabilities. Second generation migrants are found to have a higher willingness to take risks, and they are less

likely to have a low amount of positive reciprocity when compared to natives. It is also found that more risk-loving individuals have a lower reemployment probability. However, the lower reemployment probability of second generation migrants cannot be explained by the difference in economic preferences.

Chapter 4 also investigates reemployment probabilities, however from the long-term perspective, namely one year after unemployment entry. Whereas the preceding chapters concentrated on differences between the migrant and native population in Germany, this chapter focuses on all unemployed. It follows a rather new strand of the literature by analyzing the effects of individual happiness, and is therefore related to the previous chapter in investigating novel determinants of labor market outcomes. In particular, this chapter investigates whether individual happiness is a predictor of future reemployment probabilities and wages. The contributions of this chapter are first to provide a deeper understanding regarding what subjective well-being may influence and possible mechanisms, and second to gain fresh insights concerning the determinants of reemployment and reentry wages. Thereby, the analysis goes one step further than the preceding chapters in also considering the quality of the new jobs, measured by wages. The results show that residual happiness – higher (or lower) happiness levels than a number of socioeconomic and demographic characteristics would predict – has a statistically significant inverted U-shaped effect on the individual’s reemployment probability. Moreover, the relationship with reentry wages is similar, and even more robust. Further investigations offer three mechanisms, which appear to also be interrelated and have not previously been shown in this context: *a)* happiness matters mainly for future self-employment and less for standard employment; *b)* happiness matters only for male unemployed and not for females; and *c)* the concept of locus of control is able to explain part of the effect.

The subsequent two chapters are complementary to the previous ones as they focus on processes that may improve the access to jobs or prevent unemployment in the first place. Chapter 5 focuses on discrimination at the hiring stage, and therefore on unequal opportunities in the access to jobs. It contributes to the small existing literature on anonymous job applications by analyzing experimental data of this rather new policy intervention. The intuition is straightforward: removing information about characteristics that employers may discriminate against should reduce or even abandon discrimination in hiring. The data for the analysis stems from an own randomized experiment, involving participants who are economists close to finishing or having recently finished a Ph.D. degree (or equivalent). Given that the treatment was randomly assigned in the experiment, any selection into treatment status can be ruled out. Generally, anonymous job applications are not found to affect interview invitations. Investigating the effects separately by gender

shows female applicants to have a higher probability of receiving an interview invitation than male applicants with standard applications, however this difference disappears with anonymous job applications. Moreover, evidence is found that recruiters tend to rely more strongly on the “traditional” quality signal of top journal publications when confronted with anonymous job applications.

However, any structural differences that existed prior to the hiring process cannot be overcome with anonymous job applications. Accordingly, this shifts the focus to education, with Chapter 6 focusing on the German secondary education system and particularly investigating the persistent education gap between natives and migrants. This gap may be due to differences in the average socioeconomic background between native and migrant children, or to migrant-specific characteristics such as language skills or discrimination. Given that the literature has not yet arrived at a unique answer whether differences in socioeconomic family background can entirely explain the native-migrant education gap, this chapter provides a further assessment of ethnic inequalities in Germany’s education system. Hence, the gap is explicitly decomposed into a part explained by compositional differences in socioeconomic background and an unexplained part that is likely related to migrant-specific factors. The contribution of this chapter is that next to linear decomposition methods, matching techniques are used to arrive at a picture that is robust to methodological variations. This chapter further adds to the existing literature by examining three different outcomes for the *same* individuals, spanning a crucial period in children’s educational careers around and after their transition into secondary schooling. Moreover, these outcomes vary in the degree to which they are influenced by teachers, parents and children. Recent data that are continuously collected are used and, for the first time, sample sizes allow for studying this important topic with these data. Results indicate significant differences between the two groups in terms of household characteristics and parental background. These differences appear to be entirely responsible for differences in secondary school recommendations given by teachers, actual enrollment rates at different secondary school types, and differences in educational attainment at the age of 17. Comparable natives thus face similar difficulties to migrant children.

Chapter 7 summarizes the main findings of this thesis, subsequently drawing conclusions. Furthermore, potential shortcomings of the empirical analyses and avenues for future research are discussed, and policy implications are outlined.

Chapter 2

Reservation Wages of First and Second Generation Migrants*

2.1 Introduction

The literature which aims at explaining the native-migrant differences in economic outcomes such as labor force participation, labor earnings, and unemployment rates, is large. Starting with Chiswick's (1978) assimilation paper, most studies in most migration countries find a persistent wage gap between natives and immigrants. Namely, compared to natives, migrants exhibit higher unemployment rates, lower employment rates, and lower earnings. With some exceptions, most of the studies focus on first generation migrants, i.e., migrants who have themselves moved from one country to another. Second generation migrants, who are the offspring of first generation migrants and are born in the host country, have received less attention.¹ However, this group of migrants is of increasing concern, both from an academic and a policy perspective. In the course of the past century, many countries have accumulated sizeable stocks of migrants and their descendants. Although one would expect native-migrant differences in economic outcomes to decrease from one generation to the next, this is generally not the case (see Algan et al., 2010, for evidence on France, Germany and the UK).

Germany is an interesting example because of its relatively large migration inflows over a long period. These inflows became sizeable permanent stocks of both first and second generation migrants that are now present in Germany. In 2007, almost 19 percent of the

*This chapter is based on the paper *Reservation Wages of First and Second Generation Migrants* joint with Amelie F. Constant, Ulf Rinne and Klaus F. Zimmermann (Constant et al., 2010). This research was partly financed by the German Research Foundation (DFG).

¹Exceptions for Germany comparing the economic outcomes of immigrants, immigrants' children and natives include Gang and Zimmermann (2000), Riphahn (2003), Constant and Zimmermann (2003) and Uhlendorff and Zimmermann (2012). Among the first studies in the United States is Chiswick (1977).

German population (or 15.4 million persons) had a migration background. Fewer than half of those are actually foreign citizens. Among children aged 5 and below, the share is even higher: around one third is descended from a family with a migration background. Turks are by far the largest group of individuals with a migration background (about 2.5 million in 2007), followed by Poles, Russians and Italians (Rühl, 2009).

In addition, native-migrant gaps in economic outcomes are relatively persistent over the two generations of migrants in Germany. Algan et al. (2010) provide cross-country evidence on the performance of first and second generation migrants in terms of education, earnings and employment. Their results for Germany indicate lower educational outcomes of first generation immigrants when compared to natives, and particularly low achievements for those from traditional guest worker countries. While educational attainment improves substantially for second generation immigrants, outcomes are still below those of comparable natives. With respect to earnings, Algan et al. (2010) conclude that wage assimilation from one generation to the next is weak, and that there remains a substantial wage differential for all immigrant groups even for the second generation. Lastly, the authors show that native-migrant employment gaps in Germany are relatively large, in particular for Turks and Central and Eastern Europeans, and that, at least for men, these gaps do not appear to decrease from one generation to the next.

The lack of migrant intergenerational improvement is puzzling and studies tend to find conflicting results. A number of potential explanations are discussed in the literature. First, second generation migrants may be discriminated against in the labor market. One would expect ethnic discrimination to be primarily a concern for first generation migrants, but evidence from various European countries indicates that also second generation migrants are affected (see, e.g., Jonsson, 2007, and other studies in the same volume). Moreover, second generation migrants who do not have the citizenship of the host country may also face institutional discrimination (Kogan, 2007; Phalet, 2007). Second, the endowment of second generation migrants in terms of ethnic and human capital may be another explanation for the lack of intergenerational mobility. The quality of the ethnic environment of first generation migrants, what Borjas (1992) calls ethnic capital, influences the skills and labor market outcomes of their offspring. Card et al. (2000) show that for the last 50 years in the United States, the rate of intergenerational assimilation in educational attainment has remained stable and the rate of intergenerational assimilation in earnings has remained constant. Kalter and Granato (2007) conclude that missing relevant human capital is still an important explanation for the lack of intergenerational improvement in

Germany.² Third, there are explanations for the persistence of native-migrant gaps in economic outcomes across migrant generations, which are based on ethnic identity. For example, the concept of downward assimilation describes the assimilation of the second generation with the native underclass, which might lead to a permanent marginalization. Such developments are documented in the United States (Portes and Zhou, 1993) and in Europe (Silberman and Fournier, 2007; Heath et al., 2008). Two other processes are discussed in the literature: taste for isolation and oppositional identities (Blackaby et al., 2005). Both result either from discrimination or are made by choice, i.e., certain immigrant groups may actually like to isolate themselves from the receiving society or develop resentments against the dominant host culture (see Constant and Zimmermann, 2008, for a discussion in the context of first generation migrants).

Whereas these approaches focus on the lack of intergenerational improvement in terms of economic outcomes, this chapter takes a slightly different perspective. It concentrates on one important underlying mechanism in determining economic outcomes: the process of job search and the acceptance of a job offer. Given that employment biographies become more unstable and more fragmented, and labor markets in general become more flexible (Eichhorst et al., 2010), the importance of job search and the success of job finding are critical. But there may be crucial differences in job search behavior between first and second generation migrants. For instance, Heath and Li (2008) argue that the lack of intergenerational improvement in the United Kingdom may be explained by differences in the willingness to accept low paid jobs or to work in the enclave economy. The failure to catch up across generations could result from lower reservation wages of first generation migrants compared to their offspring. Changing frames of reference from one migrant generation to the next are identified as a potential channel through which this phenomenon may arise. Whereas the comparative reference group of first generation migrants may be their families, co-ethnics and peers in the country of origin, second generation migrants may expect to be treated like their peers from the host country. Similarly, Stark and Taylor (1991) develop the hypothesis that international migrants (i.e., first generation migrants) keep their reference group in their country of origin in order to improve their relative position within their original reference group.³ This positive effect of migration might be outweighed by changing the reference group to the one in the host society. The more different the home and host societies are, the less likely it is thus for reference group

²Constant and Zimmermann (2003) show that it is the mother's education and not the father's occupation that influences the occupational choices of the immigrant children. In stark contrast, Germans are more likely to choose occupations similar to their father's occupation when the father is in the white-collar or professional category.

³This is also one reason that explains why immigrants are willing to work in low rank jobs that no native would be willing to take.

substitution.⁴

This chapter empirically tests the hypothesis that reservation wages of second generation migrants exceed those of first generation migrants. Two extensions of the basic model of job search provide theoretical justifications for this hypothesis: *a*) an unknown wage offer distribution, and *b*) reference standards. In both cases, changing frames of reference are identified as a channel through which the phenomenon of increasing reservation wages over migrant generations may arise. Our empirical analysis uses data on entrants into unemployment at a very early stage of the unemployment spell.⁵ Our results confirm our hypothesis and show an unconditional reservation wage gap of 2.3 percent between first and second generation migrants, which increases to about 3.5 percent and becomes statistically significant once differences in characteristics are taken into account. In a next step, we approximate potentially different reference groups between the two migrant generations by introducing measures of ethnic self-identification, the *ethnosizer* – an objective two-dimensional measure of ethnic identity – and German language skills. Whereas the former two measures do not explain much of the reservation wage gap between migrant generations, German language skills do explain a substantial part of this gap. Although host language proficiency can be viewed as part of human capital, it is endogenously determined and depends on the individual’s social network and his or her social interactions. Language may thus reflect, at least in part, frames of reference. A decomposition analysis moreover suggests that a substantial part of the unconditional reservation wage gap is driven by higher self-evaluated returns to characteristics of second generation migrants, e.g., with respect to education. We argue that self-evaluations may reflect frames of reference.

The remainder of this chapter is organized as follows. After discussing theoretical considerations in Section 2.2, we provide an overview of our data in Section 2.3. Section 2.4 presents and discusses our empirical results. A sensitivity analysis is performed in Section 2.5. Finally, Section 2.6 concludes.

2.2 Theoretical Considerations

This section provides theoretical arguments for our hypothesis that reservation wages increase from first to second generation migrants. We start by briefly reviewing the standard model of job search and extend this framework in two ways: *a*) we relax the assumption

⁴The assumption about reference group substitution is part of the “relative deprivation hypothesis.” Accordingly, relatively more deprived households are more likely to send migrants to foreign labor markets given that there is an expected income gain (Stark and Taylor, 1991).

⁵Reservation wages of migrants in Germany were also studied in Constant and Zimmermann (2005). However, this analysis does not distinguish between first and second generation migrants.

of a known wage offer distribution, and *b*) we directly incorporate a reference standard into the model. Both extensions provide theoretical justifications to our conjecture that changing frames of reference are a channel through which the phenomenon of increasing reservation wages from one migrant generation to the next may arise.

2.2.1 The Basic Model of Job Search

The starting point of our analysis is the standard model of job search (McCall, 1970; Mortensen, 1970).⁶ In this model the reservation wage represents the crucial wage above which an individual is willing to accept job offers. It is assumed that unemployed individuals seek to maximize the expected present value of future income streams over an infinite horizon. In a given period, a job offer with wage w is received with probability λ , where w is an exogenously determined random variable distributed according to the wage offer distribution $H(w)$. More importantly, this distribution is assumed to be known to the job seeker.

The basic setup furthermore assumes that *a*) individuals are risk neutral, *b*) the discount rate is equal to d , *c*) jobs are separated exogenously with probability q per period, *d*) search is costless, *e*) non-labor income equals b per period, and *f*) there is no on-the-job search. It can then be shown that the (unique) reservation wage ξ is determined by the following equation:

$$\xi = b + \frac{\lambda}{d + q} \int_{\xi}^{\infty} (w - \xi) dH(w) . \quad (2.1)$$

Therefore, the individual's reservation wage ξ depends on the income stream during job search b , the job arrival rate λ , the discount rate d , and the job separation rate q . Employing the implicit function theorem, comparative static analysis reveals:

$$\frac{\partial \xi}{\partial b} > 0 ; \quad \frac{\partial \xi}{\partial \lambda} > 0 ; \quad \frac{\partial \xi}{\partial d} < 0 ; \quad \frac{\partial \xi}{\partial q} < 0 . \quad (2.2)$$

Hence, according to the basic model the reservation wage ξ depends positively on the income stream during job search b and the job arrival rate λ , while it decreases with the discount rate d and the job separation rate q .

There are several extensions to the basic model of job search, addressing and relaxing assumptions which may be an oversimplification. In what follows, we incorporate two extensions to the basic model: *a*) an unknown wage offer distribution, and *b*) reference standards.

⁶See also Chapter 3 of Cahuc and Zylberberg (2004).

2.2.2 Unknown Wage Offer Distribution

The assumption of a known wage offer distribution $H(w)$ is sometimes referred to as one of the most heroic assumptions of job search models (Franz, 1980). But relaxing this assumption has important implications: if this distribution is unknown, the reservation wage becomes a function of the job seeker's beliefs.

Burdett and Vishwanath (1988) formulate a model which is based on the assumption that workers do *not* have precise knowledge of the distribution of the prevailing wages.⁷ Their study is frequently cited for showing that when the distribution of prevailing wages is unknown, learning takes place during job search, and the individual reservation wage declines as a consequence of the selection process during the ongoing unemployment spell. However, the authors also address the situation at the very beginning of the unemployment spell. At the start of search, job seekers form beliefs about the unknown distribution $H(w)$, summarizing the knowledge which has been accumulated through various sources of information (e.g., newspapers, wage statistics, wages of friends, relatives, or colleagues). In this setup, the reservation wage is therefore a function of the workers' beliefs – at the beginning of the respective unemployment spell based on external information, and subsequently modified after wage offers have been received.

How are initial beliefs about the wage offer distribution formed? We argue that reference groups play a crucial role in this regard, and that these reference groups shift from one migrant generation to the next (Heath and Li, 2008). More precisely, our working hypothesis is that first generation migrants are still relatively strongly attached to their country of origin, and therefore sources of information which they use to form beliefs (i.e., their reference groups) come to a sizeable extent from abroad. In contrast, the beliefs of second generation migrants should be more strongly based on German experiences because these migrants are born and raised in the host country and because individuals compare themselves with similar age groups. We thus expect reference groups to shift over migrant generations. Given that wage levels in migrants' home countries are below those of Germany, we would expect reservation wages to increase from first to second generation migrants.

Subsequently, during the course of the unemployment spell, individuals can alter and modify their beliefs depending on the wage offers they receive. Social networks and personal contacts are a major source of information about job offers, and a substantial number of jobs are found through these channels (Granovetter, 1995; Franzen and Hangartner, 2006). Updating initial beliefs may also occur through the process of peer updating, i.e.,

⁷Other studies relaxing the assumption of search models that the wage (or price) offer distribution is known include Kohn and Shavell (1974), Rothschild (1974), Bikhchandani and Sharma (1996) and Dubra (2004).

via wage offers that members of the individuals' network have received rather than the individuals themselves (Kriechel and Pfann, 2006). In both cases, if the composition of social networks or peer groups shifts from one migrant generation to the next accordingly (i.e., from stronger attachment to the country of origin towards a more German-oriented perspective), reservation wages of first generation migrants are also in the course of the unemployment spell lower than those of second generation migrants, other things equal.

2.2.3 Shifting Reference Standards

So far, reference standards are only indirectly included in the model by assuming that they play a crucial role in forming beliefs about the (unknown) wage offer distribution. A slightly different, albeit related and more pragmatic extension directly incorporates a reference standard r into this framework.

More specifically, we assume that the absolute wage w as well as the relative wage $(w - r)$ contribute linearly to the utility of an employed individual.⁸ The discounted expected utility V_e of an employed individual can then be expressed as:

$$V_e(w) = \frac{1}{1+d} \left((1-\theta)w + \theta(w-r) + (1-q)V_e(w) + qV_u \right), \quad (2.3)$$

where the discount rate is equal to d , the parameter θ determines the extent to which comparisons play a role, jobs are separated exogenously with probability q per period, and V_u is the discounted expected utility of an unemployed individual. Note that the discounted expected income of an unemployed individual does not change compared to the standard model of job search.

Utility maximization and rearranging terms yields the following expression for the reservation wage ξ :⁹

$$\xi = b + \frac{\lambda}{d+q} \int_{\xi}^{\infty} (w - \xi) dH(w) + \theta r. \quad (2.4)$$

The reservation wage ξ is increasing in the reference standard r as well as in θ , i.e., in the extent to which comparisons play a role. Changing frames of reference is thus a channel through which increasing reservation wages from one migrant generation to the next may arise, if the reference standard r shifts accordingly across generations.

⁸See, e.g., Falk and Knell (2004) for a more general model of reference standards. They employ a similar specification into a more general framework of utility maximization.

⁹See Appendix A2.1 for a more detailed representation, including intermediate steps.

2.3 Data and Sample Characteristics

We test the hypothesis of increasing reservation wages from one migrant generation to the next using data from the *IZA Evaluation Dataset S* (Caliendo, Falk et al., 2011).¹⁰ We concentrate on one of the two pillars of the data: a survey of almost 18,000 individuals who entered unemployment between June 2007 and May 2008. An important advantage of this dataset is that the individuals were interviewed shortly after entering unemployment. Our analysis is based on the first wave of the survey, which takes place about two months after unemployment entry.¹¹ The added value of this dataset is the large variety of topics that it addresses: questions cover many important individual characteristics which are rarely available for economic research but influence economic outcomes. Examples include personality traits (Borghans et al., 2008), attitudes (Bonin et al., 2007), cognitive skills (Heckman et al., 2006), and ethnic identity (Constant and Zimmermann, 2009).

Most importantly for our study, respondents in this dataset report their reservation wages (details are given below). Moreover, the dataset contains relatively detailed information about the individuals' migration background, migrant-specific characteristics (e.g., language skills and language use) and ethnic identity. This information allows us to construct the *ethnosizer* (Constant, Gataullina, and Zimmermann, 2009), a two-dimensional index of ethnic identity. Viewing this measure as an approximation of frames of references, we can proceed testing our working hypothesis. We also employ other approximations of frames of references, ethnic self-identification and German language skills, which are both part of the *ethnosizer*.

The setup of the *IZA Evaluation Dataset S* takes into account the specific situation of migrants in Germany in a different way: next to a detailed assessment of the individuals' migration background, the interviews were – depending on the language skills of the interviewees – also available in Turkish and Russian. These are the native languages of the two major migrant groups in Germany. Altogether, 207 individuals were interviewed in these languages.

2.3.1 Sample Selection and Descriptive Analysis

For our analysis, we select individuals with a migration background, who are between 18 and 55 years old when entering unemployment. This “prime age” time frame helps us avoid difficulties with accounting for the decision to (early-)retire. We exclude individuals

¹⁰The *IZA Evaluation Dataset S* was created by IZA with financial support of the Deutsche Post Foundation and consists of survey information on individuals who entered unemployment in Germany between June 2007 and May 2008.

¹¹The survey consists of two additional rounds of interviews. Respondents are interviewed again one year and three years after unemployment entry, respectively.

with missing information on important characteristics (e.g., wage information from previous employment) and focus on individuals who were unemployed job seekers during the first interview. Only these individuals are requested to state their reservation wages. We furthermore drop the top and bottom percentile of the reported net hourly reservation wages. After applying these criteria, we end up with 1,342 individuals with a migration background. Out of them, 776 individuals are first generation migrants and 566 individuals are second generation migrants. While first generation migrants are individuals who are not German-born, second generation migrants are *a*) individuals who are German-born, but do not have German citizenship, and *b*) individuals who are German-born, but at least one of their parents is not German-born. We thus apply a very straightforward definition of second generation migrants, including basically all individuals who have a migration background but are German-born.¹²

Table 2.1 displays descriptive statistics of our sample by migration background. First and second generation migrants have on average roughly the same age and the gender distribution is fairly similar. The share of migrants with German citizenship is high in both groups. Almost 70 percent of first generation migrants are German citizens. This high percentage can be explained by the substantial inflow of ethnic Germans, who immigrated from the former USSR and Central and Eastern European countries, in particular around 1990. These individuals were considered to be of German descent and were usually granted German citizenship upon arrival. Moreover, the migrants in our sample have been in Germany for a relatively long time, and thus for many of them it became possible to obtain the German citizenship.¹³ The share of German citizenship holders among the second generation is even higher (about 80 percent). The naturalization requirements and procedure in Germany changed in 2000, when the German citizenship law was reformed. Before the reform, obtaining German citizenship was primarily through bloodlines (*ius sanguinis*) and residence of at least 15 years. After the reform the law of soil (*ius soli*) became available to immigrant children born in Germany, and years of residence to apply for naturalization were reduced to eight (with exceptions such as three years for persons with a German spouse).¹⁴ Less than 10 percent of the first generation migrants live in East Germany, whereas 18 percent of second generation migrants do. The share of married individuals among first generation migrants is higher than among second generation migrants. The share of first generation migrants without a formal educational or vocational

¹²We assess the sensitivity of our results to this definition in Section 2.5. More specifically, in the second generation group, we also include foreign-born individuals who migrated to Germany at a very young age.

¹³Years since migration are 18 years on average, see Table 2.2.

¹⁴See Zimmermann, Constant, and Gataullina (2009) for a more detailed description and analysis of the naturalization process in Germany.

degree is higher than that of second generation migrants. However, more first generation migrants have a general qualification for university entrance or a university degree than second generation migrants. First and second generation migrants in our sample earned similar average wages before becoming unemployed and the average duration of previous employment was almost the same in both groups. These statistics also indicate that both groups of recent entrants into unemployment had a relative strong attachment to the labor market in the past.

Table 2.2 presents further descriptive statistics for the two groups of migrants in our data. It focuses on migrant-specific characteristics to shed more light on their migration background and migration history. We first consider the country of origin of first and second generation migrants. For this purpose, we aggregate the respondents' countries of origin into three major sending regions: *a*) guest worker countries, *b*) Central and Eastern European countries, and *c*) other countries.¹⁵ The descriptive statistics then basically reflect two major developments in Germany's migration history. First, almost 60 percent of first generation migrants are from Central and Eastern European countries. This substantial share can be explained by the sizeable inflow of ethnic Germans who came to Germany around 1990, with the fall of the Iron Curtain and the subsequent East-to-West migration. Second, more than 40 percent of second generation migrants in our sample have a lineage in guest worker countries.¹⁶ They are the offspring of the guest workers who were hired to migrate to Germany during the post-war economic boom and kept migrating until the early 1970s and the halt on labor migration in 1973.

Table 2.2 shows that, on average, first generation migrants have been in Germany for a long time, having moved when they were rather young. The average years since migration of first generation migrants exceeds 18 years, and the average age at migration is about 17 years. Moreover, about half of the first generation migrants completed an educational degree abroad and about 30 percent have a vocational degree from abroad. These numbers appear plausible as most first generation migrants spent substantial parts of their lives in their country of origin, mostly during childhood and adolescence when schooling takes place. The share of second generation who completed a vocational or educational degree abroad is virtually zero (1.6 percent).

¹⁵Guest worker countries include Turkey, the former Yugoslavia, Italy, Spain, and Greece. Central and Eastern European countries include Poland, the former USSR, the former CSSR, and Romania.

¹⁶The country of origin of second generation migrants is either *a*) the country of their citizenship (if they do not have German citizenship), or *b*) their parents' country of origin. If the latter is not the same for both parents, we take the father's country of origin (Card et al., 2000; Jonsson, 2007).

Table 2.1: Descriptive Statistics I (Selected Characteristics)

	1st generation	2nd generation
Sociodemographic characteristics		
Age (in years)	34.942 (9.796)	35.002 (9.986)
Male	0.512 (0.500)	0.472 (0.500)
German citizenship	0.695 (0.461)	0.807 (0.395)
East Germany	0.081 (0.273)	0.182 (0.386)
Married	0.568 (0.496)	0.456 (0.498)
Educational attainment		
No formal degree	0.023 (0.151)	0.014 (0.118)
Secondary school (9 yrs.) (<i>Hauptschule</i>)	0.341 (0.475)	0.387 (0.487)
Secondary school (10 yrs.) (<i>Realschule</i>)	0.335 (0.472)	0.387 (0.487)
Technical college entrance qualification (11-12 yrs.) (<i>Fachabitur, Fachhochschulreife</i>)	0.052 (0.221)	0.051 (0.221)
General qualification for university entrance (12-13 yrs.) (<i>Abitur, Allgemeine Hochschulreife</i>)	0.249 (0.433)	0.161 (0.368)
Vocational attainment		
No formal degree	0.224 (0.417)	0.127 (0.334)
Apprenticeship (dual system)	0.460 (0.499)	0.594 (0.492)
Specialized vocational school	0.142 (0.349)	0.157 (0.364)
University, technical college	0.174 (0.379)	0.122 (0.327)
Previous employment		
Net hourly wage (in euros)	7.239 (3.218)	7.246 (3.084)
Duration (in months)	40.406 (61.124)	40.251 (61.081)
# Observations	776	566

Source: IZA Evaluation Dataset S, own calculations.

Notes: Standard deviations are in parentheses. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

Table 2.2: Descriptive Statistics II (Migrants' Characteristics)

	1st generation	2nd generation
Country of origin (by region)		
Guest worker countries ^a	0.202 (0.402)	0.419 (0.494)
Central and Eastern European countries ^b	0.579 (0.494)	0.148 (0.356)
Other countries	0.219 (0.414)	0.433 (0.496)
Time in Germany		
Years since migration	18.139 (9.756)	–
Age at migration	16.809 (10.883)	–
Education abroad		
Educational degree abroad	0.487 (0.500)	0.016 (0.125)
Vocational degree abroad	0.305 (0.461)	0.016 (0.125)
# Observations	776	566

Source: IZA Evaluation Dataset S, own calculations.

Notes: Standard deviations are in parentheses. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

^a Guest worker countries include Turkey, the former Yugoslavia, Italy, Spain and Greece.

^b Central and Eastern European countries include Poland, the former USSR, the former CSSR and Romania.

2.3.2 Measures of Frames of Reference

To measure ethnic identity, we apply the two-dimensional version of the *ethnosizer* in our empirical analysis (Constant and Zimmermann, 2008; Constant, Gataullina, and Zimmermann, 2009). We argue that the *ethnosizer* provides an approximation of the different reference groups by measuring the intensity of commitment to the home and the host culture. It is a complex concept, which classifies immigrants into four distinct states or regimes: *a*) assimilation, *b*) integration, *c*) marginalization, and *d*) separation. An assimilated immigrant has a high commitment to the host culture and a weak one to the home culture. Being integrated means to be committed to both the home and host cultures. Marginalization displays a weak attachment to either culture, and separation exhibits a strong commitment to the home culture, but not to the host one. The four states are formed by combining four essential elements of personal devotion to the Ger-

man culture and society and to the culture and society of origin: *a)* language, *b)* ethnic self-identification, *c)* ethnic interaction, and *d)* migration history.¹⁷

Table 2.3 displays descriptive statistics of the specific variables we use in our model. For this purpose, we have transformed the respondents' answers vis-à-vis the four elements into variables ranging from 0 to 1. Note that for each element we have information on both countries. For each country, a value of zero indicates no commitment and a value of one indicates total and absolute commitment. For example, for the element language, a value close to one corresponds to better German language skills and a more frequent use of a different language than German as family language.

Table 2.3: Descriptive Statistics III (Components of the *Ethnosizer*)

	1st generation	2nd generation
Language		
German language skills	0.775 (0.195)	0.903 (0.127)
Family language	0.366 (0.276)	0.148 (0.218)
Ethnic self-identification		
Self-identification with Germany	0.746 (0.213)	0.718 (0.225)
Self-identification with country of origin	0.570 (0.318)	0.510 (0.328)
Ethnic interaction		
Language with friends	0.301 (0.271)	0.116 (0.186)
Migration history		
Intention to apply for German citizenship	0.804 (0.346)	0.864 (0.308)
Center of interest in 5 years (10–15 years)	0.218 (0.244)	0.242 (0.250)
# Observations	776	566

Source: IZA Evaluation Dataset S, own calculations.

Notes: Standard deviations are in parentheses. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born. All variables range between 0 and 1. A higher value corresponds to better German language skills, a more frequent use of a different language than German as family language, a stronger self-identification with Germany, a stronger self-identification with the country of origin, a more frequent use of another language than German with friends, a higher probability of applying for German citizenship, and a higher probability of leaving Germany.

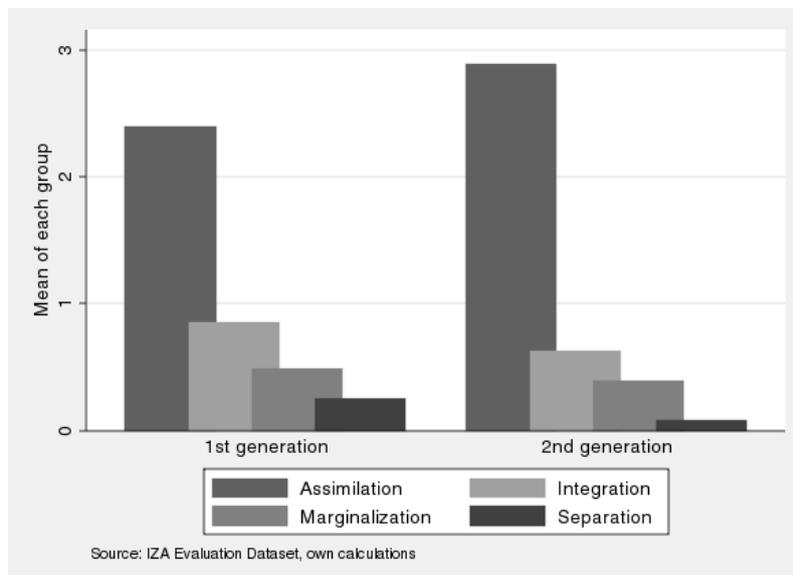
¹⁷Our data do not include the exact same questions as the *SOEP*, which has been used so far to construct the *ethnosizer*. Therefore, we use a modified version and rely only on four elements. The element “culture” is not included in our *ethnosizer* here.

Second generation migrants report a better German language proficiency than first generation migrants and a less frequent use of a different language than German as their family language. The degree of self-identification with Germany is similar across the two migrant generations in our sample, albeit slightly weaker in the group of second generation migrants. Second generation migrants self-identify to a lower extent with the country of origin, but the difference is rather small. The use of a different language than German as a means of communication among friends is rather uncommon for second generation migrants, but more frequent among first generation migrants. Finally, second generation migrants report both a higher probability to apply for German citizenship and a higher probability of leaving Germany in the future.¹⁸

To construct the four identity states of the *ethnosizer* for each individual, we proceed as follows. With respect to language usage and ability, we approximate the commitment to the host country via the command of the German language and the commitment to the country of origin via the actual communication with family members. More specifically, a respondent with a ‘very good’ or ‘good’ command of the German language who communicates to his or her family members at least half in another language is classified as linguistically integrated; a respondent with at least a ‘good’ command of the German language who communicates to his or her family members ‘only’ or ‘mostly’ in German is classified as linguistically assimilated; a respondent with relatively poor or no command of the German language who communicates to his or her family members at least half in another language is classified as linguistically separated; and finally, a respondent with relatively poor or no command of the German language who communicates to family members ‘only’ or ‘mostly’ in German is classified as linguistically marginalized. Similarly, migrants who self-identify both strongly with Germany and with the country of origin are considered as integrated; migrants who self-identify strongly with Germany but to a smaller extent with the country of origin are considered as assimilated; migrants who self-identify strongly with the country of origin but to a smaller extent with Germany are considered as separated; and, finally, migrants who self-identify only weakly both with Germany and the country of origin are considered as marginalized. With respect to the other two dimensions of ethnic interaction and migration history, individuals are categorized analogously.

Figure 2.1 juxtaposes the distribution across all four states of the *ethnosizer* for first and second generation migrants in our sample. The distributions are rather similar: both have the highest score for assimilation, followed by integration and marginalization, while separation is ranking last. However, the score for assimilation is higher in the second

¹⁸This is in line with the finding that migrants with German passports exit more frequently (Constant and Zimmermann, 2011).

Figure 2.1: Two-Dimensional *Ethnosizer* by Migration Status

Source: IZA Evaluation Dataset S, own calculations.

Notes: Mean scores for each of the four states of the *ethnosizer*. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

generation, whereas the scores for all three other dimensions are slightly below those of the first generation. This seems plausible because second generation migrants feel more dedicated to the German culture than first generation migrants. Furthermore, this finding reinforces our hypothesis of changing frames of references from one migrant generation to the next.

2.3.3 Reservation Wages and Ethnic Identity

There are still comparatively few empirical studies that directly incorporate reservation wages in their analysis. The main reason for this lies in the scarcity of adequate data sets; but our data include self-reported reservation wages, which we can directly incorporate in our analysis. More specifically, respondents were posed the following questions regarding their reservation wage:

- a) Now the focus turns to earnings expectations while searching for a job. How high do you expect your net monthly wage to be? How many hours per week would you at least have to work to receive this net monthly wage?
- b) Would you also be willing to accept a job offer with a lower net monthly wage? If so, what is the lowest net monthly wage you would accept? How many hours per week would you at least have to work to receive this net monthly wage?

Answers to these questions give us information about the individuals' reservation wage.¹⁹ Moreover, we calculate the reservation wage ratio (RWR). This ratio is defined as the reservation wage at the time of the interview divided by the previous wage from (self-)employment, i.e., before entering unemployment.

Table 2.4 shows the average net hourly reservation wages and reservation wage ratios. The average reservation wage for the entire sample is € 7.18, which corresponds to an 11 percent increase compared to the previous wage of individuals in our sample. The average net hourly reservation wage of second generation migrants amounts to € 7.25 and exceeds that of first generation migrants. The latter amounts to € 7.13. However, the reservation wage ratios are the same in both migrant groups.

Table 2.4: Descriptive Statistics IV (Reservation Wage (RW) and Reservation Wage Ratio (RWR))

	Migrants		1st generation		2nd generation	
	RW	RWR	RW	RWR	RW	RWR
Total	7.18	1.11	7.13	1.11	7.25	1.11
Assimilation	7.18	1.10	7.09	1.12	7.32	1.06
Integration	7.33	1.09	7.18	1.07	7.55	1.13
Marginalization	7.00	1.16	7.16	1.17	6.87	1.16
Separation	6.75	1.13	7.04	1.15	6.16	1.07
# Observations	1,342		776		566	

Source: IZA Evaluation Dataset S, own calculations.

Notes: Net hourly reservation wage (RW, in €). The reservation wage ratio (RWR) is defined as the reservation wage divided by the previous hourly wage from (self-)employment before entering unemployment. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

When we further differentiate individuals according to the four regimes of ethnic self-identification, a few observations can be highlighted. First, integrated individuals have the highest average reservation wage. This result is mainly driven by integrated second generation migrants whose average net hourly reservation wage is particularly high with € 7.55. Second, first generation migrants have rather similar net hourly reservation wages across the four regimes of ethnic self-identification. Third, marginalized and in particular separated second generation migrants have rather low net hourly reservation wages. Fourth, the variation in terms of reservation wage ratios across the four regimes of ethnic

¹⁹If both questions are answered, one can interpret response *a*) as the conditional expected wage and *b*) as the reservation wage (Lancaster and Chesher, 1983).

self-identification is relatively modest in both migrant groups. The overall picture thus suggests that reservation wages are related to previous wage levels, and individuals seem to regard these as a reference for future wages. However, there is a considerable degree of variation across individuals of different migration status, and also across the four regimes of ethnic self-identification – in particular in terms of net hourly reservation wages.

We furthermore investigate net hourly reservation wages and reservation wages of male and female first and second generation migrants in West and East Germany, respectively, as well as reservation earnings and reservation earnings ratios across the four regimes of ethnic self-identification.²⁰ Based on our separate analysis of male and female first and second generation migrants in West and East Germany, two important observations become apparent: *a*) men generally have higher reservation wages than women, and *b*) individuals living in West Germany generally have higher reservation wages than those in East Germany. Hence, men in West Germany have the highest reservation wages irrespective of their migration status. Obvious reasons for these findings are that wage levels in West Germany are on average higher than in East Germany and the wages of men are higher than the wages of women. The difference between reservation wages of first and second generation migrants is relatively large in West Germany, whereas the reservation wages of both groups are relatively similar in East Germany. In terms of reservation earnings, it seems worth to note that reservation earnings ratios are generally lower than those based on hourly wages. This finding suggests that hourly reservation wages which exceed the previous hourly wages are not necessarily resulting from higher monthly earnings aspirations. Individuals seem to aspire similar earnings as they previously had, but they would like to work fewer hours for the same amount of money.

²⁰See Tables A2.1 and A2.2 (Appendix A2.2) for details.

2.4 Empirical Results

Differences in average reservation wages between first and second generation migrants may be driven by differences in characteristics. We therefore proceed by controlling for observable and quantifiable differences. Furthermore, we perform a decomposition analysis of the reservation wage gap between the two groups. By doing so, we are able to shed more light on the underlying mechanisms which may drive our results.

2.4.1 OLS Regressions

To control for differences in characteristics between first and second generation migrants, we run OLS regressions of the individuals' reservation wage and compare the results with the unconditional gaps. The regressions include socio-demographic characteristics, household characteristics, educational and vocational attainment, unemployment benefits, previous employment and other explanatory variables. Finally, we include measures of ethnic identity as described above, and also a measure of language ability.

Table 2.5 displays the OLS regression results. The first column reports the unconditional reservation wage gap between first and second generation migrants in our sample. This raw difference amounts to 2.3 percent, i.e., the reservation wages of second generation migrants exceed those of first generation migrants by this amount. Although this difference can be considered as economically significant, it is not statistically significantly different from zero. However, once we include control variables, the gap between first and second generation migrants increases, see column (2). Second generation migrants have conditional reservation wages which are 3.5 percent higher than those of the first generation. The conditional difference is statistically significantly different from zero. All other control variables in this regression have the expected signs and most of them are statistically significant.

We extend our analysis in Table 2.6 when we additionally include approximations of frames of reference in our regression framework. Ethnic self-identification, the *ethnosizer* and German language skills are separately included, see columns (2)–(4). The first column again displays the results of our baseline regression to ease comparisons. When we include ethnic self-identification in column (2), the conditional reservation wage gap remains virtually the same at 3.4 percent. It thus seems that ethnic self-identification does not have any explanatory power regarding the reservation wage gap between first and second generation migrants. The coefficient on the separated ethnic self-identification variable is negative and relatively large, though not statistically significant. When we include the *ethnosizer* in column (3), the conditional reservation wage gap decreases slightly although none of the coefficients on the *ethnosizer* variables is statistically significant. However, when we in-

clude German language skills in column (4), the conditional reservation wage gap between the two migrant generations decreases to 2.6 percent. The difference moreover becomes statistically insignificant. Differences in German language skills, which combine speaking and writing skills, can therefore explain a substantial part of the difference in reservation wages between first and second generation migrants. The statistically significantly positive coefficient estimate indicates that better language skills increase reservation wages.

The results of these regressions thus confirm the first part of our working hypothesis: second generation migrants indeed have higher reservation wages than first generation migrants. However, we do not find strong support for the second part of our working hypothesis, namely that changing frames of reference are a channel through which this phenomenon may arise. Ethnic identity and the *ethnosizer*, which both can be viewed as approximations of frames of reference, do not explain much of the reservation wage gap between migrant generations. This is consistent with findings of Constant and Zimmermann (2009). Using the *SOEP*, they find that the *ethnosizer* variables affect the work participation decision, but are not statistically significant for earnings.

On the other hand, German language skills do explain a substantial part of the reservation wage gap between migrant generations. This is a more standard explanation for this gap as language skills can be viewed as part of a person's human capital endowment, and should thus enter wages and productivity directly. But language skills are also endogenously determined and depend on the individual's social network and his or her social interactions. They may thus reflect, at least in part, a person's frames of reference. It is nonetheless difficult to disentangle these two components of language skills – human capital and frames of reference – from each other, although we control for example for previous earnings in our regressions.

Table 2.5: Baseline OLS Regressions Reservation Wage

	(1)	(2)
1st generation migrants	reference (reference)	reference (reference)
2nd generation migrants	0.023 (0.016)	0.035 (0.016)**
Male		0.074 (0.016)***
Age		0.009 (0.006)
Age squared		-.010 (0.008)
Married		0.047 (0.021)**
Partner working full-time		-.065 (0.021)***
Partner working part-time		0.025 (0.027)
Children in household		0.033 (0.024)
Number of children in household		0.031 (0.013)**
No formal degree		reference (reference)
Secondary school (9 years) (<i>Hauptschule</i>)		0.03 (0.05)
Secondary school (10 years) (<i>Realschule</i>)		0.051 (0.05)
Technical college entrance qualification (11-12 years) (<i>Fachabitur, Fachhochschulreife</i>)		0.048 (0.058)
General qualification for university entrance (12-13 years) (<i>Abitur, Allgemeine Hochschulreife</i>)		0.102 (0.054)*
No vocational degree		reference (reference)
Apprenticeship		0.041 (0.018)**
Specialized vocational school		0.047 (0.025)*
University, technical college		0.191 (0.033)***
Duration previous employment >10 years		reference (reference)
Duration previous employment ≤1 year		-.077 (0.028)***
Duration previous employment ≤5 years		-.043 (0.027)
Duration previous employment ≤10 years		-.035 (0.033)
Logarithm of unemployment benefits		0.001 (0.003)
Logarithm of previous earnings		0.203 (0.018)***
Country of origin: other countries		reference (reference)
Country of origin: guest worker countries		-.008 (0.018)
Country of origin: Central/Eastern European countries		-.043 (0.017)**
R^2	0.001	0.381
# Observations	1,342	1,342

Source: IZA Evaluation Dataset S, own calculations.

Note: Robust standard errors in parentheses. Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are dummies for German states, month of unemployment entry and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table 2.6: Ethnic Identity OLS Regressions Reservation Wage

	(1)	(2)	(3)	(4)
Migration Background				
1st generation migrants	reference (reference)	reference (reference)	reference (reference)	reference (reference)
2nd generation migrants	0.035 (0.016)**	0.034 (0.016)**	0.032 (0.016)**	0.026 (0.016)
Ethnic Identity				
Assimilation		reference (reference)		
Integration		-.009 (0.015)		
Marginalization		-.006 (0.021)		
Separation		-.032 (0.025)		
Ethnosizer				
Assimilation			reference (reference)	
Integration			0.00006 (0.008)	
Marginalization			-.012 (0.01)	
Separation			-.009 (0.013)	
Language Skills				
German Language Skills				0.098 (0.042)**
R^2	0.381	0.382	0.382	0.384
# Observations	1,342	1,342	1,342	1,342

Source: IZA Evaluation Dataset S, own calculations.

Note: Robust standard errors in parentheses. Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are male, age and age squared, married, partner's employment status, educational and vocational variables, duration of previous employment, logarithm of unemployment benefits, children in household, logarithm of previous earnings, dummies for country of origin, German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request. German language skills is measured on an ordinal scale and a higher value refers to better German speaking and writing skills. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

*** significant at 1%; ** significant at 5%; * significant at 10%.

2.4.2 Decomposition

Our previous results indicate a reservation wage gap between first and second generation migrants. To shed more light on the underlying mechanisms behind this finding, we perform a Blinder-Oaxaca decomposition of this gap (Blinder, 1973; Oaxaca, 1973).²¹ The basic idea is to divide a wage gap between two groups into an explained part resulting from different characteristics such as age or education (endowments) and an unexplained part resulting from differences in returns to characteristics (coefficients). We additionally

²¹See, e.g., Aldashev et al. (2012) for a study using a similar methodology to analyze wage gaps between migrants and natives in Germany.

include an interaction which captures the fact that differences in endowments and coefficients may exist simultaneously between the two groups (Jann, 2008). Since we analyze differences in reservation wages and not in actual wages, the unexplained part represents differences in self-evaluations of given characteristics by the individuals rather than different rates of return in the market.

Table 2.7 presents the results of the decomposition exercise. The comparison between first and second generation migrants again reveals the unconditional reservation wage gap of 2.3 percent. We find a very small, but negative endowment effect. This is related to differences in the regional distribution of first and second generation migrants across German states. On the other hand we find a statistically significantly positive coefficient effect. It is even larger than the unconditional reservation wage gap and suggests a higher self-evaluation of second generation migrants for given characteristics when compared to first generation migrants. This is in line with our working hypothesis. More specifically, it appears that especially the returns to education are higher evaluated by the second generation.²² The interaction effect is small and negative.

Table 2.7: Blinder-Oaxaca Decomposition

	2nd generation vs. 1st generation
Difference	0.023
Endowments	-0.005
Coefficients	0.054**
Interactions	-0.025
# Obs. (group 1)	566
# Obs. (group 2)	776

Source: IZA Evaluation Dataset S, own calculations.

Note: Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are male, age and age squared, married, partner's employment status, educational and vocational variables, duration of previous employment, logarithm of unemployment benefits, children in household, logarithm of previous earnings, dummies for country of origin, German federal states, month of entry into unemployment, time between unemployment entry and interview (7-14 weeks) and German language skills. Full estimation results are available upon request. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

*** significant at 1%; ** significant at 5%; * significant at 10%.

The decomposition analysis thus reveals that the differences between migrant generations in their reservation wages are related to their self-evaluations of given characteristics. This, in turn, may be related to changing frames of reference over migrant generations. It appears that in comparison to first generation migrants, second generation migrants have for example higher self-evaluations of the returns to education. We argue that these

²²More detailed results of the decomposition analysis are available upon request.

self-evaluations may reflect a person's frames of reference. For instance, Reeder et al. (1960) find that perceived and actual responses of others influence how persons think of themselves, in particular if persons do not think highly of themselves. Goethals (1986) provides an overview of the social comparison theory in which the comparative function of reference group is described as a reference point in making evaluations of ourselves and others.²³ This justifies our assumption that the differences in the self-evaluated returns to characteristics between the two migrant generations are related to changing frames of reference.

2.5 Sensitivity Analysis

To assess the robustness of our results, we conduct a threefold sensitivity analysis varying the definitions of first and second generation migrants, respectively. First, we split the potentially heterogeneous group of first generation into two subgroups; second, we include individuals who moved at very young ages to Germany in the group of second generation migrants; and third, we exclude individuals from the second generation who have only one parent with a migration background.

2.5.1 Heterogeneity of First Generation

One may argue that there exists some heterogeneity within the group of first generation migrants. For instance, the years since those individuals have migrated and the age at which migration took place vary considerably. The assumption that first generation migrants have their reference group still in their country of origin may be questionable for individuals who have lived in Germany for a very long time already or who have arrived at rather young ages. We therefore perform a sensitivity analysis in which we split the first generation into two groups. The first group of first generation migrants consists of individuals who have been in Germany for at least 15 years and who were 13 years or younger when they arrived ('established first generation migrants'). Since these individuals have been in Germany already for a relatively long time and arrived when they were rather young, we expect this group to be closer to the second generation. Their reference group may have shifted towards Germany. The second group of first generation migrants consists of the remaining individuals who either have been in Germany for less than 15 years or were at least 14 years old when they arrived ('recent first generation migrants').

Table A2.3 (Appendix A2.2) displays the results. Second generation migrants and established first generation migrants indeed appear rather similar in terms of their reser-

²³Goethals (1986) refers to Kelley (1952) in this context.

vation wages. The two groups both show similar coefficient estimates when compared to recent first generation migrants. This again confirms our hypothesis that reservation wages increase over the migrant generations, but also increase with time spent in Germany.

2.5.2 Definition of Second Generation: Age at Migration

In the second part of the sensitivity analysis, we vary the definition of the second generation. So far, the group of second generation migrants includes *a*) individuals who are German-born but do not have German citizenship, and *b*) individuals who are German-born but at least one of their parents is not German-born. We change this definition and also include individuals who moved themselves to Germany but at very young ages. More specifically, we include individuals who were at most six years old when they arrived.²⁴ This is the mandatory school entrance age in Germany, and thus those individuals would have gone through the entire school education in Germany (but not necessarily pre-school education). A recent contribution to the migration literature by Åslund et al. (2009) emphasizes the importance of the age at migration for the migrants' integration process. This change affects 166 individuals compared to our baseline definition: the group of second generation migrants increases by this number – at the cost of a corresponding decrease in the number of first generation migrants.

Table A2.4 (Appendix A2.2) displays the results of this analysis. The reservation wage gap between the two migrant generations increases both unconditional and conditional. However, we still find that the gap substantially increases once we control for differences in characteristics, and that it decreases when we additionally include German language skills. Therefore, the change in the definition of second generation migrants does not affect our main findings, although the effects increase in magnitude.

2.5.3 Definition of Second Generation: Exclusion of Generation 1.5

We implement an alternative change of our definition of second generation migrants in the third part of our sensitivity analysis. Our baseline definition of second generation migrants considers individuals who are German-born and have at least one foreign-born parent. In this section we restrict the second generation to individuals who have both parents with a migration background. We thus exclude the so-called 1.5 generation and argue that their family background may entail a rather strong attachment to the German culture as they have one German-born parent. We therefore expect the remaining second generation migrants to be more similar to the first generation – also in terms of their

²⁴Gang and Zimmermann (2000) also use this definition.

reservation wages. This narrower definition of the second generation reduces our sample to 1,004 migrants, among those are 228 second generation migrants.

Table A2.5 (Appendix A2.2) displays the results. The magnitude of the reservation wage gap between the two generations remains virtually the same compared to the baseline results, both conditional and unconditional. The gap also decreases similarly as before once we additionally include German language skills. However, the precision of our estimates generally decreases and it is therefore not possible to judge whether the results confirm our expectation of a reduced reservation wage gap for this narrower definition of second generation migrants. These findings are in line with the hypothesis that multiethnic marriages are an indicator of integration and, therefore, of changing frames of reference.

2.6 Conclusions

This chapter provides strong empirical evidence on the reservation wages of first and second generation migrants in Germany. Two extensions of the basic of job search model provide theoretical justifications for the hypothesis of increasing reservation wages from one migrant generation to the next. These extensions are: *a*) an unknown wage offer distribution, and *b*) reference standards. In both cases, changing frames of reference are identified as a channel through which the phenomenon of increasing reservation wages may arise. For instance, reservation wages become a function of the job seekers' beliefs if the assumption of a known wage offer distribution is relaxed in the basic job search model. We furthermore argue that such beliefs are formed via reference groups, and that these reference groups shift over migrant generations. While first generation migrants may still be relatively strongly attached to their country of origin, beliefs of second generation migrants should be more strongly based on German experiences.

Our empirical findings confirm the hypothesis of increasing reservation wages from one migrant generation to the next. In fact, we find an unconditional reservation wage gap of 2.3 percent between first and second generation migrants, meaning that the reservation wages of second generation migrants indeed exceed those of the first generation. This gap increases to about 3.5 percent and becomes statistically significant once differences in characteristics are taken into account. In as far as German language skills or self-evaluated returns to characteristics reflect a person's frames of reference, we moreover find empirical support that changing frames of reference explain at least part of this gap. First, if we additionally control for reference groups via German language skills, the reservation wage gap decreases to 2.6 percent and becomes statistically insignificant. Although language skills may be viewed as part of a person's human capital, these skills are endogenously determined and depend on the individual's social network and his or her social interactions

– and they thus reflect, at least in part, frames of reference. Second, a decomposition of the reservation wage gap reveals that the coefficient effect drives the unconditional reservation wage gap between the two migrant generations. This suggests that second generation migrants evaluate the returns to their characteristics, such as the expected returns to their education, higher than first generation migrants do. It is plausible that changing frames of reference are related to these different self-evaluations between the two migrant generations.

2.7 Appendix

A2.1 Job Search and Reference Standards

We incorporate reference standards into the basic model of job search by assuming that the absolute wage w_i as well as the reference standard $(w_i - r_i)$ contribute in a linear way to the utility of an employed individual i (Falk and Knell, 2004). The discounted expected utility V_e of an employed person can then be expressed as:

$$V_e(w_i) = \frac{1}{1+d} \left((1-\theta)w_i + \theta(w_i - r_i) + (1-q)V_e(w_i) + qV_u \right), \quad (\text{A2.1})$$

where the discount rate is equal to d , the parameter θ determines the extent to which comparisons play a role, jobs are separated exogenously with probability q per period, and V_u is the discounted expected utility of an unemployed person. Rearranging the terms of equation (A2.1), we arrive at:

$$dV_e(w_i) = (1-\theta)w_i + \theta(w_i - r_i) + q(V_u - V_e(w_i)). \quad (\text{A2.2})$$

If an unemployed individual receives a job offer, he or she accepts the offer if $V_e(w_i) > V_u$, and thus if:

$$V_e(w_i) - V_u = \frac{\left((1-\theta)w_i + \theta(w_i - r_i) \right) - dV_u}{d+q} > 0. \quad (\text{A2.3})$$

The reservation wage, i.e., the crucial wage above which an individual i is willing to accept job offers, is defined as a threshold value ξ_i . Accepting a job offer with wage ξ_i yields the same utility that the unemployed individual gets by remaining unemployed:

$$(1-\theta)\xi_i + \theta(\xi_i - r_i) = dV_u. \quad (\text{A2.4})$$

Note that the reference standard enters this expression. Alternatively, we can express the reservation wage as:

$$\xi_i = dV_u + \theta r_i. \quad (\text{A2.5})$$

The discounted expected income of an unemployed individual does not change compared to the basic model of job search (cf. Cahuc and Zylberberg, 2004):

$$dV_u = z + \lambda \int_{\xi_i}^{\infty} (V_e(w_i) - V_u) dH(w_i), \quad (\text{A2.6})$$

where z are the net benefits when unemployed (i.e., the difference between unemployment benefits b and search costs c), $H(w)$ is the wage offer distribution and λ the job offer arrival rate.

Hence, inserting equations (A2.3) and (A2.5) into the latter expression yields:

$$\xi_i = z + \frac{\lambda}{d+q} \int_{\xi_i}^{\infty} (w_i - \xi_i) dH(w_i) + \theta r_i. \quad (\text{A2.7})$$

A2.2 Additional Tables

Table A2.1: Reservation Wage (RW) and Reservation Wage Ratio (RWR) by Migration Status, Ethnic Self-Identification, Region and Gender

	Migrants		1st generation		2nd generation	
	RW	RWR	RW	RWR	RW	RWR
Men West	7.76	1.13	7.68	1.15	7.89	1.10
Women West	6.77	1.08	6.66	1.06	6.93	1.10
Men East	6.78	1.09	6.73	1.11	6.82	1.08
Women East	6.47	1.16	6.45	1.11	6.47	1.19
# Observations	1,342		776		566	

Source: IZA Evaluation Dataset S, own calculations.

Notes: Net hourly reservation wage (RW, in €). The reservation wage ratio (RWR) is defined as the reservation wage divided by the previous hourly wage from (self-)employment before entering unemployment. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

Table A2.2: Reservation Earnings (RE) and Reservation Earnings Ratio (RER) by Migration Status and Ethnic Self-Identification

	Migrants		Migrants (1st gen.)		Migrants (2nd gen.)	
	RE	RER	RE	RER	RE	RER
Total	1123.48	1.08	1120.86	1.08	1127.08	1.08
Assimilation	1108.10	1.06	1084.85	1.08	1142.02	1.04
Integration	1151.10	1.07	1137.77	1.04	1170.40	1.13
Marginalization	1098.61	1.10	1146.87	1.11	1060.10	1.10
Separation	1098.46	1.18	1161.89	1.25	968.06	1.03
# Observations	1,342		776		566	

Source: IZA Evaluation Dataset S, own calculations.

Notes: Net monthly reservation earnings (RE, in €). The reservation earnings ratio (RER) is defined as net monthly reservation earnings divided by the net monthly earnings from previous (self-)employment, i.e., before entering unemployment. First generation migrants are not German-born; second generation migrants are German-born, but not German citizens or at least one parent is not German-born.

Table A2.3: Sensitivity Analysis I (Heterogeneity of First Generation)

	(1)	(2)	(3)	(4)	(5)
Migration Background					
Recent 1st generation migrants ^a	reference (reference)	reference (reference)	reference (reference)	reference (reference)	reference (reference)
2nd generation migrants	0.037 (0.018)**	0.063 (0.019)***	0.062 (0.019)***	0.064 (0.02)***	0.055 (0.02)***
Established 1st generation migrants ^b	0.040 (0.023)*	0.062 (0.018)***	0.060 (0.019)***	0.062 (0.019)***	0.053 (0.02)***
Ethnic Identity					
Assimilation			reference (reference)		
Integration			-.003 (0.015)		
Marginalization			-.001 (0.021)		
Separation			-.019 (0.026)		
Ethnosizer					
Assimilation				reference (reference)	
Integration				0.005 (0.009)	
Marginalization				-.005 (0.010)	
Separation				0.001 (0.014)	
Language Skills					
German Language Skills					0.051 (0.046)
Additional Control Variables					
	No	Yes	Yes	Yes	Yes
R^2	0.004	0.387	0.387	0.387	0.387
# Observations	1,342	1,342	1,342	1,342	1,342

Source: IZA Evaluation Dataset S, own calculations.

Notes: Robust standard errors in parentheses. Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are male, age and age squared, married, partner's employment status, educational and vocational variables, duration of previous employment, logarithm of unemployment benefits, children in household, logarithm of previous earnings, dummies for country of origin, German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request.

^a First generation migrants who have been in Germany for less than 15 years and arrived in Germany at age 14 or older.

^b First generation migrants who have been in Germany for at least 15 years or arrived in Germany at age 13 or younger.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A2.4: Sensitivity Analysis II (Age at Migration)

	(1)	(2)	(3)	(4)	(5)
Migration Background					
1st generation migrants	reference (reference)	reference (reference)	reference (reference)	reference (reference)	reference (reference)
2nd generation migrants ^a	0.034 (0.016)**	0.062 (0.016)***	0.060 (0.016)***	0.062 (0.017)***	0.053 (0.016)***
Ethnic Identity					
Assimilation			reference (reference)		
Integration			-0.005 (0.015)		
Marginalization			-0.006 (0.02)		
Separation			-0.024 (0.025)		
Ethnosizer					
Assimilation				reference (reference)	
Integration				0.006 (0.009)	
Marginalization				-0.008 (0.01)	
Separation				-0.002 (0.013)	
Language Skills					
German Language Skills					0.063 (0.043)
Additional Control Variables					
	No	Yes	Yes	Yes	Yes
R^2	0.003	0.387	0.387	0.387	0.388
# Observations	1,342	1,342	1,342	1,342	1,342

Source: IZA Evaluation Dataset S, own calculations.

Notes: Robust standard errors in parentheses. Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are male, age and age squared, married, partner's employment status, educational and vocational variables, duration of previous employment, logarithm of unemployment benefits, children in household, logarithm of previous earnings, dummies for country of origin, German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request.

^a Second generation migrants include individuals who arrived in Germany at age six or younger.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A2.5: Sensitivity Analysis III (Generation 1.5)

	(1)	(2)	(3)	(4)	(5)
Migration Background					
1st generation migrants	reference (reference)	reference (reference)	reference (reference)	reference (reference)	reference (reference)
2nd generation migrants ^a	0.03 (0.021)	0.037 (0.023)*	0.037 (0.023)	0.038 (0.023)*	0.027 (0.023)
Ethnic Identity					
Assimilation			reference (reference)		
Integration			-.010 (0.017)		
Marginalization			-.010 (0.026)		
Separation			-.004 (0.027)		
Ethnosizer					
Assimilation				reference (reference)	
Integration				0.004 (0.01)	
Marginalization				-.016 (0.011)	
Separation				-.0005 (0.014)	
Language Skills					
German Language Skills					0.133 (0.045)***
Additional Control Variables					
	No	Yes	Yes	Yes	Yes
R^2	0.002	0.397	0.397	0.399	0.402
# Observations	1,004	1,004	1,004	1,004	1,004

Source: IZA Evaluation Dataset S, own calculations.

Notes: Robust standard errors in parentheses. Dependent variable: (logarithm of) net hourly reservation wages. Additional control variables are male, age and age squared, married, partner's employment status, educational and vocational variables, duration of previous employment, logarithm of unemployment benefits, children in household, logarithm of previous earnings, dummies for country of origin, German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request.

^a Second generation migrants exclude individuals who have only one parent with a migration background ("generation 1.5").

*** significant at 1%; ** significant at 5%; * significant at 10%.

Chapter 3

Economic Preferences and Attitudes of Unemployed Natives and Migrants*

3.1 Introduction

The intensity of the long-standing discussion about migrants' integration into society, and in particular into the labor market, has noticeably increased. Based on the observation that migrants experience higher unemployment rates, lower employment rates and lower earnings when compared to natives in many countries (e.g., Kahanec and Zaiceva, 2009), the debate centers around the question how those gaps can be explained and reduced.

The group of second generation migrants becomes more and more of a concern. Over the course of the past century, many countries have accumulated sizeable stocks of migrants and their descendants. Although one would expect differences in economic outcomes between migrants and natives to decrease from one migrant generation to the next, this is generally not the case (see Algan et al., 2010, for evidence on France, Germany and the UK). The persistence of native-migrant gaps in economic outcomes is puzzling – in spite of the potential explanations discussed in the literature¹ – and it is a serious concern. Successfully addressing this issue represents one of the major challenges many economies are currently facing. Germany, for instance, will sooner rather than later be faced with the

*This chapter is based on the paper *Economic Preferences and Attitudes of the Unemployed: Are Natives and Second Generation Migrants Alike?* joint with Amelie F. Constant, Ulf Rinne and Klaus F. Zimmermann (Constant et al., 2011). This research was partly financed by the German Research Foundation (DFG).

¹Potential explanations are, e.g., based on ethnic or institutional discrimination (Kaas and Manger, 2011; Kogan, 2007), on differences in ethnic or human capital (Kalter and Granato, 2007), and on concepts of ethnic identity (Heath et al., 2008; Blackaby et al., 2005; Constant and Zimmermann, 2009).

consequences of demographic change. Shortages of skilled workers are already reported by an increasing number of industries. Therefore, qualifying and integrating migrants in general and the second generation migrants in particular becomes even more important.

In this chapter we focus on entrants into unemployment in Germany and compare natives and second generation migrants in terms of their labor market reintegration. We follow this approach for two main reasons. The first reason is that, over time, employment biographies have become more unstable and more fragmented, while the German labor market has become more flexible (Eichhorst et al., 2010). Job search, whether successful or not, is of critical importance. Short periods of unemployment incurred while transitioning from one job to the next are nowadays more the rule than the exception. Research on unemployment duration and frictions in the labor market has become even more pertinent in light of the recent economic crisis. Second, Germany represents a prime example of a country with a sizeable stock of second generation migrants and persistent gaps in economic outcomes between natives and second generation migrants. In 2007, almost 19 percent of the German population (or 15.4 million individuals) had a migration background (Rühl, 2009). Among them, about one third were born in Germany, and are thus second generation migrants. Today's second generation migrants are mostly the offspring of the so-called guest workers.² In light of its post-war economic boom, Germany's migration policy had focused on the recruitment of low-skilled foreign labor, mainly from Southern Europe, the guest workers. By 1973, however, and with the economic crisis, the influx of guest workers from Southern Europe had ceased. The persistent and substantial gaps between natives and the first or the second generation migrants in Germany are manifested in a number of economic outcomes, such as unemployment rates. Since the early 1970s, the unemployment rates of natives and migrants have been drifting apart. In 2008, the average unemployment rate of migrants was more than twice as high as that of natives (18.1 percent vs. 8.0 percent, Statistik der Bundesagentur für Arbeit, 2009). This is partially due to differences in job search behavior. For instance, Uhlendorff and Zimmermann (2012) show that unemployed migrants do not find less stable positions than natives, but migrants need more time to find jobs, where first and second generation Turks are identified as the major problem group. Constant et al. (2011) also analyze the labor market reintegration of migrants in Germany in comparison to natives. They find that "separated" migrants need more time to find employment.³ This finding seems to be related to the migrants' exerted search effort and to their reservation wage levels.

²Other large groups of migrants in Germany are ethnic Germans from Eastern Europe, recent immigrants from the EU and accession countries, and humanitarian migrants.

³Separated migrants have a strong ethnic identity of the home country and a weak ethnic attachment to the host country.

We analyze the economic preferences and attitudes of unemployed second generation migrants in Germany, and we compare them with unemployed native Germans with regard to risk attitudes, time preferences, trust and reciprocity. These are traits that lately have garnered the attention of economists. The recent economic literature highlights the importance of “non-cognitive” skills (see Heckman and Rubinstein, 2001, for an early contribution on this topic and Borghans et al., 2008, for a recent overview). More importantly, non-cognitive skills can influence economic outcomes above and beyond factors such as human capital or household composition. However, while the latter determinants are frequently analyzed and relatively robust findings have been established, research on preferences and attitudes – and more generally on personality traits – and their influence on economic outcomes has started only recently. Further research is needed in this area: for instance, if there are non-cognitive differences between natives and second generation migrants who become unemployed, one can (and should) take such differences into account – e.g., when designing active and passive labor market policies. A better understanding of these factors can certainly help improve the labor market integration of second generation migrants. Recent contributions that explore the link between personality traits, unemployment and job search include, e.g., Caliendo et al. (2010) and McGee (2010), who investigate the influence of locus of control, as well as Uysal and Pohlmeier (2011), who analyze the role of the “Big Five” taxonomy to classify personality traits.

Our research question is whether and how unemployed second generation migrants differ from unemployed natives in terms of economic preferences and attitudes. If such differences exist, they may explain at least part of the persistent native-migrant gap in economic outcomes. We base our analysis on rich survey data of an inflow sample into unemployment from the *IZA Evaluation Dataset S* (Caliendo, Falk et al., 2011).⁴ We show that there are indeed differences between the two groups with respect to these characteristics. Moreover, non-cognitive differences appear to matter in terms of job search and labor market reintegration. Specifically, we first find that unemployed second generation migrants have a significantly higher willingness to take risks and that they are less likely to have a low amount of positive reciprocity when compared to natives. Second, we also find a significantly lower employment probability two months after unemployment entry for individuals with a high willingness to take risks. However, the significantly lower employment probability of second generation migrants remains rather stable across specifications.

⁴At the time of publication of the article this chapter is based on, no strict differentiation in the name and the data of the survey and administrative part of the *IZA Evaluation Dataset* was officially made yet. For clarification, the analysis in this chapter is based on the survey part including only the geographical information from the administrative data. This is only the case for this chapter among the chapters which are based on the *IZA Evaluation Dataset*.

Our contribution to the literature is that we provide novel and direct evidence on the relationship between economic preferences, attitudes and labor market reintegration of natives and second generation migrants. In this chapter we only consider early exits from unemployment. These exits are very important because they prevent individuals from becoming long-term unemployed. It is widely accepted that longer spells of unemployment invoke a number of undesired consequences such as depreciation of skills, qualifications and capabilities (see, e.g., Edin and Gustavsson, 2008), and a number of dire ramifications such as a thin labor market with fewer available jobs which, in turn, perpetuates a downward spiral of continuing unemployment (Pissarides, 1992), as well as stigmatization and unhappiness.

This chapter is organized as follows. Section 3.2 discusses the literature on the relationship between preferences, attitudes and economic outcomes. After a description of our data and the sample in Section 3.3, empirical evidence on economic preferences and attitudes of unemployed second generation migrants in comparison to natives is presented in Section 3.4. Section 3.5 analyzes the relationship between non-cognitive characteristics and labor market reintegration. Finally, Section 3.6 concludes.

3.2 Preferences, Attitudes and Economic Outcomes

In this chapter we compare unemployed natives and unemployed second generation migrants with respect to four non-cognitive traits, namely *a*) risk attitudes, *b*) time preferences, *c*) trust and *d*) reciprocity. We thus study the role of these four traits in determining economic outcomes in the labor market, especially in the job search process. We also discuss potential differences in the distribution of these characteristics between natives and migrants (and second generation migrants, if applicable) and briefly review the existing empirical evidence.

In this section, we concentrate on supply side effects in the job search process. This does not imply that we rule out any demand side effects that could very well be simultaneously present. For instance, if employers prefer employees with certain inclinations and attitudes, this would affect the job offer arrival rate or the wage offer distribution. The presence of such effects would, further, also be reflected in the job seekers' search intensity and reservation wages.

3.2.1 Risk Attitudes

Almost every economic decision involves risk. Acting in an environment of uncertainty, the willingness to take risks influences the decisions which are taken as well as the resulting

economic outcomes. Examples include investment decisions (stocks, home ownership) or decisions about educational attainment.

Job search is also a risky activity. In the standard model of job search (McCall, 1970; Mortensen, 1970), a job seeker decides at a given point in time about whether to accept a job offer. He or she thus faces a trade-off between the current wage that is offered and the expected future gains of continued search. While this decision is made under uncertainty, the standard model assumes risk neutral individuals. If this assumption is relaxed (see, e.g., Pissarides, 1974), it can be shown that more risk averse individuals will terminate the job search at an earlier stage because they are less selective and will thus spend less time in unemployment – at the cost of a lower expected wage conditional on employment. The more risk averse a given job seeker is, the less value he or she attaches to expected, yet uncertain, future gains of search. Consequently, a higher risk aversion leads to a lower reservation wage. Empirical evidence on the latter relationship can be found in Pannenberg (2010), who shows that risk aversion and reservation wages are negatively correlated.

Migration is a risky activity, too. The prior is that individuals who are relatively more willing to take risks are more likely to migrate. A recent study on intra-German mobility (Jaeger et al., 2010) seems to concur. However, there is no clear-cut theoretical predictions with respect to risk attitudes of international migrants. On the one hand, standard migration models predict a lower risk aversion for migrants compared to the native population (Heitmueller, 2005). On the other hand, in as far as risk aversion is correlated with cognitive ability,⁵ self-selection models of migration (Borjas, 1987; Chiswick, 1978) predict a differentiated distribution of risk aversion among migrants: high-skilled migrants are more willing to take risks, while low-skilled migrants are more risk averse than natives. Depending on the distribution of the cognitive abilities of migrants and of their risk attitudes in both the host and home country, the average migrant may be more or less willing to take risks. Finally, the distribution of risk attitudes in the host and home country may be fundamentally different, e.g., because of cultural differences.

It is therefore an empirical question whether, and to what extent, the risk attitudes of migrants and natives differ. Bonin et al. (2009) use a representative sample of the population in Germany and show that first generation migrants are more risk averse than native Germans. The authors provide a few possible explanations of this finding. First, the migration decision of guest workers involved a rather low amount of risk, since they were given a job immediately upon arrival in Germany. Second, migrants with a higher willingness to take risks might have already returned to their country of origin, or may have

⁵Dohmen et al. (2010) find that risk aversion systematically varies with cognitive ability. Individuals with higher cognitive ability are significantly more willing to take risks.

migrated to other countries. Third, migrants in Germany might in general be rather low-skilled and thus relatively more risk averse than the average migrant in other destination countries. However, Bonin et al. (2009) also find that the difference between natives and migrants disappears in the second generation migrants. In another study, Bonin et al. (2012) find that when migrants in Germany adapt to the attitudes, culture and behavior of native Germans the native-migrant gap in risk proclivity closes, but when migrants remain committed to their home country's culture the gap is preserved. As risk attitudes are behaviorally relevant, and vary by ethnic origin, these results could explain differences in the economic assimilation of immigrants.

3.2.2 Time Preferences

Economic decisions are frequently characterized by immediate costs and delayed benefits. An example is saving for retirement. Whenever such a scenario arises, time preferences are relevant. The degree to which people discount the future obviously matters. In this context, a growing literature has challenged the conventional view; hyperbolic discounting turns out to be an important empirical phenomenon. In this framework, agents are allowed to discount time-inconsistently (see, e.g., Laibson, 1997). Such behavior also seems to matter for fertility decisions (Wrede, 2011).

Time preferences are a critical factor in the job search process. Searching for a job is an unpleasant activity, where costs arise immediately, and benefits materialize only in the future. However, the effect of impatience on exit rates from unemployment is theoretically unclear: more impatient job seekers search less intensively, but they also set lower reservation wages (DellaVigna and Paserman, 2005). It is thus an empirical question which of the two opposing effects dominates. DellaVigna and Paserman (2005) and Paserman (2008) both support the model of hyperbolic time preferences. Hyperbolic job seekers are particularly sensitive to the direct cost of searching and devote (too) little search effort. The latter study, however, detects heterogeneity in this regard for US job seekers; whereas the degree of hyperbolic discounting for low and medium wage workers is substantial, high wage workers exhibit only a moderate degree of short-run impatience.

The decision to migrate also entails short-run costs and long-run benefits, and therefore time preferences matter in this regard. The typical expectation is that more patient individuals are more likely to migrate, other things equal – at least from the source country's perspective. From the destination country's perspective, similar arguments hold as in the case of migration and risk attitudes. For instance, if time preferences are correlated with

cognitive abilities,⁶ self-selection models of migration predict a differentiated distribution of time preferences among migrants. Moreover, the distribution of time preferences could potentially be very different in the source and destination country.

Gibson and McKenzie (2011) examine the source country's perspective, and more precisely three Pacific countries (Tonga, Papua New Guinea and New Zealand). They show that a high-skilled individual's decision to migrate is strongly associated with the degree of patience. More patient individuals are significantly more likely to migrate.⁷

3.2.3 Trust

Interactions among humans usually involve, and are based on, trust. From an individual's perspective, trust captures something fundamental about the way that other people are approached. Interactions often involve vulnerability to betrayal. Trust is an important factor whether an individual enters those situations at all, and how he or she behaves in them (Dohmen et al., 2012). More specifically, economic transactions are typically characterized by incomplete contracts, and thus trust plays a key role in this context.

The literature generally agrees that informal job search channels are popular and also effective methods (Granovetter, 1973, 1995; Holzer, 1988; Blau and Robins, 1990; Montgomery, 1991). Such methods have the advantage of being relatively less costly and can provide comparatively reliable information about jobs. During job search, both the access to informal channels as well as the actual use of these channels are central to future employment success. Informal search involves to some extent an implicit and incomplete contract, and it draws on the individuals' network or social capital. Defining social capital as the "density of trust existing within a group" (Paldam and Svendsen, 2000), trusting behavior positively influences the size as well as the quality of a person's social network.⁸ Finally, informal search also relies on trust between the involved parties. The job seeker has to trust his or her social contact – otherwise, he or she would not ask this friend or relative for assistance in the first place.

Although typically it is the individual who migrates from one country to another, recent migration research takes into account the importance of the family and household as the relevant decision-making unit (see, e.g., Massey et al., 2005; Rabe, 2011). The family often supports the migrant around the time of his or her migration. In return, the migrant sends remittances back home to them. This implicit contract involves an informal system

⁶Dohmen et al. (2010) find that time preferences are systematically correlated with cognitive ability. Individuals with higher cognitive ability are significantly more patient in their experiment.

⁷Gibson and McKenzie (2011) measure patience with a binary variable. It indicates whether individuals prefer \$1,100 in one year compared to \$1,000 today.

⁸See, e.g., Caliendo, Schmidl et al. (2011) for empirical evidence on the relationship between network size and the use of job search methods.

of exchange, and it is obviously based to a large extent on trust. Therefore – at least in such circumstances – trust can be an important determinant of migration. However, the question whether natives or migrants exhibit a higher degree of trust is uncertain. Most likely, the distribution of trust in the host country and in the country of origin are very different. In fact, Butler et al. (2009) document systematic differences in the distribution of trust across 26 European countries.

Empirical evidence on potential differences between natives and migrants in the degree of trust is scarce. An exception is Hooghe et al. (2009), who find in a sample of 20 European countries that individuals who were born abroad are significantly less trustful than individuals who were born in the respective country of residence. Dinesen and Hooghe (2010) find that second generation migrants exhibit similar levels of trust to natives than the first generation do. A process of adaptation or assimilation thus seems to take place over the migrant generations.

3.2.4 Reciprocity

Many people deviate from purely self-interested behavior in a reciprocal manner (Fehr and Gächter, 2000). This has two implications: *a*) individuals may react in response to nice behavior much nicer than standard models would predict (positive reciprocity), and *b*) their response to unkind actions may be retaliation or punishment (negative reciprocity). This, of course, also matters for economic outcomes. Examples include the provision of public goods or, more generally, how social norms are established and maintained.

Reciprocity also influences labor market outcomes. Dohmen et al. (2009) find, among other things, that positively reciprocal individuals are significantly less likely to be unemployed. In contrast, negatively reciprocal individuals are significantly more likely to be unemployed. Those findings can be explained as follows: whereas positive reciprocity may help to establish successful long-term employment relationships, negative reciprocity may lead to an early termination of such relationships.

When comparing natives' and migrants' degree of reciprocity, there are no clear theoretical predictions and empirical evidence is scant. Cox and Orman (2010), however, provide experimental evidence. The authors highlight the interaction of trust and reciprocity in their study. They show that people are in general reciprocal, and that this may lead to a self-fulfilling prophecy for migrants. As migrants are trusted less than natives (even by other migrants), they react with (negative) reciprocal behavior in response. Therefore, they indeed appear to be less trustworthy. The lack of trust may thus hinder migrants' assimilation or integration with the host country's society.

3.3 Data

We use data from the *IZA Evaluation Dataset S* (Caliendo, Falk et al., 2011) and concentrate on one of its two pillars. Namely, a survey of almost 18,000 individuals who entered unemployment between June 2007 and May 2008. Our analysis is based on the first wave of the survey, which took place about two months after unemployment entry.⁹ This has the advantage that individual characteristics, attitudes and preferences are unlikely to have changed in response to unemployment entry. Another advantage of our data is the specific focus on entrants into unemployment. The *IZA Evaluation Dataset S* is thus very appropriate for studying the processes of job search and labor market reintegration. Similar household surveys are generally designed to be representative of the whole population (e.g., the *German Socio-Economic Panel Study, SOEP*), which has an important drawback when studying unemployed individuals because sample sizes decrease substantially.

Our data address a large variety of topics. The questions cover many important individual characteristics, which are rarely available for economic research but have been shown to influence economic outcomes nonetheless. Among these characteristics are the four economic preferences and attitudes that this chapter focuses on. These characteristics have been elicited for individuals who were born in Germany, in order to keep sample attrition tractable.¹⁰ This explains why we compare the second generation migrants with natives and not the first generation migrants. Moreover, the questions for these characteristics were only included for individuals who entered unemployment in June 2007, October 2007 and February 2008. This reduces the size of our initial sample to fewer than 4,000 individuals.

For our analysis, we select individuals who are between 18 and 55 years old at the time they enter unemployment. We exclude individuals with missing information on important characteristics. After applying these criteria, our final sample consists of 2,875 individuals. Among those there are 2,609 natives and 266 second generation migrants. We define second generation migrants to include *a*) individuals who are German-born but do not have German citizenship, and *b*) individuals who are German-born but at least one of their parents is not German-born. Compared to the entire German population, second generation migrants are thus slightly over-represented in our sample of entrants into unemployment.¹¹

⁹The survey consists of two additional rounds of interviews. Respondents are interviewed again one year and three years after unemployment entry, respectively.

¹⁰The entry cohorts into unemployment which are analyzed in our chapter have been surveyed in an (additional) intermediate wave of interviews (Caliendo, Falk et al., 2011). Sample attrition is therefore of particular concern for this group.

¹¹The share of second generation migrants in the German population is about 7 percent (Rühl, 2009), whereas this share amounts to about 9 percent in our sample.

Table 3.1: Descriptive Statistics I (Selected Characteristics)

	Natives	2nd gen.	t-test
Sociodemographic characteristics			
Age (in years)	35.407 (10.524)	32.500 (9.974)	4.311***
Male	0.522 (0.500)	0.500 (0.501)	0.697
German citizenship	1.000 (0.000)	0.759 (0.428)	28.741***
East Germany	0.323 (0.468)	0.150 (0.358)	5.839***
Married	0.420 (0.494)	0.372 (0.484)	1.498
Educational attainment			
No formal degree	0.010 (0.099)	0.015 (0.122)	-0.775
Secondary school (9 yrs.) (<i>Hauptschule</i>)	0.295 (0.456)	0.368 (0.483)	-2.496**
Secondary school (10 yrs.) (<i>Realschule</i>)	0.423 (0.494)	0.331 (0.471)	2.915***
Technical college entrance qualification (11-12 yrs.) (<i>Fachabitur, Fachhochschulreife</i>)	0.049 (0.217)	0.056 (0.231)	-0.495
General qualification for university entrance (12-13 yrs.) (<i>Abitur, Allgemeine Hochschulreife</i>)	0.223 (0.416)	0.229 (0.421)	-0.247
Vocational attainment			
No formal degree	0.093 (0.290)	0.177 (0.382)	-4.350***
Apprenticeship (dual system)	0.614 (0.487)	0.545 (0.499)	2.207**
Specialized vocational school	0.143 (0.350)	0.113 (0.317)	1.335
University, technical college	0.150 (0.357)	0.165 (0.372)	-0.657
Previous employment			
Net hourly wage (in euros)	6.661 (4.389)	6.913 (4.378)	-0.893
Duration (in months)	42.517 (68.194)	40.940 (62.746)	0.362
# Observations	2,609	266	

Source: IZA Evaluation Dataset S, own calculations.

Note: Sample of individuals who were born in Germany. Second generation migrants either do not have German citizenship or at least one of their parents is not German-born. Standard deviations in parentheses.

Mean difference: *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 3.1 displays descriptive statistics of our sample of entrants into unemployment, separately for natives and second generation migrants. Second generation migrants are significantly younger than natives – on average about three years. The gender distribution is similar: in both groups, slightly less than half of the sample are females. Obviously, every native in our sample has German citizenship, but this is also the case for the majority of second generation migrants. Only about one in four individuals in this group has citizenship other than German. This can be explained by the fact that our sample, by construction, only includes individuals who were born in Germany.¹² The share of natives living in East Germany is significantly larger than the fraction of second generation migrants in this part of Germany. A more detailed assessment of the individuals' migration background reveals that the majority of second generation migrants in West Germany has a migration background. While the migration background of the West German migrants can be traced back to the so-called guest worker countries, the origins of the second generation migrants in East Germany are mainly in Central and Eastern European countries.¹³ The share of married individuals is similar for both natives and second generation migrants.

With respect to the educational and vocational attainment of natives and second generation migrants, two differences stand out. First, the fraction of second generation migrants with a degree from a 9-year secondary school (*Hauptschule*) is significantly larger than the fraction of natives. In contrast, a significantly larger proportion of natives have a 10-year secondary school degree (*Realschule*) than the second generation migrants. Second, the share of second generation migrants without a formal vocational degree is substantial and significantly larger than that of natives. Almost one in five migrants has no such degree, while it is only about one in ten natives with no degree. On the other hand, the fraction of natives with a vocational degree obtained through the apprenticeship system is significantly larger when compared to second generation migrants. These two differences with respect to the educational and vocational attainment are most likely related. It appears that completing *Hauptschule* often does not provide the necessary prerequisites to obtain

¹²The German citizenship law was reformed in 2000. Before the reform, primarily the principle of descent (*ius sanguinis*) and naturalization after at least 15 years of residence were the possibilities of obtaining German citizenship. After the reform also the law of soil (*ius soli*) is available to immigrant children born in Germany, and years of residence required to apply for naturalization were reduced to eight (with exceptions, such as three years for those with a German spouse). For a more detailed description and analysis of the naturalization process in Germany, see Zimmermann et al. (2009).

¹³We assign the origin of second generation migrants through their country of citizenship (if they do not have German citizenship) or through their parents' country of birth. If both parents were born abroad but in different countries, we take the father's country of birth (Card et al., 2000; Jonsson, 2007). Guest worker countries include Turkey, former Yugoslavia, Italy, Spain and Greece. Central and Eastern European countries include Poland, the former USSR, the former CSSR and Romania.

an apprenticeship position or, more generally, to enter vocational education.¹⁴

These differences in the human capital endowment between natives and second generation migrants are, however, not reflected in characteristics of the previous employment position. Prior to entering unemployment both groups were earning similar hourly wages. Also the duration of previous employment differs, on average, by only about one month between the two groups.

3.4 Are Natives and Second Generation Migrants Alike?

Unemployed natives differ from unemployed second generation migrants mainly with regard to their average age, place of residence, and human capital endowment. These differences can be relevant when designing appropriate policies and measures that aim to provide a quick return into employment. Besides these characteristics, there are also a number of preferences and attitudes which appear to be relevant in this context. Unemployed natives and unemployed second generation migrants might very well differ in this respect.

We thus analyze four economic preferences and attitudes which are available in our data. They are obtained from the *IZA Evaluation Dataset S* and based on the following questions (translated from German):¹⁵

- Risk attitudes: *How do you estimate yourself personally: are you generally prepared to take risks or do you try to avoid risks?*
- Time preferences: *How do you regard yourself as an individual: are you someone who generally gets impatient or someone who always has a lot of patience?*
- Trust: *How do you regard yourself as an individual: are you someone who generally trusts others or are you someone who does not trust others?*
- Reciprocity: *To what extent does the following statement apply to you? I am prepared to accept costs to help someone who has helped me previously.*

Responses to the questions on risk attitudes, time preferences and trust are measured on an 11 point scale, which ranges in each case from 0 to 10. An answer of 0 indicates complete unwillingness to take risks, complete impatience, and complete unwillingness to trust others, respectively. An answer of 10 indicates complete willingness to take risks, complete patience, and complete willingness to trust others, respectively. The wording of the questions in the *IZA Evaluation Dataset S* is very similar to questions in other large and representative surveys (e.g., *European Social Survey*, *ESS*, or *German Socio-Economic*

¹⁴See, e.g., Worbs (2003) for more details. She also stresses the importance of the increasing shortage of apprenticeship positions, which particularly affects second generation migrants.

¹⁵The interviews were generally conducted in German, but depending on the language skills of the interviewee also in Turkish and Russian.

Panel, SOEP), and at least some of the questions have been experimentally validated.¹⁶ In the following, we use three alternative measures for each of the three characteristics: *a*) actual responses on the 11 point scale (“raw index”), *b*) a binary indicator for a value of 6 or higher on the 11 point scale (“binary indicator”), and *c*) a classification into three categories, where values of 3 and lower compose the lowest category, values of 4, 5 and 6 the intermediate category, and values of 7 and higher the highest category on the 11 point scale (“three categories”).¹⁷

The response to the question regarding reciprocity is measured on a 7 point scale, ranging from 1 to 7. An answer of 1 indicates that the statement does not apply at all, and 7 means that the statement applies perfectly. Importantly, the question only addresses positive reciprocity, i.e. whether someone reacts in response to nice behavior with nice actions. Also note that the statement explicitly addresses whether the respondent would incur costs to be positive reciprocal.¹⁸ Again, we use three alternatives measures: *a*) actual responses on the 7 point scale (“raw index”), *b*) a binary indicator for a value of 5 or higher on the 7 point scale (“binary indicator”), and *c*) a classification into three categories, where values of 3 and lower compose the lowest category, values of 4 and 5 the intermediate category, and values of 6 and 7 the highest category on the 7 point scale (“three categories”).

Figure 3.1 illustrates the distributions of the four preferences and attitudes in our sample. Each characteristic is measured by the raw index. We juxtapose the respective distribution among natives to that among second generation migrants. The distributions of risk attitudes look fairly similar, at least at first glance. In both groups, about one in four responses takes the value of 5, indicating an intermediate willingness to take risks. Extreme values at both ends of the distribution are rarely picked by the respondents, i.e. in both distributions the values 0 and 1 as well as 9 and 10 have very little mass. However, it appears to be the case that there is more mass at higher values of the distribution of risk attitudes among second generation migrants. In particular, the value of 8 is picked more frequently.

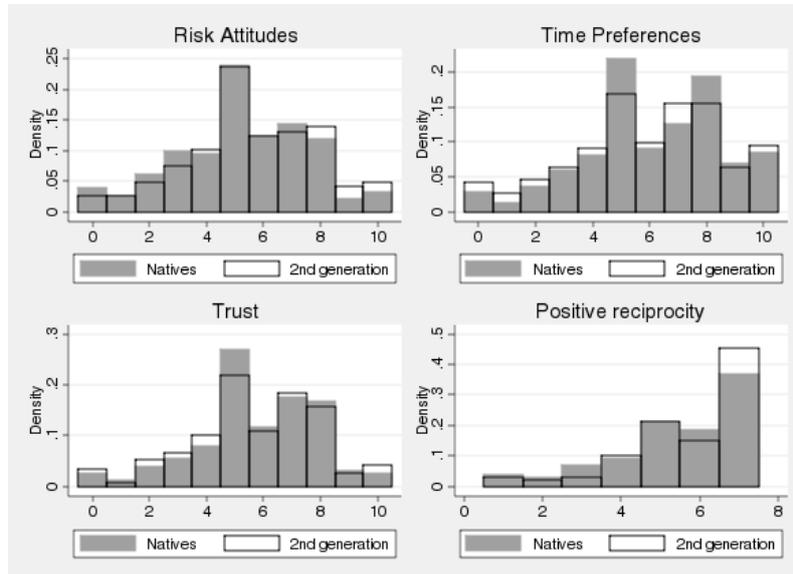
When comparing the distributions of time preferences, they appear similar for values lower than 5. In both groups, the value of 2 is chosen the least. Natives have a peak at 5 and 8, whereas the migrants’ responses are more smoothly distributed in the higher segments. The values 5, 7 and 8 are rather frequently selected. The distributions for trust look relatively similar to the distributions of time preferences. Natives have a peak

¹⁶The question about time preferences is the same as in the *SOEP*. See, e.g., Dohmen et al. (2011) for an experimental validation of a similar risk measure included in the *SOEP*.

¹⁷See, e.g., Jaeger et al. (2010), who also use this binary indicator for risk attitudes based on the same 11 point scale. Robustness checks can be found in Dohmen et al. (2011).

¹⁸The statement is very similar to statement (6) in Dohmen et al. (2009), which is from the *SOEP*.

Figure 3.1: Preferences and Attitudes of Natives and Second Generation Migrants



Source: IZA Evaluation Dataset S, own calculations.

Note: Sample of individuals who were born in Germany. Second generation migrants either do not have German citizenship or at least one of their parents is not German-born. Risk attitudes, time preferences and trust are measured on an 11 point scale (from 0 to 10); reciprocity is measured on a 7 point scale (from 1 to 7).

at the value of 5. This is also the value that the second generation migrants pick most frequently, but not as often as natives. Similar to risk attitudes, extreme values such as 1 and 2 rarely belong to the responses of the two groups. In contrast to the first preferences and attitudes, positive reciprocity is measured on a 7 point scale. Both distributions have more mass at higher values. However, second generation migrants respond more frequently with the highest value of 7 and less frequently with the lowest three values, compared to native Germans.

Table 3.2 summarizes information about all three measures of the four preferences and attitudes. It displays the means for the raw index, the binary indicator and the three categories (in each case separately for natives and second generation migrants). Starting with risk attitudes, the raw index and the low risk category indicate that natives are significantly more risk averse than second generation migrants. The binary indicator also points to this result. However, the difference is not significant. This result seems somewhat surprising, taking into account that second generation migrants are relatively less educated than natives. Therefore, it is at odds with the hypothesis that higher educated individuals are more willing to take risks.

3.4 Are Natives and Second Generation Migrants Alike?

Table 3.2: Descriptive Statistics II (Economic Preferences and Attitudes)

	Natives	2nd gen.	t-test
Risk attitudes			
Raw index	5.238 (2.304)	5.579 (2.322)	-2.295**
Binary indicator	0.439 (0.496)	0.485 (0.501)	-1.430
Three categories:			
Low risk	0.226 (0.418)	0.177 (0.382)	1.837*
Intermediate risk	0.458 (0.498)	0.462 (0.500)	-0.125
High risk	0.316 (0.465)	0.361 (0.481)	-1.501
Time preferences			
Raw index	6.117 (2.426)	5.929 (2.616)	1.195
Binary indicator	0.564 (0.496)	0.564 (0.497)	-0.003
Three categories:			
Impatient	0.138 (0.345)	0.177 (0.382)	-1.744*
Intermediate time preferences	0.389 (0.488)	0.357 (0.480)	1.018
Patient	0.473 (0.499)	0.466 (0.500)	0.224
Trust			
Raw index	5.746 (2.106)	5.669 (2.259)	0.562
Binary indicator	0.518 (0.500)	0.519 (0.501)	-0.018
Three categories:			
Low trust	0.134 (0.340)	0.162 (0.369)	-1.263
Intermediate trust	0.465 (0.499)	0.429 (0.496)	1.145
High trust	0.401 (0.490)	0.410 (0.493)	-0.281
Positive reciprocity			
Raw index	5.452 (1.651)	5.703 (1.541)	-2.380**
Binary indicator	0.769 (0.421)	0.816 (0.388)	-1.728*
Three categories:			
Low positive reciprocity	0.140 (0.347)	0.083 (0.276)	2.591***
Intermediate positive reciprocity	0.302 (0.459)	0.316 (0.466)	-0.452
High positive reciprocity	0.558 (0.497)	0.602 (0.491)	-1.360
# Observations	2,609	266	

Source: IZA Evaluation Dataset S, own calculations.

Note: Sample of individuals who were born in Germany. Second generation migrants either do not have German citizenship or at least one of their parents is not German-born. Risk attitudes, time preferences and trust are measured on an 11 point scale (from 0 to 10); reciprocity is measured on a 7 point scale (from 1 to 7). The *raw index* displays those scales; the *binary indicator* indicates a value of 6 or higher (11 point scale) or a value of 5 or higher (7 point scale); and the *three categories* reflect values of 3 and lower (3 and lower) for the lowest category, values of 4, 5 and 6 (4 and 5) for the intermediate category, and values of 7 and higher (6 and 7) for highest category on the 11 point scale (7 point scale). Standard deviations in parentheses. Mean difference: *** significant at 1%; ** significant at 5%; * significant at 10%.

With respect to time preferences, there is a significant difference between natives and second generation migrants in the lowest of the three categories. In the latter group, a significantly larger fraction is relatively impatient. This finding is also reflected in most other numbers, although those differences are not significant. The numbers for trust display no significant differences between the distributions of the two groups. None of the two groups shows a distinct tendency regarding their level of trust when compared to

the other group. Finally, the three measures for positive reciprocity show clear differences between natives and second generation migrants. They indicate that second generation migrants have a significantly larger extent of positive reciprocity than natives. When differentiating among the three categories of positive reciprocity, there is a significant difference in the category indicating a low amount of positive reciprocity. A significantly larger share of natives has a relatively low amount of positive reciprocity when compared to second generation migrants in our sample.

3.5 Do Differences Make a Difference?

To analyze the differences in preferences and attitudes between natives and second generation migrants in more detail and to assess their impact on economic outcomes, we perform a multivariate regression analysis in which we control for differences in other observable characteristics. The outcome variable in this analysis is being (self-)employed at the first interview, which took place on average two months after unemployment entry.¹⁹

One issue deserves further attention before we continue with our analysis. Our sample of entrants into unemployment is subject to a dynamic endogenous selection process. This may have consequences for the economic attitudes and preferences at the core of our interest, which may be affected by the incidence of unemployment as well as the unemployment duration. It thus implies a potential problem of reverse causality, as individuals may adjust preferences and attitudes, e.g., in response to unsuccessful job search. However, we are confident that in our case, such effects are small – if present at all. First, interviews were conducted very shortly after unemployment entry. As we expect preferences and attitudes to be stable, at least in the short-run, we do not expect substantial adjustments in this regard over a period of two months. Second, all individuals were interviewed at a similar point in time relative to unemployment entry. Hence, any potential adjustments should be similarly present for all individuals in our data.²⁰

Table 3.3 summarizes the status at the first interview for natives and second generation migrants in our sample. Our subsequent outcome variable differs significantly between the two groups. A larger proportion of natives than second generation migrants had already found employment when the first interview took place. No significant difference is found for subsidized (self-)employment. Second generation migrants are significantly more likely to be unemployed. Furthermore, a significantly larger share of second generation migrants is enrolled in education. This might be related to the fact that they are, on average,

¹⁹When we use an indicator for regular employment at the first interview as dependent variable (i.e. not additionally including self-employment), results remain virtually the same.

²⁰Caliendo, Schmidl et al. (2011) argue along similar lines when they discuss the issue of potential reverse causality with respect to social networks of the unemployed.

younger than natives. Similar shares of individuals in both groups either participated in active labor market policy (ALMP), were in an apprenticeship, or were inactive when the first interview took place.

Table 3.3: Descriptive Statistics III (Status at the First Interview)

	Natives	2nd gen.	t-test
Unsubsidized (self-)employment	0.237 (0.426)	0.154 (0.362)	3.075***
Subsidized (self-)employment	0.038 (0.192)	0.041 (0.200)	-0.244
Unemployment	0.655 (0.475)	0.737 (0.441)	-2.679***
ALMP	0.040 (0.196)	0.034 (0.181)	0.482
Education	0.002 (0.048)	0.008 (0.087)	-1.767*
Apprenticeship	0.016 (0.126)	0.015 (0.122)	0.1313
Inactive	0.011 (0.105)	0.011 (0.106)	-0.024
# Observations	2,609	266	

Source: IZA Evaluation Dataset S, own calculations.

Note: Sample of individuals who were born in Germany. Second generation migrants either do not have German citizenship or at least one of their parents is not German-born. Standard deviations in parentheses.

Mean difference: *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 3.4 presents the results of our baseline probit regression, where the dependent variable indicates whether the individual is employed at the first interview. The first column reports estimates without including preferences and attitudes; in the second column they are included. Male individuals are significantly more likely to be employed at the first interview in both regressions. The coefficients on age, marital status and schooling have the expected signs, but are in general not significantly different from zero. In contrast, the variables indicating different categories of vocational attainment have a strong and significant impact on the probability of being employed at the first interview. Interestingly and somewhat surprisingly, individuals who have completed an apprenticeship or graduated from a specialized vocational school have an even higher probability of being employed than university graduates. It should, however, be kept in mind that only two months since unemployment entry have passed. This picture might change over time.

Table 3.4: Probit Regressions I (Baseline: Employed at the First Interview)

	(1)	(2)
Male	0.059 (0.015)***	0.063 (0.015)***
Age	0.01 (0.006)	0.01 (0.006)
Age squared	-0.014 (0.008)*	-0.014 (0.008)
Married	-0.019 (0.018)	-0.021 (0.018)
No school degree	reference (reference)	reference (reference)
School 9 yrs	0.013 (0.074)	0.016 (0.073)
School 10 yrs	0.003 (0.074)	0.006 (0.073)
School 11-12 yrs	0.034 (0.079)	0.035 (0.079)
School 12-13 yrs	0.017 (0.075)	0.018 (0.075)
No vocational degree	reference (reference)	reference (reference)
Apprenticeship	0.107 (0.028)***	0.107 (0.028)***
Spec. vocational school	0.093 (0.033)***	0.093 (0.033)***
University, techn. college	0.075 (0.034)**	0.075 (0.034)**
No prior job	reference (reference)	reference (reference)
Duration last job <=1 year	0.153 (0.031)***	0.154 (0.031)***
Duration last job <=5 yrs.	0.149 (0.032)***	0.149 (0.032)***
Duration last job <=10 yrs.	0.07 (0.039)*	0.07 (0.039)*
Duration last job >10 yrs.	0.08 (0.04)**	0.077 (0.04)*
Logarithm of unemployment benefits	-0.040 (0.002)***	-0.040 (0.002)***
Children in household	0.011 (0.033)	0.011 (0.033)
Number of children in household	-0.011 (0.018)	-0.010 (0.018)
Second generation migrant	-0.070 (0.027)**	-0.067 (0.027)**
Risk		-0.009 (0.003)***
Time		0.004 (0.003)
Trust		0.003 (0.004)
Reciprocity		0.003 (0.005)
Log-Likelihood	-1309.1311	-1304.296
# Observations	2,875	2,875

Source: IZA Evaluation Dataset S, own calculations.

Note: Probit regressions. Average marginal effects. Robust standard errors in parentheses. Dependent variable: (self-)employed at first interview. Preferences and attitudes are included by the raw index in model (2). Additional control variables are dummies for German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks).

*** significant at 1%; ** significant at 5%; * significant at 10%.

The duration of last employment also plays a large role in explaining reemployment patterns in our data. Respondents with a former job duration of less than five years have a higher employment probability than individuals with more than five years. A potential explanation might be that individuals who have been previously employed for relatively shorter durations are more flexible and thus faster in finding new jobs, which might also be related to lower expectations for future employment. The amount of unemployment benefits and the probability of being employed at the first interview show a significantly negative relationship: the higher the amount of unemployment benefits, the lower is the probability of employment. This is consistent with theory and previous empirical findings (see, e.g., Cahuc and Zylberberg, 2004, Chapter 3, and references therein). The presence and number of children does not significantly influence the outcome variable in our regression.

Second generation migrants have on average – even after controlling for the characteristics mentioned before – a significantly lower employment probability at the first interview. This difference, however, slightly decreases when we additionally control for preferences and attitudes in the second column of Table 3.4. When we test the equality of the coefficient estimates, we cannot reject the null hypothesis of equality. Although the effect on the native-migrant difference appears to be moderate, a likelihood ratio test indicates a better model fit of the regression in the second column.

In this regression, risk attitudes have a significantly negative influence on the employment probability. The more risk loving an individual is, other things equal, the less likely he or she is employed shortly after unemployment entry. This finding is consistent with theory and previous empirical findings. Pannenberg (2010) shows that a higher willingness to take risks is associated with a higher reservation wage, and thus with a lower employment probability.

To test whether economic preferences and attitudes have a differential impact on second generation migrants and natives, we estimate an additional model specification that includes interaction effects of the dummy variable for second generation migrants, with the four measures of economic preferences and attitudes. The coefficient estimates on the interaction terms are not significantly different from zero. Hence, we do not find support for a differential impact across the two groups. Similarly, we do not find large differences across gender. When estimating the regressions separately for men and women, we find, in general, no substantial differences compared to the results reported in Table 3.4. The only difference is a significantly positive influence of trust in the female regression, which is not the case for men.

Table 3.5 reveals the results of the baseline regression when we include the three different measures of risk attitudes in three separate regressions. The first column shows

the results of the baseline regression (without controlling for preferences and attitudes) and is added to facilitate comparison. The coefficients of the raw index and the binary indicator are both negative and significant, and the coefficient estimate on the second generation dummy decreases slightly. When we include the low and high risk categories and take the intermediate category as reference, we find that it is individuals with a particularly high willingness to take risks who drive the overall effect. Furthermore, the coefficient estimate on the indicator for second generation migrants also decreases, albeit slightly in this regression.

Table 3.5: Probit Regressions II (Risk Attitudes: Employed at the First Interview)

	Baseline	(1)	(2)	(3)
Risk: raw index (0, 1, 2, ..., 10)		-0.008 (0.003)**		
Risk: binary indicator (1 if ≥ 6)			-0.041 (0.015)***	
Risk: low (1 if ≤ 3)				0.014 (0.018)
Risk: intermediate (1 if 4–6)				reference (reference)
Risk: high (1 if ≥ 7)				-0.034 (0.017)**
Second generation migrant	-0.070 (0.027)**	-0.067 (0.027)**	-0.067 (0.027)**	-0.067 (0.027)**
Log-Likelihood	-1309.1311	-1306.2475	-1305.236	-1305.8124
# Observations	2,875	2,875	2,875	2,875

Source: IZA Evaluation Dataset S, own calculations.

Note: Probit regressions. Average marginal effects. Robust standard errors in parentheses. Dependent variable: (self-)employed at first interview. Additional control variables are male, age and age squared, married, educational and vocational variables, dummies of duration of last employment, logarithm of unemployment benefits, children in household, dummies for German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available upon request.

*** significant at 1%; ** significant at 5%; * significant at 10%.

To shed more light on the underlying mechanism behind these findings, we investigate the relationship between risk attitudes, reservation wages and search intensity in more detail.²¹ First, we find support for the hypothesis that more risk averse individuals are less selective, i.e. that they have lower reservation wages – which then lead to higher employment probabilities. This is true for both native job seekers and unemployed sec-

²¹See Tables A3.1, A3.2 and A3.3 in the Appendix. The number of observations decreases in this exercise because reservation wages, the number of search channels used, and the number of applications sent out are only elicited for those individuals who are actively searching for employment at the time of the first interview. Individuals who had already found employment are not included.

ond generation migrants.²² Thus we cannot reject the hypothesis that higher reservation wages is the mechanism through which a significantly lower employment probability for individuals with a high willingness to take risks results. Second, we find that the number of search channels used – as an approximation of search intensity – is virtually the same for both natives and second generations migrants in our sample. Moreover, the number of search channels decreases very slightly in the willingness to take risks. However, a second approximation of search intensity, the number of applications sent out by the individuals, indicates that search intensity increases in the willingness to take risks.²³ This latter finding is in line with the observation of lower reservation wages for more risk averse individuals. Search intensity may thus be a channel through which the direct effect of risk attitudes on reservation wages is reinforced.

Furthermore, we investigate in more detail the influence of time preferences, trust and positive reciprocity on the probability of being employed at the first interview. In those additional regressions, we individually include the three different measures for each of the preferences and attitudes.²⁴ Interestingly, and independently of the measure used, none of the three characteristics exhibits significant explanatory power in these regressions. The coefficient estimates on the indicator for second generation migrants remain virtually the same in all regressions. It thus appears that among the preferences and attitudes we examine, only the measures of risk attitudes enter statistically significantly in the regressions. That is, risk attitudes explain the probability of being employed at the first interview. Despite descriptive differences between natives and migrants, which are to some extent present in the case of the three other preferences and attitudes, these do not appear to significantly influence the employment probability – at least not beyond those characteristics which are also controlled for in our regressions.

3.6 Conclusions

In this chapter we study four types of preferences and attitudes that individuals who enter into unemployment in Germany exhibit; namely, *a*) risk attitudes, *b*) time preferences, *c*) trust and *d*) positive reciprocity. We further distinguish between natives and second generation migrants to analyze whether there are differences between these two groups in this regard, and whether such differences matter in terms of subsequent employment prospects.

²²It appears that second generation migrants generally have higher reservation wages than natives, also conditional on risk attitudes. This finding certainly deserves further research.

²³Second generation migrants with intermediate risk attitudes have, on average, the lowest number of applications sent out. We cannot explain this finding, but it is rather striking.

²⁴See Tables A3.4, A3.5 and A3.6 in the Appendix.

Our results indicate that there are differences between natives and second generation migrants with respect to preferences and attitudes, and these differences mainly lie in attitudes towards risk and in positive reciprocity. Second generation migrants show a significantly higher willingness to take risks, and they are less likely to have a low amount of positive reciprocity when compared to natives. Those differences also matter in terms of economic outcomes, and more specifically in terms of employability two months after unemployment entry. We observe a significantly lower employment probability for individuals with a high willingness to take risks, even when controlling for other observable characteristics. The mechanism through which this occurs is very likely the reservation wage, which is found to be higher for individuals with a lower degree of risk aversion. Search intensity may be another channel through which the direct effect of risk attitudes on reservation wages is reinforced. Therefore, our findings offer interesting perspectives, e.g., with regard to the design and targeting of active labor market policy. It may be reasonable to specifically focus on less risk averse individuals with measures such as job search requirements and monitoring, which potentially lower the expectations and reservation wages of those unemployed individuals.

However, our findings are not the answer to the question why second generation migrants still lag behind natives in numerous economic outcomes. Including preferences and attitudes in our regressions only moderately shrinks the natives and second generation migrants disparity in terms of their employment probability two months after they enter unemployment. It may be worth investigating the long-term effects of these non-cognitive characteristics on reemployment probabilities, although the issue of reverse causality becomes more of a concern in this case. Moreover, our data do not include first generation migrants. Nonetheless, an interesting avenue for future research would be to include those individuals, e.g., to study the potential patterns of adaptation over the migrant generations in the job search process – and beyond.

It should also be kept in mind that our data are not representative of the entire population of second generation migrants and natives in Germany. The *IZA Evaluation Dataset S* is comprised of a representative inflow sample into unemployment. There are, however, underlying dynamics of the process of becoming unemployed, which, while they go beyond the scope of this chapter, may cause the distribution of preferences and attitudes to be different in our sample from that in the population. For instance, it has been shown that public sector employees are more risk averse than employees in the private sector (Buurman et al., 2012). Assuming that public sector employees are less likely to become unemployed and less likely to have a migration background, this is one channel through which an inflow sample into unemployment would not be representative of the population

in terms of preferences and attitudes. This may well be an important explanation to why our findings are, in some aspects, in contrast to previous findings in the literature on preferences and attitudes of migrants and natives.

When considering the broader picture and the context of our chapter, the slow reintegration of second generation migrants into the labor market may also be related to other characteristics than preferences and attitudes. For instance, we know that there are substantial differences in human capital. Furthermore, migrants might have different access to social networks that are important in the job search process, especially in informal job search. Beyond access to such networks, the size and quality of migrants' networks may also be very different from natives' networks. Second generation migrants may very likely be affected by racial or ethnic discrimination. Lastly, ethnic identity is also an important factor influencing an array of economic outcomes through various channels. The extent to which those potential explanations apply, and how they potentially interact, deserves further research.

3.7 Appendix

Table A3.1: Descriptive Statistics IV (Risk Attitudes and Reservation Wages)

	Natives and Migrants	Natives	Migrants (2nd gen.)
Total	7.17	7.10	7.69
Low Risk (≤ 3)	6.74	6.69	7.23
Intermediate Risk (4–6)	7.09	7.03	7.62
High Risk (≥ 7)	7.56	7.50	8.02
# Observations	1,715	1,533	182

Source: IZA Evaluation Dataset S, own calculations.

Note: Net hourly reservation wage (in €). Risk is measured on an 11 point scale (from 0 to 10).

Table A3.2: Descriptive Statistics V (Risk Attitudes and Number of Search Channels)

	Natives and Migrants	Natives	Migrants (2nd gen.)
Total	4.83	4.83	4.80
Low Risk (≤ 3)	4.91	4.91	4.91
Intermediate Risk (4–6)	4.81	4.82	4.72
High Risk (≥ 7)	4.80	4.79	4.84
# Observations	2,407	2,178	229

Source: IZA Evaluation Dataset S, own calculations.

Note: Average number of search channels used. Risk is measured on an 11 point scale (from 0 to 10).

Table A3.3: Descriptive Statistics VI (Risk Attitudes and Number of Applications)

	Natives and Migrants	Natives	Migrants (2nd gen.)
Total	15.81	15.85	15.40
Low Risk (≤ 3)	14.40	14.31	15.38
Intermediate Risk (4–6)	15.14	15.40	12.63
High Risk (≥ 7)	17.81	17.65	19.14
# Observations	2,396	2,171	225

Source: IZA Evaluation Dataset S, own calculations.

Note: Average number of applications sent out. Risk is measured on an 11 point scale (from 0 to 10).

Table A3.4: Probit Regressions III (Time Preferences: Employed at the First Interview)

	Baseline	(1)	(2)	(3)
Time: raw index (0, 1, 2, ..., 10)		0.004 (0.003)		
Time: binary indicator (1 if ≥ 6)			0.018 (0.015)	
Time: impatient (1 if ≤ 3)				-.027 (0.023)
Time: intermediate (1 if 4-6)				reference (reference)
Time: patient (1 if ≥ 7)				-.002 (0.016)
Second generation migrant	-.070 (0.027)**	-.069 (0.027)**	-.070 (0.027)***	-.069 (0.027)**
Log-Likelihood	-1309.1311	-1308.0035	-1308.3675	-1308.4089
# Observations	2,875	2,875	2,875	2,875

Source: IZA Evaluation Dataset S, own calculations.

Note: Probit regressions. Average marginal effects. Robust standard errors in parentheses. Dependent variable: (self-)employed at first interview. Additional control variables are male, age and age squared, married, educational and vocational variables, dummies of duration of last employment, logarithm of unemployment benefits, children in household, dummies for German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available on request. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A3.5: Probit Regressions IV (Trust: Employed at the First Interview)

	Baseline	(1)	(2)	(3)
Trust: raw index (0, 1, 2, ..., 10)		0.003 (0.003)		
Trust: binary indicator (1 if ≥ 6)			0.021 (0.015)	
Trust: low (1 if ≤ 3)				-.004 (0.023)
Trust: intermediate (1 if 4-6)				reference (reference)
Trust: high (1 if ≥ 7)				0.0004 (0.016)
Second generation migrant	-.070 (0.027)**	-.070 (0.027)**	-.070 (0.027)**	-.070 (0.027)**
Log-Likelihood	-1309.1311	-1308.8179	-1308.1268	-1309.1139
# Observations	2,875	2,875	2,875	2,875

Source: IZA Evaluation Dataset S, own calculations.

Note: Probit regressions. Average marginal effects. Robust standard errors in parentheses. Dependent variable: (self-)employed at first interview. Additional control variables are male, age and age squared, married, educational and vocational variables, dummies of duration of last employment, logarithm of unemployment benefits, children in household, dummies for German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available on request. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A3.6: Probit Regressions V (Pos. Reciprocity: Employed at the First Interview)

	Baseline	(1)	(2)	(3)
Reciprocity: raw index (1, 2, ..., 7)		0.003 (0.004)		
Reciprocity: binary indicator (1 if ≥ 5)			0.014 (0.015)	
Reciprocity: low (1 if ≤ 3)				-.007 (0.024)
Reciprocity: intermediate (1 if 4-5)				reference (reference)
Reciprocity: high (1 if ≥ 6)				0.012 (0.016)
Second generation migrant	-.070 (0.027)**	-.071 (0.027)***	-.070 (0.027)***	-.071 (0.027)***
Log-Likelihood	-1309.131	-1308.961	-1308.691	-1308.653
# Observations	2,875	2,875	2,875	2,875

Source: IZA Evaluation Dataset S, own calculations.

Note: Probit regressions. Average marginal effects. Robust standard errors in parentheses. Dependent variable: (self-)employed at first interview. Additional control variables are male, age and age squared, married, educational and vocational variables, dummies of duration of last employment, logarithm of unemployment benefits, children in household, dummies for German federal states, month of entry into unemployment and time between unemployment entry and interview (7-14 weeks). Full estimation results are available on request. *** significant at 1%; ** significant at 5%; * significant at 10%.

Chapter 4

Subjective Well-Being, Reemployment and Wages*

4.1 Introduction

Analyzing individual happiness has become increasingly important in economic research, starting with the pioneering work of Easterlin (1974) on income, GDP per capita and happiness.¹ A person's subjective well-being displays a wider (empirical) concept of their utility by incorporating both income and non-income determinants. In the same spirit, the Stiglitz report on the measurement of economic performance and social progress highlights that “*emphasising well-being is important because there appears to be an increasing gap between the information contained in aggregate GDP data and what counts for common people's well-being*” (Stiglitz et al., 2009, p.12). Subjective well-being and detecting its determinants can be considered the main goal in most people's lives (see, e.g., Frey and Stutzer, 2002, for a detailed overview). However, this chapter adopts a different direction – namely what stands behind considering happiness as a goal. Is happiness also a driver of behavior and life's outcomes? Do societies benefit from happier citizens? There is no doubt that people do certain things to become happier or remain as happy, but do happier people also behave differently *because* they have different well-being levels?

This chapter concentrates on unemployment dynamics – and particularly, how an unemployed individual's happiness is related with their future labor market outcomes. To date, the unemployment-happiness literature has been rather concerned with the effect of general and individual unemployment on happiness (e.g., Clark and Oswald, 1994; Winkel-

*This chapter is based on the paper *Don't Worry, Be Happy? Happiness and Reemployment* (Krause, 2012).

¹The terms happiness, subjective well-being and life satisfaction are used interchangeably in this chapter, as with most economists, see, e.g., Graham et al. (2004).

mann and Winkelmann, 1995, 1998; Clark et al., 2001; Di Tella et al., 2001; Kassenboehmer and Haisken-DeNew, 2009) with a broad consensus that unemployment leads to a reduction in life satisfaction. Given that there appears to be high psychological distress related to the state of unemployment and general output reduces, this constantly represents an important topic in terms of public welfare and policies. On that note, it is naturally important to understand what brings unemployed people back into employment: is the unemployment-happiness relationship exclusively a one-way street, and can this contribute to the underlying discussion about voluntary and involuntary unemployment? Therefore, the main questions of this chapter are whether individual happiness influences an unemployed individual's future reemployment probability, and if reemployed, reentry wages. Since there seems to be no adaptation in life satisfaction with respect to unemployment compared to other life events (Clark et al., 2008), the relationship with reemployment appears to be of particular importance. Moreover, reemployment is measured in the data one year after the respective unemployment entry. This is a crucial point with respect to unemployment duration, as it marks the border to long-term unemployment. It is important that individuals avoid passing into long-term unemployment for several reasons. First, evidence suggests that individuals suffer from long-term unemployment with respect to their labor market opportunities and physical and mental well-being (Machin and Manning, 1999), and individuals who have been longer unemployed are less likely to find a job (Shimer, 2008). Second, 12 months are the maximum period in Germany during which prime-aged unemployed individuals are entitled to unemployment benefits receipt.²

The general contributions of this chapter are first, a deeper understanding about what the unemployed's life satisfaction might influence and possible mechanisms, and second, new insights about determinants of reemployment and reentry wages. In particular, this chapter aims to minimize the possible worries arising from the endogeneity of happiness. For an actual causal effect of happiness, one would need something like a random assignment or experimental data, which I do not have in the case of the observational survey data being used. A problem of endogeneity arises if an unobserved variable influences life satisfaction *and* future employment probability, since one would falsely interpret an effect from life satisfaction as causal in this case, despite the other factor actually determining the pattern in the relationship. Several factors related to the type of data, sample selection and empirical strategy contribute to a reduction of the endogeneity issue. Rich survey data of recent entrants into unemployment in Germany are used for the empirical analysis, with much known about their search behavior and other variables compared to other datasets. Moreover, the respondents all have been unemployed for the same amount

²These rules vary by age in connection with former employment duration. After these 12 months, unemployed individuals are entitled to a form of social insurance.

of time, around two months on average, and thus their happiness levels are not influenced by different unemployment durations and moreover a discouraged worker effect should be small or non-existent. I am able to exclude those individuals who have not been looking for a job, and importantly those who have been looking and report to have found a job already, so the sample will only comprise actual job seekers. In addition, individual happiness and the outcome variables are observed one year apart, since disentangling the direction of any effects would be almost impossible only using one cross-section. Finally, the empirical strategy is based on using “residual happiness” rather than absolute happiness as an explanatory variable, much in the spirit of Graham et al. (2004). The idea is to investigate whether people who had higher (or lower) happiness levels than their socioeconomic and demographic characteristics would predict having different labor market outcomes one year later. This residual element of happiness is interpreted as some sort of underlying inner disposition or cognitive bias (e.g., Cummins and Nistico, 2002), and therefore captures psychological differences between the respondents (and some random noise). Moreover, this is the first study to consider an exclusion restriction when calculating residual happiness and correcting the standard errors in the main regression due to the generated regressor.

The main results are that residual happiness has a positive and statistically significant effect on the individual’s reemployment probability, however, this has a nonlinear, concave shape with the reemployment probability decreasing at the highest values of residual happiness. The relationship between residual happiness and reentry hourly wages is similar, and even more statistically robust. Further investigation shows that the reemployment result is mainly driven by self-employment. To the best of my knowledge, it has never been shown that happiness matters mainly for future self-employment and less for standard employment. The optimal level of residual happiness to maximize the self-employment probability lies at 1.9 points over what would be predicted by several covariates, given a happiness scale from 0-10. Moreover, there are rather strong gender differences with respect to the reemployment relationship, where men are driving the result and the concept of locus of control (the subjective belief about future outcomes being determined by the own actions or external factors) is able to explain part of the effect. These mechanisms also appear to be interrelated.

The remainder of this chapter is organized as follows. Section 4.2 introduces some theoretical considerations. Section 4.3 describes the data and sample. Section 4.4 provides the results of the empirical analysis, and Section 4.5 concludes.

4.2 Happiness as a Driver of Job Search Behavior

There are still only a few papers to use happiness as a determinant rather than an outcome (see e.g., Kenny, 1999; Guven, 2012; Goudie et al., 2012; De Neve and Oswald, 2012). Using residual happiness, Guven (2011) finds an inverted U-shaped effect of residual happiness on social capital, and Graham et al. (2004) find that individuals with higher residual happiness make more money and are in better health five years later. Psychologists and economists have considered positive affect as an explanatory variable (for a detailed overview, see, e.g., Lyubomirsky et al., 2005).

Studies connecting happiness, job search and labor outcomes include Clark et al. (2008), finding that future unemployment reduces current well-being, which can be interpreted as an anticipation effect. Considering the drop in well-being when becoming unemployed, those with a higher drop in mental well-being are found less likely to remain unemployed one year later (Clark, 2003) and have a shorter unemployment duration, whereas Gielen and van Ours (2011) find this drop in life satisfaction not to stimulate job finding. Psychologists find that high trait positive affect leads to greater success at obtaining follow-up job interviews (Burger and Caldwell, 2000), and that higher well-being at the age of 18 predicts higher levels of occupational attainment (Roberts et al., 2003). Overall, findings in the literature suggest that higher happiness leads to “better” outcomes.

In theory, the standard model of job search (McCall, 1970; Mortensen, 1970) suggests that an individual’s reemployment probability depends on both the probability of receiving a job offer and accepting it, usually displayed by the individual’s reservation wage. Determinants of the reservation wage are the expected wage distribution, possible search costs, the job offer arrival rate and unemployment benefits (or more generally, gains during jobless periods). Factors determining the job offer arrival rate include the general state of the labor market, the individual’s job search effort (if effort is endogenized), education and experience. How would an individual’s well-being enter this model?

Hermalin and Isen (2008) incorporate current emotional state into an economic modelling and decision-making framework, with the idea being a dynamic recurring relationship between affect at the beginning of a period, which influences preferences, that determine decisions or behavior, which in turn determine affect at the end of a period. With respect to reemployment, their theoretical framework suggests that employers prefer workers with initial happiness levels greater than some cutoff value as their work effort would be higher.³ If the happiness level is not high enough, the employers try to induce it, e.g., by offering the employee a signing bonus and thereby boosting the state of affect. In terms of

³There is experimental evidence showing that positive affect can increase intrinsic motivation (e.g., Isen and Reeve, 2005). See also Oswald et al. (2009) for an experiment with respect to happiness and productivity.

the search model, the job offer arrival rate would therefore increase with happiness, since a happier worker is assumed to be more valuable for the employer through assumed higher productivity and possibly better teamwork abilities. This would be a direct channel from happiness to employment, displaying a sort of unobserved characteristic for the hiring probability besides qualification, experience and possibly other factors.

Besides this direct impact, several indirect channels exist through which happiness can affect reemployment, with the most obvious probably being job search effort. However, the direction of this effect is theoretically ambiguous: on the one hand, a very unhappy individual may suffer intensely from unemployment and tries hard to get out of it. This increases the job search intensity and/or decreases the reservation wage, both of which would lead to a higher reemployment probability. On the other hand, higher subjective well-being may display more resilience and higher motivation to search.⁴ In this case, *higher* happiness would increase the prospective employment probability through higher job search effort. Other channels include health and social contacts, which are both positively related to happiness and reemployment (see, e.g., Verkleij and Stolck, 1989).

A second outcome in the empirical analysis is the reemployed individual's wage. What would the association be between happiness and future wages? It appears similar to the one discussed for the reemployment probability, namely that employers may see higher potential or prospective productivity in happier job candidates, which would result in higher wage offers. From the workers' perspective, happier candidates may exert greater bargaining power or abilities through higher self-esteem, and likewise reentry wages would increase with happiness. Therefore, theory predicts that the happier the unemployed individual, the higher is their wage when reentering the labor market.

4.3 Data and Sample

I use data from the *IZA Evaluation Dataset S* (Caliendo, Falk et al., 2011), which is a survey of almost 18,000 individuals who entered unemployment between June 2007 and May 2008.⁵ One cohort of respondents was interviewed each month, therefore one wave consist of 12 cohorts. The analysis is based on the first wave of the survey, which took place on average about two months after unemployment entry, and the second wave, which took place one year after this respective unemployment entry.⁶ One advantage of the data

⁴As Lynch (1989) points out for the empirical analysis of reemployment probabilities of young unemployed, motivation is an unobserved and omitted factor which might bias the estimates.

⁵There is also an administrative part (*IZA Evaluation Dataset A*) of the complete dataset, which is not used in this chapter.

⁶The survey consists of three rounds of interviews in total. Respondents are interviewed again three years after unemployment entry.

lies in its specific focus on entrants into unemployment. The *IZA Evaluation Dataset S* is thus highly appropriate for studying the processes of job search and labor market reintegration. Similar household surveys are generally designed to be representative of the whole population (e.g., the *German Socio-Economic Panel Study, SOEP*), which has an important drawback when studying unemployed individuals because sample sizes decrease substantially.

The data address a large variety of topics such as the individual's detailed search behavior (number of applications, search channels, reservation wages etc.), ethnic and social networks, psychological factors and life satisfaction. The exact wording of the life satisfaction question is "How satisfied are you with your life as a whole these days?" and is measured on a scale of 0–10, where 10 represents maximum satisfaction. Self-reported life satisfaction has shown to be a valid and consistent measure of subjective well-being within the existing literature. Self-reports and other measures such as interview ratings, peer reports and the average daily ratio of pleasant to unpleasant moods show a strong convergence (e.g., Diener and Lucas, 2000). Other objective validity has been shown through, e.g., brain-science data (Urry et al., 2004) and compensating-differentials quality of life measures (Oswald and Wu, 2010). Moreover, Lepper (1998) shows that subjective well-being measures are fairly stable over time, and are not substantially influenced by mood states or interview circumstances.

The sample is selected with respect to the following characteristics. All individuals in the first wave must still be unemployed, thus I exclude those who are already reemployed at the time of the first interview. Given that the interview takes place on average around two months after unemployment entry, around 25 percent of the individuals in the first wave have already exited unemployment. Respondents who claim not to have searched for a job since unemployment entry are also excluded. Most of them had already found a job. Moreover, I exclude those individuals who searched for a job but claimed at the time of the interview to certainly have a prospective job. I thereby minimize the potential bias arising from already having a job or knowledge about a future job, which causes individual happiness and future reemployment probability to increase simultaneously. The selected sample is a balanced panel of the first and second wave, and after excluding observations with missing information, I am left with a sample of 2,534 individuals per wave.

Table 4.1: Descriptive Statistics I (Selected Characteristics)

Variable	Mean	Std. Dev.
Life Satisfaction (Wave 1)	6.144	(2.128)
Life Satisfaction of the Employed (Wave 2)	7.079	(1.777)
Life Satisfaction of the Unemployed (Wave 2)	5.486	(2.380)
Employed (Wave 2)	0.588	(0.492)
Hourly Wage (Wave 2) (Euros) – If Employed	8.302	(8.298)
Age	38.243	(9.863)
Male	0.467	(0.499)
Native	0.826	(0.379)
1st Generation Migrant	0.092	(0.289)
2nd Generation Migrant	0.082	(0.274)
Eastern Germany	0.285	(0.452)
Married	0.507	(0.500)
No Formal Educational Degree	0.010	(0.099)
Secondary School (9 Yrs.)	0.276	(0.447)
Secondary School (10 Yrs.)	0.421	(0.494)
Technical College Entrance Qualification (11-12 Yrs.)	0.058	(0.233)
General Qualification for University Entrance (12-13 Yrs.)	0.235	(0.424)
No Formal Vocational Degree	0.085	(0.279)
Apprenticeship (Dual System)	0.592	(0.492)
Specialized Vocational School	0.140	(0.347)
University, Technical College	0.183	(0.387)
Net Hourly Wage of Last Job (Euros)	7.488	(3.981)
Duration of Last Job (in Months)	52.542	(77.663)
Number of Applications Sent	15.424	(19.277)
Number of Search Channels Used	5.273	(1.616)
Search for Full-Time Job	0.643	(0.479)
<i>Reason for Termination of Previous Job:</i>		
Quit	0.107	(0.309)
Layoff	0.440	(0.496)
Employer and Employee Agreed on Termination of Contract	0.082	(0.275)
End of Temporary Contract	0.219	(0.414)
Firm Closure	0.073	(0.260)
End of Self-Employment	0.013	(0.115)
Parental Leave	0.018	(0.132)
Care for Person in Need	0.001	(0.028)
Other Reason	0.047	(0.212)
# of Observations	2,534	

Source: IZA Evaluation Dataset S, own calculations.

Notes: All variables display characteristics from wave 1 if not indicated otherwise. Differing number of observations: *Life Satisfaction of the Employed (Wave 2)*: 1,489; *Life Satisfaction of the Unemployed (Wave 2)*: 777; *Hourly Wage (Wave 2) (Euros) – If Employed*: 1,381.

Table 4.1 displays summary statistics of the main variables. The information stems from the first interview, except for the employment status, hourly wage and information about life satisfaction by employment status, which are from the second wave. The mean of the newly unemployed's life satisfaction is 6.1 in the first wave, which is slightly higher than results from other studies using *SOEP* data, where the unemployed's life satisfaction lies rather below 6 (e.g., Winkelmann and Winkelmann, 1998; Gielen and van Ours, 2011). Considering the evolution of life satisfaction after one year, it confirms findings in the literature that individuals' life satisfaction increases when they are reemployed, in this

case on average by one point to around 7. Individuals who are unemployed in the second wave suffer more than in the first wave, with their life satisfaction decreasing to around 5.5 confirming the assumption that there is no adaptation to unemployment. Almost 60 percent of the sample are employed one year after unemployment entry, reporting an hourly wage of 8.30 Euros. The average age is 38 years, and slightly less than half the sample are men. Around 17 percent of the sample are either first or second generation migrants, and around 30 percent live in East Germany. 51 percent are married, most respondents have an intermediate school and vocational degree and every fifth respondent has a degree from a technical college or university. The average last hourly wage is 7.50 Euros, and the average duration of the last job prior to unemployment entry was 52.5 months. On average, the individuals have written 15 applications since unemployment entry and use about five search channels (out of 10 possibilities, including other search channels). 64 percent of the sample look for a full-time position as opposed to a part-time position or either of the two. The most common reason for terminating the last job is layoff, accounting for around 44 percent of the sample, with two other prevalent reasons being the end of a temporary contract and quitting the job.

4.4 Empirical Analysis

4.4.1 Residual Happiness

To calculate residual or unexplained happiness, I first estimate an OLS life satisfaction regression with several independent variables from the first wave.⁷ Economists are more likely than psychologists to be worried about satisfaction scores only being ordinally meaningful. However, ordinal and cardinal estimations of life satisfaction usually generate very similar results (Ferrer-i-Carbonell and Frijters, 2004; Frey and Stutzer, 2000a).⁸ The life satisfaction equation looks as follows:

$$W_i = \beta X_i + \epsilon_i, \tag{A1}$$

⁷Results from an ordered probit estimation are similar.

⁸If panel data are available, it is nowadays standard in the literature to use fixed effects models for happiness estimations in order to avoid biases arising from unobserved time-invariant factors that determine both, the independent variables and happiness. One could then estimate a standard fixed effects model and include the fixed component and overall error component in the measure of residual happiness. However, since I am using only two waves in my analysis and am interested in how residual happiness is related with future outcomes, I am estimating a cross-sectional model for the first wave (see also Guven, 2011; Graham et al., 2004). Moreover, there could be a problem due to possible serial correlation of residuals in panel models as shown by Guven (2011), which cannot be used to solve reverse causation. Nevertheless, it would be important for future research to investigate whether results largely differ between the cross-sectional and fixed effects residual happiness approach.

where W_i is individual life satisfaction, X_i are individual, household and regional characteristics, and ϵ_i are the residuals. Demographic and socioeconomic control variables are included, as well as wage and duration information about the last job, the amount of unemployment benefits received by the individual, and the employment status of the spouse or partner. Moreover, the federal state's unemployment rate, the reason for last job's termination and the living area's social class are controlled for. Geographical dummies for German federal states, interview cohorts and the amount of time between unemployment and interview are added as additional control variables.

In a second step, the residual ϵ_i for each individual i is predicted. By definition, the residuals are uncorrelated with the individual characteristics in the first wave, and as such present a measure for unexplained happiness laying above or below what would be expected by these observable individual characteristics. This variable may be interpreted as a proxy for inner individual disposition or cognitive bias, but also contains some noise. The living area's social class (number of households in a living area belonging to upper, upper-middle, middle, lower-middle or lower social class) serves as exclusion restriction, which is included in the first regression but not in the main regression of interest for identification reasons. The variable is comprised of information gathered by the survey institute by actual site inspections. To the best of my knowledge, this is the first study taking an exclusion restriction into account when using residual happiness. The variable is assumed to determine life satisfaction, but not directly the reemployment probability. Given that most of the variables in this dataset are somehow related to reemployment, it appears to be a reasonable fit. The variable displays the number of households in the living area – defined as a neighborhood of around 500 households. Regarding the relationship with happiness, this may also tackle a relative aspect (Luttmer, 2005), however, this should not harm the analysis. It is constructed out of factors such as household income, purchasing power parity and quality of the residential area, defined by, e.g., distance to parks and the development structure of buildings.⁹ The choice of the exclusion restriction is supported by evidence showing that neighborhood quality does not determine eventual earnings, unemployment likelihood and welfare participation (Oreopoulos, 2003). Moreover, residential mobility in Germany is rather low, with moving for employment-related reasons only accounting for a small share of around 10 percent, where commuting may be the preferred option (Caldera Sánchez and Andrews, 2011). Therefore, sorting due to employment prospects should pose no serious problem. There could be some correlation between the neighborhood's social class and the individual's own vocational degree, and in turn with the reemployment probability. However, individual educational and vocational

⁹The results are very robust when using a variable that determines only the quality of the residential area.

degrees are added as control variables, thus any correlation of that kind should be taken into account in any case.

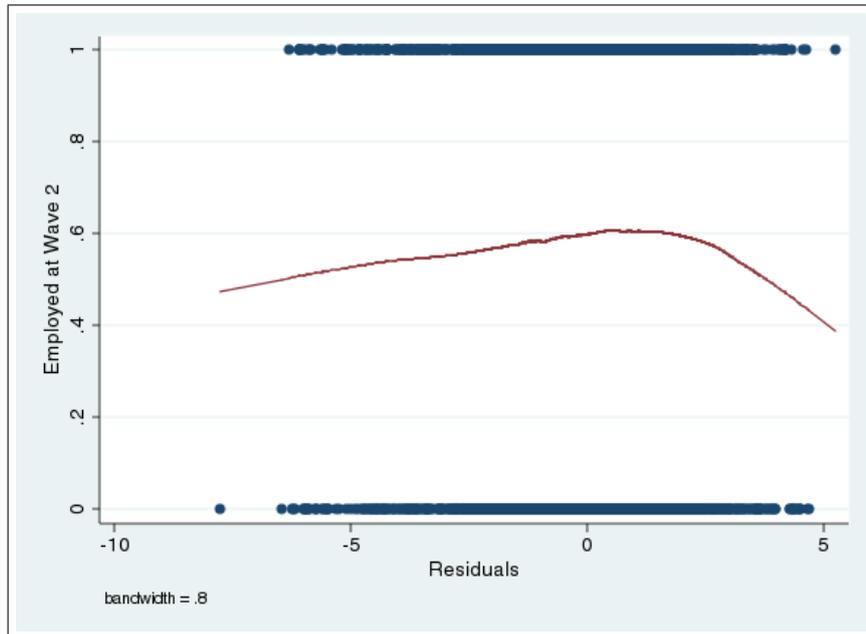
Table A4.1 shows the results of the life satisfaction regression, which are generally similar to the results with representative samples of the society or working population. In this case, the sample consists only of unemployed individuals, with one advantage that they have all been unemployed for a similar amount of time, which is usually not the case in other datasets. Men are significantly less happy, and happiness is U-shaped with age. Having a disability, being married to a spouse without a full or part-time job, or being single all have a statistically significant negative effect on life satisfaction. Having a higher schooling degree is mostly associated with higher happiness, likewise having a spouse with a full-time position. Second generation migrants are significantly less happy than natives, and the past hourly wage positively affects happiness. Compared to having had a job for under a year, having had a job for up to 10 years or longer has a significant positive effect on the happiness of newly-unemployed individuals. The reason for the end of the last job does not play an important role in this estimation.¹⁰ Finally, living in an area with a higher number of households belonging to the upper social class significantly raises life satisfaction, whereas a higher number of upper-middle households significantly decreases it, and a larger number of middle, lower-middle and lower class households does not influence life satisfaction.

Figure 4.1 shows a graph plotting the relationship between the residuals of the aforementioned regression and the employment probability in the second wave, suggesting a non-linear connection. For the most part, it is increasing until a certain point, when it experiences a sharp decrease at very positive residuals. The lowest reemployment probability is found for individuals with the highest unexplained happiness. Essentially, the graph suggests that individuals who are very unhappy or very happy both have a lower reemployment probability than individuals in between, pointing to an inversely U-shaped relationship. One possible explanation is lack of motivation, either because the person is depressed with the situation and the driving force is missing or the person is so happy that there is no motivation to change their situation.

A very important channel in this regard could be the job search effort. Table 4.2 shows the distribution of the means of various job search variables, comparing individuals with positive and negative residuals. Moreover, a t-test between the two subsamples is conducted. It becomes apparent that individuals with higher residual happiness are significantly more likely on average to be employed one year later, reflecting the largely increasing relationship between the residuals and reemployment, yet neglecting the sharp

¹⁰The negative significant effect of taking care for relatives or others is driven only by two observations.

Figure 4.1: Residual Happiness and Future Reemployment Probability



Source: IZA Evaluation Dataset S, own calculations.

Note: Based on results from a locally weighted regression.

decrease at the highest values. The other numbers in the table suggest that happier individuals exert less job search effort, for instance, writing significantly fewer applications and using significantly fewer search channels. When it comes to the use of single search channels, there is no significant difference for most of them, except searching via the job information system of the employment agency and sending out speculative applications, with happier individuals less likely to use both of these channels. With respect to the number of formal, formal active and formal passive search channels, the picture remains the same.¹¹ However, happier individuals appear to be less likely to search for a full-time position, which could be one reason why they are searching less, as the pressure may be lower.

¹¹See Caliendo, Schmidl et al. (2011) for a definition of formal active and formal passive search channels.

Table 4.2: Descriptive Statistics II (Job Search Effort)

	Negative Residual	Positive Residual	p-value of t-test
Employed in Second Wave	0.565 (0.496)	0.607 (0.489)	0.034**
Number of Applications Sent	17.221 (22.957)	13.921 (15.393)	0.000***
Number of Search Channels Used	5.377 (1.608)	5.186 (1.617)	0.003***
Number of Formal Search Channels Used	4.515 (1.511)	4.342 (1.488)	0.004***
Search for Full-Time Job	0.675 (0.469)	0.617 (0.486)	0.002***
<i>Search Channel Used:</i>			
Newspaper Advertisement	0.881 (0.324)	0.869 (0.338)	0.347
Advertisement Posted	0.150 (0.357)	0.128 (0.335)	0.116
Job Information System	0.678 (0.468)	0.628 (0.483)	0.009***
Informal Search (Friends and Relatives)	0.862 (0.345)	0.844 (0.363)	0.203
Agent of Employment Agency	0.736 (0.441)	0.717 (0.450)	0.304
Internet	0.895 (0.306)	0.888 (0.316)	0.548
Private Agent with Agency Voucher	0.098 (0.297)	0.091 (0.288)	0.571
Private Agent without Agency Voucher	0.179 (0.384)	0.159 (0.366)	0.166
Speculative Application	0.696 (0.460)	0.659 (0.474)	0.051*
Other Search Channel	0.205 (0.404)	0.202 (0.402)	0.885
# of Observations	1,154	1,380	

Source: IZA Evaluation Dataset S, own calculations.

Notes: All variables display characteristics from wave 1 except being employed at wave 2.

*** significant at 1%; ** significant at 5%; * significant at 10%.

4.4.2 Main Results

Reemployment

The second step in the empirical analysis is to investigate whether residual happiness has any additional effects on the reemployment probability, after controlling for usual determinants of reemployment. Table 4.3 shows the main results when adding residual happiness as a regressor along with several other control variables. To detect any non-linearities, squared terms and quintile dummies are used besides the full values of the residual variable. Column (1) presents linear effects, indicating a positive and significant effect of increasing residual happiness on the future reemployment probability. The residual is then divided into negative (and positive) residuals by setting the positive (or negative)

residuals to zero. The negative residual variable displays the absolute values rather than the negative numbers, which means that a negative sign denotes a *positive* effect of an increasing residual on the reemployment probability. The positive linear effect of residual happiness is driven by individuals who are less happy than would have been predicted. No significant positive effect of positive residual happiness alone can be detected. Interestingly, when adding a squared term of the positive and negative residual, the inversely U-shaped effect becomes apparent for the positive residual fraction, with a residual of 1.633 representing the turning point. This quadratic effect is not driven by outliers, since there are more than 500 observations involving a residual of 1.633 and above. This means that being 1.633 points happier than predicted by a number of variables maximizes an individual's reemployment probability. There is no non-linear effect for individuals with negative residuals. Finally, four dummies are added in separate regressions that indicate having a residual value higher than the first, second, third and fourth quintile of residual happiness. Again, this demonstrates the positive effect at the lower part of the residual distribution and the diminishing trend the higher the residuals. Statistical significance is also only given at the two dummies at the lower spectrum. In summary, these results suggest a positive significant effect of residual life satisfaction, particularly at the lower part of the distribution, whereas the linear effect turns non-linear inversely U-shaped in the upper part of the distribution. The effect at the top of the residual distribution may typify individuals who are voluntarily unemployed or did not try to change their life situation, since they were already very satisfied with it.

Table 4.3: Main Results I (Employed at the Second Interview)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Residual Happiness	0.027 (0.013)**								
Positive Residual Happiness		0.020 (0.026)							
Negative Residual Happiness			-0.053 (0.020)***						
Positive Residual Happiness Squared				0.160 (0.066)**					
Negative Residual Happiness Squared				-0.049 (0.021)**					
Negative Residual Happiness Squared					-0.087 (0.052)*				
Negative Residual Happiness Squared					0.008 (0.012)				
> 1st Quintile of Residual Happiness						0.182 (0.065)***			
> 2nd Quintile of Residual Happiness							0.121 (0.053)**		
> 3rd Quintile of Residual Happiness								0.061 (0.053)	
> 4th Quintile of Residual Happiness									0.032 (0.066)
# of Observations	2,534	2,534	2,534	2,534	2,534	2,534	2,534	2,534	2,534
Log Likelihood	-1616.050	-1618.039	-1614.720	-1615.393	-1614.464	-1614.396	-1615.735	-1617.675	-1618.211

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal employment agency.

Note: Probit regressions. Parameter estimates are shown. Murphy and Topel (1985) standard errors in parentheses. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, male, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table 4.4: Main Results II (Hourly Wage of New Job at the Second Interview)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Residual Happiness	0.017 (0.006)***								
Positive Residual Happiness		0.022 (0.011)**							
Negative Residual Happiness			-0.027 (0.009)***						
Positive Residual Happiness Squared				0.079 (0.028)***					
Negative Residual Happiness Squared				-0.028 (0.010)**					
Positive Residual Happiness Squared									
Negative Residual Happiness Squared					-0.085 (0.023)***				
> 1st Quintile of Residual Happiness					0.014 (0.005)***				
> 2nd Quintile of Residual Happiness						0.081 (0.027)***			
> 3rd Quintile of Residual Happiness							0.092 (0.022)***		
> 4th Quintile of Residual Happiness								0.051 (0.022)**	
# of Observations	1,379	1,379	1,379	1,379	1,379	1,379	1,379	1,379	1,379
R ²	0.321	0.318	0.321	0.321	0.325	0.321	0.325	0.319	0.317

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Note: OLS regressions. Murphy and Topel (1985) standard errors in parentheses. The dependent variable is in logarithmic form. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, male, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%, ** significant at 5%, * significant at 10%.

Hourly Wage

Table 4.4 displays regression results for the smaller sample of individuals who found a job in the second wave, with the dependent variable being their logarithmic hourly wage at the new job. Columns (1), (2) and (3) highlight a statistically significant positive effect of residual happiness on future hourly wages. However, as can be seen in column (4), the effect is not linear, as the squared term of positive residual happiness is negative. Therefore, similar to the probability of reemployment, the highest values of positive residual happiness lead to lower hourly wages. The turning point is similar to before, at a residual value of 1.36. With respect to negative residual happiness and its squared term, both coefficients show a positive statistically significant effect, bearing in mind the “reversed” sign for the non-quadratic negative residual coefficient. The quintile dummies confirm the former results with positive significant effects up to and including the third quintile. Besides having a mostly positive effect on the reemployment probability, happier individuals also earn more in their new job. Given that past hourly wage and education is controlled for in the regression, there must be something additional that the employers appreciate or expect from the happier individuals for them to be paid higher wages accordingly. Moreover, happier individuals might also be better bargainers. The negative effect at the top could be explained by individuals with the highest residual happiness not caring much about wages, such that they do not bargain as intensely. Oishi et al. (2007) also find that the highest levels of income are not reported by the most satisfied individuals, but rather by moderately satisfied individuals.

The first question arising at this point is why such effects occur, with the forthcoming section attempting to explain where the effect comes from. However, the mechanisms shown in the following focus on reemployment and not wages. The channels for these two outcome variables appear not to be similar, and only hold with respect to the reemployment relationship.

4.4.3 Potential Mechanisms

Male vs. Female

Table A4.2 shows the results for reemployment separately by gender, and to the best of my knowledge, such differential effects for men and women have never been shown. Interestingly, the results suggest that the male unemployed are driving the main results, as the effects for women are not statistically significant and substantially smaller than for men. The linear residual happiness coefficients are significantly different from each other, in an interesting and perhaps unexpected pattern. Why should happiness only be

a driver for unemployed males with respect to their reemployment probability? It could be that this selected sample displays a non-representative selection for males and females, in the sense that men may still feel more attached to the labor market than women, and thus not being very unhappy is more important for men. Additionally, the male residual happiness distribution has longer tails (women may reply more carefully or avoid outliers), therefore effects at the bottom and top can be driven by the male responses. The male and female reemployment rate is virtually the same. Further research would be interesting in considering whether this differential pattern also exists in other settings, not only connected to unemployed individuals.¹² Dividing the sample by education does not lead to differential results.

Self-Employment

Table A4.3 shows the results when differentiating standard employment and self-employment as outcomes, with both possibilities being jointly analyzed thus far. The results appear quite intriguing, with columns (1) to (5) showing the estimations where the dependent variable is equal to 1 if an individual became reemployed, excluding the self-employed. Compared to the main results, all coefficients decrease, and moreover, most statistical significance disappears. The nonlinear shape at the top is still apparent, but only significant at the 10 percent level. Columns (6) to (10) show the results when only considering self-employment, with all coefficients increasing compared to the main results, being up to four times larger than the coefficients for standard employment. Moreover, they are all statistically significant, except the squared negative happiness residual term, which suggests a clear and robust inversely U-shaped relationship between residual happiness and self-employment. The turning point for the self-employed is at a residual happiness value of 1.9, which is slightly higher than for the whole sample. This result can be a valuable contribution given the increasing interest and literature regarding personality and entrepreneurship (see, e.g., Caliendo, Fossen et al., 2011; Caliendo and Kritikos, 2012).

Locus of Control

One advantage of the data set used for this analysis is the variety of topics covered, therefore the main results can be connected to variables that are rarely available, which to my knowledge has not been achieved in such a way. There are a number of personality questions in the questionnaire, with some of them referring to the locus of control. This is a concept involving the subjective belief of whether life's outcomes are outside one's

¹²Graham and Chattopadhyay (2012) consider gender differences with respect to well-being around the world. However, well-being serves as an outcome variable rather than a driver of behavior in their study.

control and can rather be attributed to fate or luck (*external*), or alternatively whether life's outcomes depend on one's own decisions and behavior (*internal*). Individuals with an internal locus of control have been associated with higher happiness (Verme, 2009; Becker et al., 2012), and external individuals have been associated with a lower probability of full-time employment (Braakmann, 2009) and lower reservation wages (Caliendo et al., 2010), whereas internal individuals exert higher job search effort (Caliendo et al., 2010).

By adding this personality dimension to the relationship, can the locus of control concept explain the residual life satisfaction effect? Table A4.4 displays the results when including the standardized locus of control index,¹³ showing that the residual happiness effect can be partly explained by this factor, as all coefficients decrease at least slightly when including the standardized index of locus of control as a control variable. However, the effects of only negative residual happiness and the inversely U-shaped effect at the high positive residual values are still significantly different from zero.

All three potential channels appear to be interrelated, as men are more likely to be self-employed, and those self-employed also had higher internal locus of control levels in the first wave. However, further differentiating the male sample by self-employment and employment shows that there is still a happiness effect for men with respect to standard employment (that is not apparent for women).¹⁴ Generally showing that happiness is a predictor of self-employment has not previously been achieved to my knowledge, and can represent important information for academic research and policy-makers.

4.4.4 Attrition

Panel mortality is a common problem related to longitudinal datasets and may lead to selection bias. Around 50 percent of the original sample of the dataset in this analysis can be reached for a second interview. The main results are therefore checked for robustness by inverse probability weighting to control for possible attrition bias. Assuming the selection process is based on observables, this procedure is \sqrt{N} -consistent (Wooldridge, 2002). This method involves two steps, the first step of which is to estimate a probit or logit model of the probability to reply in the second wave on several independent characteristics of the first wave. In the second step, inverse probabilities are calculated for each individual with the fitted probabilities to reply in the second wave. The main estimation results are

¹³Constructing the locus of control index relies heavily on Caliendo et al. (2010). Respondents are asked ten statements related to attitudes towards life and the future and are supposed to agree on a scale from 1 to 7. Caliendo et al. (2010) performed a factor analysis that attributed certain items to the internal locus of control concept and certain others to the external one. For the full index, all items are standardized and the aggregated external ones are subtracted from the aggregated internal items. The full index is then standardized once more and enters the regression as such. A higher value refers to a more internal locus of control.

¹⁴Results are not shown.

weighted using these inverse probability weights, which take higher dropout rates with respect to certain individual characteristics into account.

The results of a logit estimation are shown in Table A4.5, with the probability to reply in the second wave being the dependent variable.¹⁵ Compared to the first cohort, most cohorts are significantly more likely to reply in the second wave. The same is true for higher vocational degrees and whether children are present in the household. The larger the timelag between the actual unemployment entry and the first interview, – there is an average time gap of two months – the lower the probability to give a second interview. Furthermore, first generation migrants are also more likely to drop out. Other characteristics such as information about the last job, gender, geographical distribution, age, marital status, life satisfaction, residual happiness and locus of control are not relevant for the selection process.¹⁶

Table A4.6 shows the main results correcting for panel mortality, with the first five columns displaying the results for future reemployment and the last five columns the results for future wages. The effects with respect to reemployment slightly decrease, and the main effect of residual happiness loses its statistical significance, whereas the nonlinear effect for positive residual happiness is particularly robust to attrition bias. Further analysis shows that dropping around 100 observations with weights above 4.5 (the overall mean is 2.07 with a standard deviation of 0.84, and the median is 1.80) leads to very robust main results. In summary, there appears to be some selection bias with respect to the results of reemployment which, however, is driven by outliers with very large weights. The results of future wages are very robust with respect to attrition as shown by columns (6) – (10). Some magnitudes are slightly smaller than without correcting for panel mortality, yet this does not change the former conclusions. The results are also robust to dropping individuals with weights larger than 4.5. Therefore, correcting for attrition bias does not seem to alter the key findings of the main analysis.

4.5 Conclusions

This chapter investigates the effect of individual happiness on future labor market outcomes. In particular, an inflow sample into unemployment in Germany is used to calculate residual happiness, which displays higher (or lower) satisfaction levels than would be predicted by a number of demographic and socioeconomic characteristics. In a second step, the effect of this residual on future labor market outcomes is analyzed. There is a statisti-

¹⁵Results are not altered using a probit estimation.

¹⁶Life satisfaction, residual happiness and locus of control are left out of the estimation shown here, given that they do not contribute to the selection process.

cally significant inverted U-shaped effect of residual happiness on an unemployed individual's future reemployment and reentry wages, even after controlling for demographic and socioeconomic characteristics. Further investigation offers three mechanisms, that appear to also be interrelated, and have not previously been shown in this context: *a)* happiness matters mainly for future self-employment and less for standard employment; *b)* happiness matters only for male unemployed and not for females; and *c)* the concept of locus of control is able to explain part of the effect. The result regarding self-employment is a new and interesting finding that may have implications for the literature on entrepreneurship. However, this study is only representative of the selected unemployment population in Germany. Future research investigating gender effects could shed light upon whether significant differences between men and women also exist outside the unemployment or labor market context. Furthermore, the connection between happiness and personality traits should be investigated in greater detail whenever possible, to better understand the driving forces behind their relationship.

One motivation for this chapter is to understand what happiness displays for individuals. There is no doubt that it can be considered as *the* ultimate goal in life for most people. Individuals do certain things because they derive utility or satisfaction from them, therefore happiness represents a goal in itself. However, there is also a second goal that goes one step further: happiness also makes people do things or not, which in turn leads to certain outcomes. Consequently, given a positive connection, happiness would lead people to make "better" choices for themselves and their lives, which would hopefully translate into "better" choices for society. Generally, this positive connection between happiness and future outcomes seems to exist. However, this study shows that this effect is not linear, at least in this special setting with unemployed individuals. If reemployment and higher wages are considered desirable outcomes for the unemployed and the society, the shape of the effect suggests that the optimal level of happiness is not necessarily the highest (Frey and Stutzer, 2000b). Being too happy may lead to the loss of motivation and resilience to pursue one's life in a conscious and healthy manner. In the same spirit, psychologists have found the optimal level of happiness in the domains of volunteer work and personal relationships to be the highest, whereas the optimal level of happiness for achievement outcomes such as income and education is a moderately high level. Oishi et al. (2007) state that a slight dissatisfaction can serve as motivation to achieve more, earn more money, and in other words, to (self-)improve, which is confirmed by the findings of this chapter. Maximizing happiness should not necessarily be the goal that future policy-makers should consider. Instead, *optimizing* happiness appears to be the enduring and desirable long-term ambition.

4.6 Appendix

Table A4.1: OLS Life Satisfaction Estimation First Wave

	Life Satisfaction in Wave 1	
Male	-0.212	(0.091)**
Age	-0.088	(0.038)**
Age Squared	0.090	(0.050)*
Disabled	-0.305	(0.170)*
Marital Status (<i>Reference: Divorced/Widowed</i>)		
Married	-0.542	(0.167)***
Single	-0.540	(0.142)***
Partner (<i>Reference: No Partner</i>)	-0.286	(0.236)
Employment Status Spouse (<i>Reference: not Full-Time/Part-Time Employed</i>)		
Full-Time Employed	0.888	(0.140)***
Part-Time Employed	0.328	(0.230)
Employment Status Partner (<i>Reference: not Full-Time/Part-Time Employed</i>)		
Full-Time Employed	-0.085	(0.258)
Part-Time Employed	0.710	(0.529)
Educational Degree (<i>Reference: No Degree</i>)		
Secondary School (9 yrs.)	0.597	(0.418)
Secondary School (10 yrs.)	0.723	(0.418)*
Technical College Entrance Qualification (11-12 yrs.)	0.546	(0.447)
General Qualification for University Entrance (12-13 yrs.)	0.806	(0.429)*
Vocational Degree (<i>Reference: No Degree</i>)		
Apprenticeship (Dual System)	0.124	(0.156)
Specialized Vocational School	0.050	(0.186)
University, Technical College	-0.117	(0.199)
Children in Household	0.208	(0.175)
Number of Children in Household	0.117	(0.099)
Migrant Status (<i>Reference: Native</i>)		
1st Generation Migrant	0.032	(0.148)
2nd Generation Migrant	-0.331	(0.151)**
Net Hourly Wage of Last Job (Euros)	0.046	(0.012)***
Duration of Last Job (<i>Reference: Until 1 Year</i>)		
1 to 5 Years	0.143	(0.097)
5 to 10 Years	0.367	(0.137)***
More than 10 Years	0.331	(0.146)**
0 Months	-0.692	(0.411)*
Log of Unemployment Benefits	0.019	(0.016)
State Unemployment Rate	-0.078	(0.212)
Termination of Previous Job (<i>Reference: Temporary Contract</i>)		
Quit	0.102	(0.159)
Layoff	-0.091	(0.111)
Employer and Employee Agreed	0.216	(0.175)
Firm Closure	0.063	(0.181)
End of Self-Employment	-0.328	(0.365)
Parental Leave	0.313	(0.332)
Care for Person in Need	-2.507	(1.452)*
Other	-0.207	(0.212)
Nb. of Households in Living Area Belonging to Upper Social Class	0.001	(0.001)*
Nb. of Households in Living Area Belonging to Upper-Middle Social Class	-0.001	(0.0004)**
Nb. of Households in Living Area Belonging to Middle Social Class	0.000	(0.0003)
Nb. of Households in Living Area Belonging to Lower-Middle Social Class	0.000	(0.0002)
Nb. of Households in Living Area Belonging to Lower Social Class	-0.000	(0.001)
Constant	7.758	(1.960)***
# of Observations		2,534
R ²		0.114

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Notes: Standard errors in parentheses. Further control variables include dummies for German federal states, interview cohorts, time between unemployment entry and interview.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4.2: Mechanisms I (Male vs. Female)

	Male Sample					Female Sample				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Residual Happiness	0.050 (0.019)***					0.002 (0.019)				
Pos. Residual Happiness		0.053 (0.036)					-0.025 (0.038)			
Neg. Residual Happiness			-0.086 (0.029)***					-0.019 (0.029)		
Pos. Residual Happiness				0.301 (0.099)***					0.026 (0.098)	
Pos. Residual Happiness Sq.				-0.082 (0.030)***					-0.019 (0.033)	
Neg. Residual Happiness					-0.170 (0.076)**					-0.012 (0.075)
Neg. Residual Happiness Sq.					0.020 (0.016)					-0.002 (0.017)
# of Observations	1,180	1,180	1,180	1,180	1,180	1,343	1,343	1,343	1,343	1,343
Log Likelihood	-731.593	-734.124	-730.720	-730.214	-730.042	-846.195	-845.987	-845.978	-845.82964	-845.972

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Note: Probit regressions. Parameter estimates are shown. Murphy and Topel (1985) standard errors in parentheses. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4.3: Mechanisms II (Standard Employment vs. Self-Employment)

	Exclusion of Self-Employed at the Second Interview				Exclusion of Standard Employed at the Second Interview					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Residual Happiness	0.019 (0.013)					0.090 (0.026)**				
Pos. Residual Happiness		0.006 (0.026)					0.116 (0.047)**			
Neg. Residual Happiness			-0.041 (0.020)**					-0.155 (0.043)**		
Pos. Residual Happiness				0.116 (0.067)*					0.440 (0.136)***	
Pos. Residual Happiness Sq.				-0.037 (0.021)*					-0.116 (0.046)**	
Neg. Residual Happiness					-0.065 (0.054)					-0.258 (0.114)**
Neg. Residual Happiness Sq.					0.006 (0.012)					0.027 (0.027)
# of Observations	2,334	2,334	2,334	2,334	2,334	1,244	1,244	1,244	1,244	1,244
Log Likelihood	-1514.387	-1515.358	-1513.379	-1513.784	-1513.267	-435.560	-438.908	-435.128	-435.415	-434.588

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Note: Probit regressions. Parameter estimates are shown. Murphy and Topel (1985) standard errors in parentheses. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4.4: Mechanisms III (LOC Index)

	(1)	(2)	(3)	(4)	(5)
Residual Happiness	0.018 (0.013)				
Locus of Control Index Std.	0.081 (0.028)***				
Pos. Residual Happiness		0.001 (0.026)			
Locus of Control Index Std.		0.089 (0.027)***			
Neg. Residual Happiness			-0.042 (0.020)**		
Locus of Control Index Std.			0.079 (0.027)***		
Pos. Residual Happiness				0.125 (0.067)*	
Pos. Residual Happiness Sq.				-0.042 (0.021)**	
Locus of Control Index Std.				0.084 (0.028)***	
Neg. Residual Happiness					-0.064 (0.053)
Neg. Residual Happiness Sq.					0.005 (0.012)
Locus of Control Index Std.					0.077 (0.028)***
# of Observations	2,534	2,534	2,534	2,534	2,534
Log Likelihood	-1611.790	-1612.745	-1610.597	-1610.7544	-1610.498

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Note: Probit regressions. Parameter estimates are shown. Murphy and Topel (1985) standard errors in parentheses. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4.5: Logit Estimation: Probability to Respond in the Second Wave

	Interview Wave 2	
Interview Cohort (<i>Reference: Cohort 1</i>)		
Cohort 2	0.806	(0.164)***
Cohort 3	0.982	(0.168)***
Cohort 4	1.183	(0.164)***
Cohort 5	0.466	(0.157)***
Cohort 6	1.165	(0.152)***
Cohort 7	1.038	(0.158)***
Cohort 8	0.890	(0.166)***
Cohort 9	0.052	(0.160)
Cohort 10	1.218	(0.160)***
Cohort 11	1.115	(0.154)***
Cohort 12	1.183	(0.153)***
Time between Unemployment Entry and Interview (<i>Reference: 1 Month</i>)		
2 Months	-0.139	(0.082)*
3 Months	-0.242	(0.100)**
4 Months	-0.374	(0.222)*
Net Hourly Wage of Last Job (Euros)	0.006	(0.009)
Duration of Last Job (<i>Reference: Until 1 Year</i>)		
1 to 5 Years	-0.062	(0.072)
5 to 10 Years	0.031	(0.103)
More than 10 Years	-0.051	(0.109)
0 Months	-0.295	(0.283)
Male	0.022	(0.065)
Age	0.031	(0.027)
Age Squared	-0.012	(0.036)
Disabled	-0.016	(0.129)
Marital Status (<i>Reference: Divorced/Widowed</i>)		
Married	0.067	(0.100)
Single	0.105	(0.104)
Partner (<i>Reference: No Partner</i>)	-0.175	(0.118)
Educational Degree (<i>Reference: No Degree</i>)		
Secondary School (9 Yrs.)	-0.010	(0.286)
Secondary School (10 Yrs.)	0.160	(0.287)
Technical College Entrance Qualification (11-12 Yrs.)	0.342	(0.314)
General Qualification for University Entrance (12-13 Yrs.)	0.528	(0.297)*
Vocational Degree (<i>Reference: No Degree</i>)		
Apprenticeship (Dual System)	0.220	(0.107)**
Specialized Vocational School	0.315	(0.132)**
University, Technical College	0.393	(0.146)***
Children in Household	0.200	(0.0745)***
Migrant Status (<i>Reference: Native</i>)		
1st Generation Migrant	-0.394	(0.103)***
2nd Generation Migrant	-0.021	(0.111)
Constant	-2.024	(0.573)***
# of Observations		4,728
Log Likelihood		-3057.752

Source: IZA Evaluation Dataset S, own calculations.

Notes: Standard errors in parentheses. Further control variables include dummies for German federal states.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4.6: Panel Mortality Correction

	Employed at the Second Interview					Hourly Wage at the Second Interview				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Residual Happiness	0.022 (0.014)					0.015 (0.005)***				
Pos. Residual Happiness		0.002 (0.027)					0.018 (0.011)*			
Neg. Residual Happiness			-0.049 (0.021)**					-0.024 (0.008)***		
Pos. Residual Happiness				0.147 (0.069)**					0.078 (0.029)***	
Pos. Residual Happiness Sq.				-0.050 (0.022)**					-0.022 (0.010)**	
Neg. Residual Happiness					-0.075 (0.055)					-0.085 (0.023)***
Neg. Residual Happiness Sq.					0.006 (0.012)					0.015 (0.005)***
# of Observations	2,534	2,534	2,534	2,534	2,534	1,379	1,379	1,379	1,379	1,379
Log Likelihood/R ²	-3020.613	-3023.199	-3017.379	-3017.896	-3017.113	0.311	0.308	0.311	0.311	0.316

Source: IZA Evaluation Dataset S, own calculations. State unemployment rates from the federal unemployment agency.

Note: Probit/OLS regressions weighted using inverse probability weights. Parameter estimates are shown. Murphy and Topel (1985) standard errors in parentheses. Positive (negative) residual happiness contains the residual values while setting the negative (positive) values to zero. Negative residual happiness displays the absolute values rather than the negative numbers. Further control variables are dummies for German federal states, interview cohorts, time between unemployment entry and interview, state unemployment rate wave 1 and wave 2, reason for termination of previous job, migrant status, age and age squared, marital status, disability, (number of) children in household, employment status of spouse/partner, duration and hourly wage of last employment, logarithm of unemployment benefits, educational and vocational degrees, search variables of wave 1 (number of search channels and applications, search for full-time or part-time job).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Chapter 5

Anonymous Job Applications of Fresh Ph.D. Economists*

5.1 Introduction

Individuals from minority groups face discrimination in several forms and in several markets. Discrimination is for example present within sports, where it influences the referees' decisions in basketball (Price and Wolfers, 2010) or baseball (Parsons et al., 2011), but it is also documented in a wide range of consumer markets such as the market for new cars (e.g., Ayres and Siegelman, 1995) or the housing market (e.g., Ondrich et al., 2003; Bosch et al., 2010).¹ Nevertheless, the labor market is presumably the most important market in which discrimination is present. The vast body of the literature that aims at identifying, measuring and decomposing the gender wage gap supports this view (see, e.g., Weichselbaumer and Winter-Ebmer, 2005, for a meta-study). But employers' discriminatory behavior in the labor market may not only affect wage setting: it may be already present in the hiring process.

From a theoretical point of view, firms should hire the most productive workers – no matter where they are from, what gender they have, or which ethnic group they belong to. Discrimination is a market failure, and it is costly for firms. For example, Weber and Zulehner (2009) show that firms with strong preferences for discrimination, i.e., a low share of female employees relative to the industry average, have significantly shorter survival rates. On the other hand, there are numerous empirical studies that find a substantial extent of discrimination in the hiring decisions of firms. Examples of such studies that typically use correspondence tests include Bertrand and Mullainathan (2004)

*This chapter is based on the paper *Anonymous Job Applications of Fresh Ph.D. Economists* joint with Ulf Rinne and Klaus F. Zimmermann (Krause, Rinne and Zimmermann, 2012).

¹See Yinger (1998) for an overview about discrimination in consumer markets.

for the United States, Carlsson and Rooth (2007) for Sweden, and Kaas and Manger (2011) for Germany.

Discrimination as a market failure provides the basis for policy interventions of various kinds. One intervention, which has recently gained attention and popularity, are anonymous job applications. The intuition is straightforward: removing information about characteristics that employers may discriminate against should reduce or even abandon discrimination in hiring. Discrimination becomes virtually impossible, at least in the first stage of the hiring process which is the decision about the invitation for a job interview. To test whether the desired effects result in practice, several European countries have recently conducted experiments with anonymous job applications (e.g., France, the Netherlands, and Germany). Empirical results are not yet available for the majority of these experiments – with one exception: Åslund and Nordström Skans (2012) analyze an experiment conducted in parts of the local administration in the Swedish city of Gothenburg. Based on a difference-in-differences approach, the authors find that anonymous job applications increase the chances of an interview invitation for both women and applicants of non-Western origin when compared to standard applications. These increased chances in the first stage also translate into a higher job offer arrival rate for women, but not for migrants.

Our chapter adds to the literature on the effects of anonymous job applications and to the literature on the job market for fresh Ph.D. economists. While the data used in the latter literature is fairly old, we use fresh data from an own randomized experiment.² Participants in our experiment are economists who are close to finishing or have recently finished a Ph.D. degree (or equivalent). During the North American annual job market for economists 2010/2011, they applied for a position as a post-doctoral researcher at a European-based economic research institution. Because the treatment was randomly assigned in the experiment, we can rule out any selection into treatment status.

We expect that the introduction of anonymous job applications reduces the extent of discrimination in hiring. Discrimination becomes impossible if the anonymization is effective. Nevertheless, to result in any effects, it is required that discriminatory behavior is present before the introduction of anonymous job applications. One may, however, question that this holds in our specific context. First, discrimination may be lower for high-skilled occupations (including Ph.D. economists). This view is supported, e.g., in Carlsson and Rooth (2007). Second, discrimination may be lower in international labor markets. This argument is related to the previous point and manifests for example in the fact that English is the common language (or *lingua franca*) in economic research. Third,

²Our study is therefore similar to Goldin and Rouse (2000) who also analyze anonymous job applications in a particular labor market. They find that the introduction of “blind” auditions to select members of symphony orchestras increases the chances of female musicians to be hired.

discrimination may be lower in more competitive labor markets (Weber and Zulehner, 2009), and there is evidence that the particular labor market under study is rather thick (Coles et al., 2010). These three arguments support the view that discrimination in hiring may not be very prevalent in the annual job market for Ph.D. economists. The effects of anonymous job applications may thus be limited in our context.

This chapter is organized as follows. Section 5.2 gives an overview about the annual job market for Ph.D. economists and highlights some important features. Section 5.3 describes our experimental design and gives an overview about the data. We present and discuss our results in Section 5.4. Finally, Section 5.5 concludes.

5.2 The Job Market for Ph.D. Economists

The job search process for economists who are close to finishing or have just recently finished their Ph.D. (or equivalent) is rather exceptionally structured.³ Mainly academic institutions, but also government agencies and private firms stand on the demand side. The applicant screening process is an annual procedure. It typically ranges from September to February, and it is structured in three steps.⁴

The first step takes place in early fall. At this stage, vacancies for Ph.D. economists are posted in the monthly issues of Job Openings for Economists (JOE) and on several other websites (Coles et al., 2010). Candidates send their applications to potential employers, who then decide which applicants they would like to interview. The second stage takes place at the Allied Social Science Association (ASSA) meetings in January, where candidates and employers meet for interviews. The interview dates are set up in advance and interviews take place, e.g., in hotel rooms, in suites, or at tables in large ballrooms.⁵ In a third step, the most convincing candidates are invited to visit the institutions and present their research. These visits are typically scheduled between January and March, when also job offers are communicated. Coles et al. (2010) argue that the number of doctorates awarded from academic institutions and the number of academic and non-academic job vacancies result in a rather thick market. Candidates who receive their Ph.D. from universities other than those based in the United States also participate in this job market, similar to the demand side with institutions based outside the United States participating.

The literature on the job market mainly concentrates on the United States. Most

³Cawley (2011) serves as a comprehensive overview and guideline for young economists who plan to participate in the job market.

⁴The following description focuses on the *primary job market*. See Carson and Navarro (1988) for an additional illustration of the *preemptive job market* and the *secondary job market*.

⁵About 600 hotel rooms or suites and 150 tables have been booked recently for interviews (Coles et al., 2010).

studies are concerned with certain determinants of the application process and the supply and demand side in the market, where empirical evidence dates back to the 1980s. These studies analyze the relationship between the applicant's professional characteristics, other socio-demographic factors and interview decisions or job offers. Other studies investigate heterogeneous demand side effects, such as differences in hiring practices between higher-ranked and lower-ranked departments, or they compare the hiring decisions of academic and non-academic employers.

For example, Taube (1987) analyzes the relationship of applicant characteristics on outcomes such as interview invitations, site visits and job offers with survey data from the ASSA meetings in 1987. He finds that males have fewer academic interviews than females, and that the number of publications is significantly positive related with site visits. Moreover, the number of interviews and site visits as well as the number of site visits and job offers are positively related. Similar effects of the number of research papers on the interview decision are documented in Carson and Navarro (1988), who analyze survey data from economic departments in the 1985/1986 job market. They additionally find that the candidate's presentation at the campus visit and the future research agenda are important determinants of a successful job search. In addition, they investigate differences in hiring practices between the top 20 economic departments and other economic departments.⁶ The use of networks to find candidates and the candidate's research rather than teaching skills are more important for the top departments. At the same time, they require less teaching activities and offer higher base salaries.

Barbezat (1992) uses data on Ph.D. economists who searched for a job in the 1988/1989 job market. She investigates the importance of the rank of the economic department from the applicant's side and finds that a higher ranking of a potential employer increases the probability that the applicant accepts a job offer from that employer. She furthermore finds that different gender preferences for the time attributed to teaching and research activities, for salary and other benefits, and for collegiality are able to explain that women are more likely to accept a job at liberal arts colleges compared to top-ranked universities. The results concerning the rank of the departments are confirmed by Stock et al. (2000) who use survey data of job candidates and academic departments which recruited economists in the job market in 1995/1996. In addition, they find that candidates who receive a Ph.D. from a higher-ranked department tend to have more interviews and job offers.

List (2000) focuses on interview decisions and compares academic and non-academic

⁶Carson and Navarro (1988) determine the top 20 economic departments through recent rankings. In their case, they include Chicago, Columbia, Cornell, Harvard, Johns Hopkins, MIT, Michigan, Minnesota, NYU, Northwestern, Pennsylvania, Princeton, Rochester, Rutgers, Stanford, UC-Berkeley, UC-Los Angeles, UC-San Diego, Wisconsin, Yale.

institutions in this regard. He analyzes survey data from first-time job seekers at the ASSA meetings in 1997. He finds that the interview decision of academic departments – as opposed to non-academic employers – is based on research publications of the candidates, a completed Ph.D. from one of the best 19 institutions and reference letters from prestigious economists. Moreover, women receive slightly more academic interview invitations, but less interview invitations from non-academic employers. Among the socio-demographic characteristics of the applicant, only age plays a statistically significant role for the interview decision, which is negative. List (2001) presents additional results based on similar data. He concludes that gender, age, ethnic background, and citizenship are determinants of the interview decision. Nevertheless, a candidate can influence the probability of receiving an interview invitation by maintaining quality teaching and research portfolios. He furthermore identifies networking as an important factor of success. His estimates suggest that recommendation letters from eminent economists significantly increase the number of interview invitations.

To summarize, the literature generally agrees that the most important determinants of interview and hiring decisions in the job market for high-skilled economists are professional signals of the applicant. These signals include the number of research papers and publications, the time to complete the Ph.D. degree, and the university which the degree is obtained from. However, some studies suggest that the probability of receiving an interview invitation increases (or decreases) depending on gender, age, or ethnic background. This gives rise to the question whether such potentially different treatments are still present when these characteristics are not known to the recruiters, i.e., when anonymous job applications are introduced.

5.3 Experimental Design and Sample

Our experiment took place at a European-based economic research institution during the annual job market 2010/2011. Vacancies for positions as a post-doctoral researcher were posted in two monthly issues of the JOE (October and November 2010). 148 applications were screened in November and December 2010 and 26 candidates were invited for an interview at the ASSA meetings in January 2011. Because of data protection laws, our sample size decreases from 148 applicants to 96 individuals. Participants in the experiment are required to give us permission to use their data, and we therefore electronically asked them to do so. The (positive) response rate of about 65 percent appears reasonable, in particular when considering the time lag of about four months between the application submission and our initial request for permission.⁷ We are moreover not aware of any

⁷We sent out an additional reminder to increase the response rate.

reason why this procedure should result in a selective sample. For example, our outcome of interest appears not to be related to individual responses. Out of 26 successful candidates who received an invitation for a job interview at the ASSA meetings, six applicants did not give us permission to use their data. Unfortunately, again because of the same data protection laws, we cannot empirically analyze the issue of selective response in more detail. Our final sample consists of 82 individuals when we additionally exclude observations with missing information about age and citizenship.

Importantly, applicants were not aware of the experiment at all. Applications were submitted as in previous years, and no specific requirements were imposed. After the application deadline had expired (November 30, 2010), treatment status was randomly assigned to rule out any selection into treatment group and control group. If included in the treatment group, the applicant's name, contact details, age, nationality, gender and any other indications of the candidate's identity were overwritten with correction fluid. The anonymous job applications were moreover photocopied before handing them to the recruiters, since in most cases the correction fluid did not cover the respective text entirely. The anonymization was done by experienced staff members who were otherwise not involved in the hiring process. This method of anonymizing applications did not prove to be very efficient in past international experiments. However, since recommendation letters are an important determinant in the application process (List, 2000, 2001) and no serious alternative was available to anonymize continuous text documents, it was decided to carry out the anonymization as described.

The screening process of the applications was conducted as in previous years by the institution's experienced hiring committee. According to the recruiters, a maximum of four to six positions can be filled each year. All members of the hiring committee are male, of European origin and senior researchers involved for years in hiring decisions. They reviewed both standard and anonymous applications. While they were aware of the experiment, they were involved neither in its design nor in the analysis of the data. The preparation of the material and an imposed strong time-pressure to review the applications have left only a few possibilities to identify the applicants. Both reviewers are experienced researchers and interviewers, open to experiments and monitoring. Also in previous traditional recruitment processes, invitation decisions were typically reviewed by a different member of the hiring committee. Hence, the reviewers were unlikely to react to the experimental situation.

Table 5.1: Descriptive Statistics

	Non-Anonymous	Anonymous	t-test
Interview invitation	0.244 (0.435)	0.171 (0.381)	0.811
Female	0.341 (0.480)	0.366 (0.488)	-0.228
Non-western origin	0.293 (0.461)	0.268 (0.449)	0.243
Age	30.78 (3.158)	29.95 (2.747)	1.269
Number of papers	4.366 (3.352)	4.610 (2.862)	-0.354
Number of publications in A/A+ journals	0.073 (0.461)	0.195 (0.511)	-1.266
Ph.D. degree from top 20 university	0.171 (0.381)	0.293 (0.461)	-1.306
Years to complete Ph.D.	5.000 (1.285)	4.707 (1.167)	1.080
Holding Ph.D. degree at time of application	0.146 (0.358)	0.171 (0.381)	-0.299
Work experience	0.122 (0.331)	0.049 (0.218)	1.181
Research fields match with institution's areas	0.756 (0.068)	0.634 (0.076)	1.195
# Observations	41	41	

Source: Own experimental data.

Notes: Standard deviations are in parentheses. Non-western origin is defined as having citizenship from an African, Asian, Latin American, or Eastern European country. A/A+ journals are defined according to the *Handelsblatt* journal ranking. Top universities are defined as the top 5% institutions listed by RePEc in July 2011 and include 268 ranks. Top 20 universities include: Harvard, University of Chicago, MIT, LSE, UC-Berkeley, Princeton, Oxford, New York University, Columbia University, Stanford University, Barcelona Graduate School of Economics, Toulouse School of Economics, Boston University, Yale, Northwestern, University of Pennsylvania, University of Michigan, Paris School of Economics, UC-San Diego, and Brown.

Mean difference: *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 5.1 displays descriptive statistics for our treatment and control groups, i.e., the two groups with anonymous and non-anonymous job applications. It becomes apparent that the randomization was indeed successful as any differences between the two groups are not statistically significant. About 20 percent of the sample receive an interview invitation, where the probability for the group with standard applications is slightly higher than for the group with anonymous job applications. About one third of the applicants are female, the average age is around 30 years, and roughly 30 percent have a non-Western background. The candidates have written in total (working papers and publications) between four and five papers. The average number of papers published in A/A+ journals

is below one in both groups. About 25 percent receive their Ph.D. degree from one of the top 20 universities. Although this share differs between treatment and control group, the difference is not statistically significant. On average, applicants report that they need about five years to complete their Ph.D. program and less than 20 percent already hold a Ph.D. degree when they apply. Few applicants have work experience outside academia. About 70 percent have experience in the institution's fields of specialization.⁸

The distribution of applicants' characteristics is therefore similar to Barbezat (1992), except that the fraction of women is higher in our sample. This is also the case when we compare our sample to most other samples in the related literature, but it is very likely related to the increasing number of female Ph.D. economists over time – and most other studies use data from more than ten years ago. Another difference to related studies is that we observe a relatively low fraction of applicants from the top 20 departments. But given that most of these departments are based in the United States, and that most applicants who receive their Ph.D. in the United States also apply for a post-doctoral position in this region, it comes as no surprise that applicants from these departments appear more often in North American data.

5.4 Results

Table 5.2 displays the results of our baseline probit model, where the dependent variable equals 1 if an interview invitation is received and 0 otherwise. Socio-demographic characteristics, professional signals and interaction terms between anonymized characteristics and treatment status are added sequentially to the specifications, see columns (1) to (4). The first column displays the raw difference in the invitation probability between applicants with standard applications and those with anonymous job applications. This difference of 7 percentage points is not statistically different from zero, as mentioned above, and it remains statistically insignificant when we include additional control variables. Anonymous job applications themselves therefore do not have an impact on the interview decision.

In columns (2) and (3) of Table 5.2, we additionally include socio-demographic and professional characteristics. Age has an inversely U-shaped effect on the probability of receiving an interview invitation, but being female or having a non-western background do not significantly influence the recruiters' decision. The number of publications in top journals is positively associated with an interview invitation, although this effect is not statistically significant. Candidates who already hold a Ph.D. degree at the time of the

⁸Results are similar when excluding 25 applicants without experience in these fields. See Krause et al. (2011) for a more detailed analysis regarding this criterion.

interview have a significantly lower probability to receive an interview invitation. This finding may be related to the timing of entering the market. It is typically the case that applicants enter the market before they have been officially awarded the Ph.D. degree. Therefore, already holding a degree may be interpreted as a negative signal. It likely indicates that the candidate does not participate in the market for the first time.⁹ We also find that work experience outside academia has a significantly positive effect on the outcome variable. This can be explained by the orientation of the particular institution because it is not only an academic institution, but also serves as a place of communication between economic research and political practice.

Table 5.2: Regression Analysis I

	(1)	(2)	(3)	(4)
Anonymous	-0.073 (0.089)	-0.056 (0.089)	-0.029 (0.086)	0.124 (0.104)
Female		0.117 (0.086)	0.129 (0.082)	0.297 (0.107)***
Anonymous×Female				-0.383 (0.136)***
Non-western origin		-0.020 (0.09)	-0.030 (0.089)	-0.007 (0.123)
Anonymous×Non-western origin				0.038 (0.176)
Age		1.067 (0.477)**	1.158 (0.523)**	1.131 (0.48)**
Age squared		-0.017 (0.008)**	-0.019 (0.009)**	-0.018 (0.008)**
Number of publications in A/A+ journals			0.052 (0.081)	0.032 (0.085)
Ph.D. degree from top 20 university			-0.092 (0.098)	-0.128 (0.094)
Years to complete Ph.D.			-0.065 (0.034)*	-0.058 (0.032)*
Holding Ph.D. degree at time of application			-0.206 (0.149)	-0.248 (0.149)*
Work experience			0.284 (0.133)**	0.250 (0.124)**
# Observations	82	82	82	82
Log Likelihood	-41.516	-37.532	-34.619	-32.166

Source: Own experimental data.

Notes: Probit model. Average marginal effects. Robust standard errors in parentheses. Dependent variable is equal to 1 if individual was invited for an interview. See Table 5.1 for additional notes.

*** significant at 1%; ** significant at 5%; * significant at 10%.

⁹According to Cawley (2011), candidates should enter the market when a) they have a good job market paper completed in fall, and b) they are likely to defend their dissertation in the following spring. He also gives advice to not selectively enter the market and prepare for re-entering the market in the next year, if necessary. In his view, departments are likely to assume that candidates who are on the market for the second time are of low quality.

To identify whether anonymous job applications have a different effect on certain groups, we add interaction terms between the treatment status and socio-demographic characteristics in column (4) of Table 5.2. Interestingly, the coefficient estimate on the interaction term between anonymous job applications and female applicants is significantly negative. On the other hand, the coefficient estimate for female applicants becomes significantly positive. This indicates that a) with standard applications, female applicants are more likely to receive an interview invitation relative to their male counterparts, and b) this relative advantage disappears with anonymous job applications. A story that is consistent with this finding is that female candidates are generally favored in the hiring process at this institution, but such (positive) discrimination is not possible anymore when the applicant's gender is unknown.

Another channel through which differential effects between non-anonymous and anonymous groups may arise are professional signals. One could imagine that these signals might receive a different weight when screening an anonymous application and not knowing the identity of the applicant as compared to the regular screening of a standard application. Hence, Table 5.3 displays the results of the regressions where interaction terms between the different professional characteristics and the treatment status are included. We again sequentially include additional control variables in columns (1) and (2). These results basically mirror our previous findings. In column (3), we include the interaction terms of interest. Our results confirm the hypothesis that certain characteristics of the applicant which are related to his or her education or research portfolio are treated differently under anonymous job applications. This is especially the case for the number of publications in A/A+ journals. Whereas this professional signal has a negative, but insignificant effect on the invitation probability with standard applications, the effect is significantly positive with anonymous job applications. An explanation is that the recruiters tend to rely more strongly on the "traditional" quality signal of top journal publications when confronted with anonymous job applications.

Overall, these findings have interesting implications for anonymous job applications in general. One may have to take into account not only the potential positive side of concealing certain socio-demographic characteristics, that is to reduce discrimination, but also that other characteristics which are known to the recruiter in any case could be weighted (maybe unconsciously) differently. This may, however, have positive or negative consequences for the applicants.

Table 5.3: Regression Analysis II

	(1)	(2)	(3)
Anonymous	-0.050 (0.086)	-0.029 (0.086)	-0.628 (0.361)*
Female		0.129 (0.082)	0.142 (0.086)*
Non-western origin		-0.030 (0.089)	-0.060 (0.099)
Age		1.158 (0.523)**	1.245 (0.468)***
Age squared		-0.019 (0.009)**	-0.020 (0.008)***
Number of publications in A/A+ journals	0.028 (0.091)	0.052 (0.081)	-0.592 (0.139)***
Anonymous×Number of publications in A/A+ journals			0.709 (0.18)***
Ph.D. degree from top 20 university	-0.041 (0.103)	-0.092 (0.098)	-0.377 (0.18)**
Anonymous×Ph.D. degree from top 20 university			0.359 (0.219)
Years to complete Ph.D.	-0.039 (0.035)	-0.065 (0.034)*	-0.124 (0.047)***
Anonymous×Years to complete Ph.D.			0.115 (0.071)
Holding Ph.D. degree at time of application	-0.255 (0.134)*	-0.206 (0.149)	0.166 (0.219)
Anonymous×Holding Ph.D. degree at time of application			<i>omitted</i>
Work experience	0.287 (0.141)**	0.284 (0.133)**	0.345 (0.192)*
Anonymous×Work experience			<i>omitted</i>
# Observations	82	82	74
Log Likelihood	-38.655	-34.619	-30.285

Source: Own experimental data.

Notes: Probit model. Average marginal effects. Robust standard errors in parentheses. Dependent variable is equal to 1 if individual was invited for an interview. *Omitted* refers to a perfect prediction of success or failure of the dependent variable, so 8 observations are dropped in Column (3). See Table 5.1 for additional notes.

*** significant at 1%; ** significant at 5%; * significant at 10%.

5.5 Conclusions

We present empirical evidence on the effects of anonymous job applications in a particular labor market, namely the annual job market for Ph.D. economists. We analyze a randomized experiment conducted among applicants for a post-doctoral research position at a European-based economic research institution in 2010/2011. In case of treatment assignment, certain characteristics of the applicant, such as name, gender, age, contact details and nationality, were removed from the applications.

Our empirical analysis shows that anonymous job applications are in general not as-

sociated with a higher or lower probability to receive an invitation for a job interview. Nevertheless, when we investigate the effects separately by gender, we find that while female applicants have a higher probability to receive an interview invitation than male applicants with standard applications, this difference disappears with anonymous job applications. This finding may be related to the fact that female researchers are favored in this particular labor market – or, more specifically, at this particular institution – to promote their chances in research and academia. Evidence shows that women’s chances to climb the career ladder are still lower than men’s opportunities in this particular labor market (Mixon and Trevino, 2005), but gender discrimination may unfold only at later states (e.g., when promotions are made and/or professorship positions awarded). In any case, the positive discrimination of female economists that we observe with standard applications is not possible with anonymous job applications as the applicants’ gender is unknown. Next to these gender differences, our results indicate that certain professional signals of the applicants are weighted differently with and without anonymous job applications. We find evidence that the recruiters tend to rely more strongly on the “traditional” quality signal of top journal publications when they are confronted with anonymous job applications.

Our results concur with the often discussed notion that anonymity prevents employers from favoring minority applicants when credentials are equal – at least in the initial stage of the hiring process (see e.g. Åslund and Nordström Skans, 2012, p.100). Anonymous job applications thus do not have very large effects in our study. However, one should be cautious when generalizing from this finding. We also need to recognize that the instrument of anonymous job applications only has potential if there is a relevant size of discrimination. Discrimination is lower for high-skilled occupations and in more competitive markets. This may limit the effects of anonymous job applications in the case studied here.

The important question to be answered in the long run is whether and whom anonymous job applications serve with their initial purpose, that is to reduce discrimination and to increase the chances of disadvantaged groups in the labor market. Our findings indicate that certain groups may even be hindered in their job chances by hiding their identity. Moreover, other characteristics, which are known to the recruiter in any case, may be taken into account differently when screening the anonymous job applications. This effect can result in ambiguous outcomes for the applicants. It is *a priori* difficult to judge the direction because the interpretation of information is context-specific, and the introduction of anonymous job applications broadly changes the informational context. Moreover, anonymous job applications specifically target at the initial stage of the recruit-

ment process. Any preexisting structural differences, and discrimination that is based on such differences, can therefore not be overcome. Whether anonymous job applications are implemented should therefore depend on the characteristics of the particular, narrowly defined labor market. For example, it appears important to take into account the extent of discrimination as well as the characteristics of the hiring process.

Chapter 6

Decomposing the Native-Migrant Education Gap*

6.1 Introduction

Native-migrant gaps in economic outcomes are documented in many countries. This is *per se* not very surprising – given that migrants are selected groups (Borjas, 1987), that their human capital may not be entirely transferable (Chiswick, 1978; Borjas, 1985), that their language skills may be insufficient (Dustmann and Fabbri, 2003), and that they may face discrimination (Bertrand and Mullainathan, 2004). However, the extent to which these gaps are persistent across migrant generations is startling. Algan et al. (2010) find intergenerational progress for second generation migrants in France, Germany and the United Kingdom, but the performance deficits in comparison to native peers remain substantial (see also OECD, 2006; Schneeweis, 2011).

This chapter focuses on the gap in education outcomes since education is widely perceived as the main channel through which migrant families could economically catch up over generations with the native population. Despite of a growing number of related studies,¹ the literature has not yet arrived at a unique answer as to whether differences in socioeconomic family background can (entirely) explain the native-migrant gaps in education. On the one hand, a strand of the literature argues that the performance differences are, at least in part, associated with the children's migration background *per se* through

*This chapter is based on the paper *Kick It Like Özil? Decomposing the Native-Migrant Education Gap* joint with Ulf Rinne and Simone Schüller (Krause, Rinne and Schüller, 2012). This research was partly financed by the German Research Foundation (DFG).

¹The international literature on the educational attainment of second generation migrants is relatively large and growing (e.g., Borjas, 1992; van Ours and Veenman, 2003; Nielsen et al., 2003; Cobb-Clark and Nguyen, 2010; Belzil and Poinas, 2010). There are moreover several studies for Germany documenting a persistent native-migrant gap in education outcomes (e.g., Haisken-DeNew et al., 1997; Gang and Zimmermann, 2000; Riphahn, 2003, 2005).

migrant-specific factors such as institutional discrimination, school segregation or language ability (see, e.g., OECD, 2006) – even after controlling for socioeconomic background. On the other hand, a relatively large part of the literature argues that it is predominantly the disadvantage of migrant children in terms of socioeconomic status which leads to these gaps in Germany (e.g., Entorf and Tatsi, 2009; Lüdemann and Schwerdt, 2012). Consequently, only little ethnic inequality remains after controlling for the families' social background. The findings of Luthra (2010) even indicate a migrant *advantage* over native youths.

Against this background, this chapter provides a further assessment of the current understanding of ethnic inequalities in Germany's education system. We explicitly decompose the native-migrant education gap into a part explained by compositional differences in socioeconomic background and an unexplained part, which is likely related to migrant-specific factors. Our analysis is based on a twofold decomposition approach. Next to linear decomposition methods, we use matching techniques to arrive at a picture that is robust to methodological variations. We further add to the literature by examining three different outcomes for the same individuals spanning a crucial period in children's educational careers around and after their transition into secondary schooling. These outcomes moreover vary in the degree to which they are influenced by teachers, parents and children. In contrast to the paper which is closest to our study (Lüdemann and Schwerdt, 2012), our analysis additionally includes actual enrollment and track attendance throughout secondary education. In this context, we are able to follow the *same* individuals over time by using longitudinal data from the *German Socio-Economic Panel Study (SOEP)*. For the first time, sample sizes allow for studying this important topic with these data. We are thus able to shed light on a heavily debated question from different angles in terms of methods, outcomes and data.

Our results show first, that second generation migrants differ from their native peers in important characteristics. We observe significant differences in terms of household characteristics and parental background. Second, these differences appear entirely responsible for differences in recommendations given by teachers for and enrollment rates at different secondary school types. Also the gaps in educational attainment at age 17 can be attributed to differences in socioeconomic background. In other words, comparable natives face similar difficulties and show similar education outcomes as migrant children. Our results are therefore broadly in line with Lüdemann and Schwerdt (2012) who focus on outcomes at the end of primary school. We extend their findings by showing that these results are robust to methodological variations and also hold throughout secondary education, i.e., with respect to actual enrollment and track attendance.

The remainder of this chapter is organized as follows. Section 6.2 briefly describes the institutional background of this chapter. After describing our data and our sample in Section 6.3, we outline and discuss our empirical approach in Section 6.4 and present our results in Section 6.5. A sensitivity analysis is performed in Section 6.6 and Section 6.7 concludes.

6.2 Institutional Background

6.2.1 Germany's Secondary Education System

Important decisions are made relatively early in Germany's education system. One crucial point in time is the transition from primary to secondary schooling. At around the age of 10 years, i.e., after four years of primary education, pupils are tracked into three different types of secondary schooling.²

Traditionally, secondary schooling in Germany is divided into the following three types: *a*) a lower secondary school (*Hauptschule*), which is designed to prepare pupils for manual professions, *b*) an intermediate secondary school (*Realschule*), which prepares students for administrative and lower white-collar jobs, and *c*) an upper secondary school (*Gymnasium*), the school type which prepares for higher education. Only the latter track allows for direct access to universities. All three types are typically public and tuition-free.

The decision of secondary school placement is made jointly by parents and teachers. Primary school teachers recommend a secondary school track, but these recommendations are not binding in most federal states. This early tracking system could run the risk of cementing educational careers at an early age. For example, different curricula for the respective school types may leave only little room for later upward mobility.

6.2.2 Migrants in Germany

Germany's migration history after World War II started during the post-war economic boom, when the country focused on the recruitment of low-skilled foreign labor. Many of these guest workers from Southern European countries, who arrived until 1973, settled and were joined by their spouses. The group which is nowadays referred to as second generation migrants mainly consists of the offspring of those migrants. In the late 1980s and early 1990s, Germany experienced massive immigration flows of ethnic Germans from Eastern Europe. Subsequently, Germany also received a relatively large number of humanitarian migrants; and particularly after the enlargement of the European Union (EU) in 2004

²Note that some variation exists in this regard as education legislation is made by the federal states.

and 2007, migration streams from Central and Eastern European countries have been substantial and increasing.³

Today's composition of migrants in Germany is therefore dominated by five groups: *a*) guest workers and their spouses, *b*) their offspring, *c*) ethnic Germans from Eastern Europe, *d*) recent immigrants from the EU and accession countries, and *e*) humanitarian migrants. Turks are by far the largest group of individuals with a migration background, followed by Poles, Russians and Italians. In 2010, 19.3 percent of the German population (or 15.7 million individuals) had a migration background (Statistisches Bundesamt, 2010). Among children aged 5 and below, around one third (34.85 percent) is descended from a migrant family.

Although the group of migrant children represents a large and growing part of the German population, the situation of second generation migrants with respect to educational attainment is alarming. The share among individuals with a migration background who end up enrolling in the lowest secondary schooling track is about twice as large as among natives (Maaz et al., 2010). This may, however, be related to the particular selection process of the parent generation, i.e., mainly guest workers who were actively recruited by German firms until 1973. In contrast to other immigration countries, there had been no positive selection of migrants when compared to the native population. The aim was rather to fill temporary shortages of low-skilled labor, and thus primarily low-skilled workers were recruited.

6.3 Data

The data of this study stem from the (*SOEP*).⁴ The *SOEP* is a representative longitudinal study of private households in Germany. Interviews are conducted in annual waves starting in 1984. As we focus on children in the education system, we take advantage of information collected from 17-year-old first-time respondents. The so-called youth questionnaire was introduced in 2001 and contains retrospective questions about the school career, music education and sport activities. This includes, for example, self-reported information about recommendations for secondary schooling and grade repetition, which are rarely available in other datasets.⁵

Next to the youth questionnaires from 2001 to 2009, we use information on parental

³See, e.g., Kahanec and Zimmermann (2009) for a comprehensive analysis of the consequences of east-to-west labor migration for the old and new EU member states.

⁴See Wagner et al. (2007) for a comprehensive description of this data set.

⁵Ochsen (2011) also analyzes recommendations using *SOEP* data. Recommendations for secondary schooling are also included in an extension to the German PISA 2000 study, as well as in the PIRLS 2001 study (PISA-E and PIRLS-E).

and household characteristics from the regular *SOEP*. These are measured when the children were 10 years old, i.e., when the transition to secondary schooling typically takes place. Our sample is thus restricted to those children whose parents are observed in the *SOEP* at this time. We furthermore focus on individuals living in West Germany as the share of migrants in East Germany is still relatively low. We discard observations with missing information in important characteristics and we exclude children who attend comprehensive schools from our analysis. It is not possible to distinguish between different tracks at these schools in our data.

Our final sample consists of 770 individuals. Among those are 540 native children and 230 children with migration background. We define children with migration background as children who are either *a*) German-born with at least one of their parents being not German-born, or *b*) not German-born, but migrated to Germany when they were younger than 6 years (the mandatory school entrance age in Germany).

Table 6.1: Descriptive Statistics I (Individual and Household Characteristics)

	Natives	Migrants	t-stat
Male	0.519 (0.500)	0.413 (0.493)	2.689***
Logarithm household income	8.120 (0.405)	7.958 (0.373)	5.214***
Number of children in household	2.213 (0.954)	2.509 (1.337)	-3.470***
Single parent household	0.067 (0.250)	0.061 (0.240)	0.298
Parents' years of education	12.416 (2.387)	10.943 (2.298)	7.924***
Mother working	0.643 (0.480)	0.422 (0.495)	5.792***
Father not working	0.033 (0.180)	0.130 (0.338)	-5.183***
Father blue-collar worker	0.311 (0.463)	0.565 (0.495)	-6.814***
Father self-employed	0.130 (0.336)	0.074 (0.262)	2.240**
Father employee	0.424 (0.495)	0.217 (0.413)	5.563***
Father civil servant	0.102 (0.303)	0.013 (0.114)	4.320***
Mother's age	38.307 (4.491)	36.317 (5.375)	5.296***
Father's age	41.044 (5.435)	39.183 (6.494)	4.097***
# Observations	540	230	

Source: SOEP, own calculations.

Notes: Natives: German-born and German citizen, and parents German-born; migrants: German-born, but not German citizen or at least one parent not German-born, or not German-born, but migrated to Germany when younger than 6 years. Standard deviations in parentheses.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table 6.1 displays summary statistics of individual and household characteristics in our sample by migration background. Second generation migrants differ from natives when they are 10 years old. The household income of migrants is on average lower than in native households and there are more children in migrant households. Importantly, the

difference with respect to the parents' years of education is substantial as native parents spent on average 1.5 years more in education than migrant parents. Mothers of migrants are significantly less likely to work. Their fathers are also less likely to be employed – and if they are employed, most of them are blue-collar workers. Finally, both immigrant fathers and mothers are on average slightly younger than their native counterparts.

Table 6.2: Descriptive Statistics II (Regional Characteristics)

	Natives	Migrants	t-stat
Bavaria	0.176 (0.381)	0.109 (0.312)	2.360**
Schleswig-Holstein	0.065 (0.246)	0.022 (0.146)	2.472**
Hamburg	0.007 (0.086)	0.017 (0.131)	-1.250
Lower Saxony	0.106 (0.308)	0.148 (0.356)	-1.664*
North Rhine-Westphalia	0.270 (0.445)	0.270 (0.455)	0.023
Hesse	0.078 (0.268)	0.039 (0.194)	1.976**
Rhineland-Palatinate, Saarland	0.102 (0.303)	0.117 (0.323)	-0.639
Baden-Wuerttemberg	0.178 (0.383)	0.243 (0.430)	-2.100**
Berlin	0.019 (0.135)	0.035 (0.184)	-1.367
Region of residence population <20k	0.515 (0.500)	0.361 (0.481)	3.952***
Region of residence population 20k–100k	0.257 (0.438)	0.278 (0.449)	-0.601
Region of residence population 100k–500k	0.135 (0.342)	0.222 (0.416)	-3.004***
Region of residence population >500k	0.093 (0.290)	0.139 (0.347)	-1.918*
# Observations	540	230	

Source: SOEP, own calculations.

Notes: Natives: German-born and German citizen, and parents German-born; migrants: German-born, but not German citizen or at least one parent not German-born, or not German-born, but migrated to Germany when younger than 6 years. No individual in our sample lives in Bremen. Standard deviations in parentheses.

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table 6.3: Descriptive Statistics III (Migration Background)

Country of Origin (Parents)	Percent
Turkey	27.39
Italy	10.87
Former Yugoslavia	7.39
Greece	5.22
Spain	3.48
Russia/Formal Soviet Republics	13.48
Poland	10.43
Other Countries	21.74
# Observations	230

Source: SOEP, own calculations.

Note: Migrants: German-born, but not German citizen or at least one parent not German-born, or not German-born, but migrated to Germany when younger than 6 years.

Table 6.2 shows the distribution of individuals in our sample across Germany's federal states and according to the population size of the respective region of residence. First, we observe significant differences in the shares of migrants and natives in the federal states. Second, migrants are more likely to live in relatively densely populated regions. Therefore, the regional distribution of migrants indicates important differences when compared to natives.

The information displayed in Table 6.3 shows that more than half of the migrant children in our sample have a migration background in one of the former guest worker countries. Roughly one fourth of the children in our sample is of Turkish origin.

To investigate the native-migrant gap at different stages throughout pupils' progression in the German education system, we examine three outcome variables: *a*) teacher recommendations received at the end of primary school, *b*) actual first enrollment in one of the three secondary school types, and *c*) track attendance at age 17, i.e., when children answer the *SOEP* youth questionnaire. If children are not enrolled at the age of 17 years, the latter measure indicates the highest secondary school degree. Throughout this chapter, we use the term "education outcomes" for the outcome variables we consider. While this might be correct in an empirical sense, we should at this point acknowledge the distinction between education *outcomes* and education *choices*. In our context, at least the first enrollment decision reflects a choice of the child and/or the parents rather than an education outcome in the narrow sense. However, adequately assessing such education choices would require a structural approach which is beyond the scope of this chapter. We therefore use the term education outcomes throughout our reduced form analysis, although we are aware of its inaccuracy for describing some of our outcome variables. This should not affect our findings, but it may be relevant for their interpretation.

The education outcomes of migrant and native children are depicted in Table 6.4. The distribution of recommendations shows important differences between migrant and native children. Whereas more than half of the native children are recommended to attend upper secondary school, this is the case for only about one third of the migrant children. About one in four migrant children are recommended to enter lower secondary school. Only 17 percent of native children receive such a recommendation. It thus appears that a considerable larger share of migrant children receive recommendations for lower types of secondary schooling. This picture changes only slightly when looking at which type of secondary school the children actually enroll in. About one third of the migrant children in our sample enroll in each secondary school type, whereas half of the native children enroll in an upper secondary school. The other half of native children distributes evenly across the

remaining two types of secondary schools.⁶ When considering the educational attainment around the age of 17 years, we note some upward mobility over time. However, the differences between native and migrant children persist. It is still the case that relatively more native children attain upper secondary schooling, whereas more migrant children attain the lowest secondary schooling track.

Table 6.4: Descriptive Statistics IV (Education Outcomes)

	Natives	Migrants	t-stat
Recommendation			
Lower Secondary School	0.170 (0.376)	0.257 (0.438)	-2.766***
Intermediate Secondary School	0.304 (0.460)	0.409 (0.493)	-2.836***
Upper Secondary School	0.526 (0.500)	0.335 (0.473)	4.935***
First Enrollment			
Lower Secondary School	0.239 (0.427)	0.339 (0.474)	-2.883***
Intermediate Secondary School	0.256 (0.437)	0.339 (0.474)	-2.368**
Upper Secondary School	0.506 (0.500)	0.322 (0.468)	4.754***
Latest Enrollment			
Lower Secondary School	0.072 (0.259)	0.143 (0.351)	-3.124***
Intermediate Secondary School	0.367 (0.482)	0.447 (0.498)	-2.112**
Upper Secondary School	0.561 (0.497)	0.409 (0.493)	3.907***
# Observations	540	230	

Source: SOEP, own calculations.

Note: Natives: German-born and German citizen, and parents German-born; migrants: German-born, but not German citizen or at least one parent not German-born, or not German-born, but migrated to Germany when younger than 6 years. Standard deviations in parentheses.

*** significant at 1%; ** significant at 5%; * significant at 10%.

The descriptive analysis shows that next to migrant and native pupils' education outcomes, migrant parents' human capital endowment and socioeconomic status differ from average native parents' characteristics. The regional distribution of native and migrant families is also different. Because these characteristics are potentially important determinants of education outcomes, our subsequent analysis decomposes the native-migrant education gap into a part explained by socioeconomic family background and a migrant-specific part.

⁶There are some observable downward deviations of first secondary school enrollment compared with previous teacher recommendations. However, further analysis (available upon request) shows that this behavior does not systematically differ between native and migrant children.

6.4 Empirical Approach

One important aspect when analyzing and comparing the education outcomes of migrant children with those of their native peers is to adequately take into account that second generation migrants grow up in households which substantially differ from the average native household. This leaves us with a decomposition problem. One part of the native-migrant gap in education outcomes can be attributed to differences in average socioeconomic background characteristics between the two groups. The second part is due to differences in average returns to these characteristics, which are specifically associated with pupils' migration background and may reflect migrant-specific barriers to educational progression (e.g., language skills or discrimination). To isolate these two parts, we employ two different approaches: *a*) a linear (OLS) decomposition, and *b*) a decomposition using matching techniques. This decomposition strategy is similar to Caliendo and Lee (2012) who decompose differences in the job search behavior between obese and non-obese individuals.

Linear decomposition methods are widely used in the literature to measure unexplained gaps in mean outcomes between population groups of interest. A common approach is based on the seminal work by Blinder (1973) and Oaxaca (1973). Omitting the details, Elder et al. (2010) show that a seemingly naïve OLS regression including a group indicator variable is an attractive option to obtain a single measure of the unexplained gap. The authors show that under certain conditions, the coefficient on the group indicator variable is a weighted average of the unexplained gaps from the two standard Blinder-Oaxaca approaches. In a first step, we therefore follow this approach to decompose the native-migrant gap in education outcomes.⁷

We additionally employ matching techniques as an alternative decomposition strategy. Although these methods are primarily used in the evaluation literature to estimate treatment effects (see, e.g., Rinne et al., 2011), matching estimators are also employed to measure unexplained gaps (Frölich, 2007; Nopo, 2008; Kiss, 2011). It is important to note that imposing the usual conditional independence assumption is not necessary in this context. Any unobserved variable will contribute to the residual term, i.e., the unexplained part of the gap. More specifically, we use a propensity score matching method of which there are several suggested in the literature (see, e.g., Caliendo and Kopeinig, 2008, for an overview). Based on the characteristics of our data, we apply kernel matching. This nonparametric matching algorithm has advantages in relatively small samples because it uses weighted averages of (nearly) all individuals in the control group to construct the counterfactual outcome.

⁷Empirical applications using linear decomposition methods include Neal and Johnson (1996) who decompose racial wage gaps and Fryer and Levitt (2004) who decompose racial test score gaps.

When comparing linear and matching decompositions, there are distinctive features that justify using both estimators. First, the two approaches place different weights on observations in the population groups of interest (see Angrist and Pischke, 2008, p. 76, for a discussion). Second, the matching decomposition does not specify the regression function as linear. Third, the matching decomposition imposes a common support restriction. In contrast, linear decompositions are based on the assumption that estimations are also valid in regions of the data where there is no support of individual characteristics.

6.5 Results

We consider three different outcome variables. First, we look at the recommendations each child receives when he or she leaves primary school. Second, we investigate the actual transitions to one of the three different secondary schooling types. Finally, we assess the educational attainment when the child answers the youth questionnaire. For each outcome, we analyze two dummy variables: *a*) an indicator for the upper and intermediate secondary schooling track, and *b*) an indicator for the upper secondary schooling track. In this way, we respect the ordinal nature of our outcome measures. At the same time, this approach allows for investigating the respective gaps with regard to each schooling level.

6.5.1 Linear Decomposition

Table 6.5 displays the results of the linear (OLS) decomposition. When only controlling for gender and differences in the regional distribution of migrant and native families, we observe significant and substantial native-migrant gaps in all three outcome variables. Migrant children are about 10 percentage points more likely to receive a recommendation for the lower secondary school track, and they are 20 percentage points less likely to be recommended to the upper secondary school track. These gaps only marginally change when we consider the actual enrollment as outcome variable. When considering the educational attainment at a later stage, the differences slightly decrease, but remain significant. Around the age of 17 years, migrant children are about 7 percentage points more likely to attend the lower secondary school track and roughly 16 percentage points less likely to attain the upper secondary school track. The barrier to be recommended to and to enroll in upper secondary school therefore appears particularly relevant for migrant children. This is an important first result, especially when considering that only this school degree allows a direct university enrollment afterwards.

However, the picture entirely changes once we take family background and household characteristics into account. When including variables such as household income and par-

ents' years of education, the conditional native-migrant gap becomes virtually zero for all three outcomes. The coefficient estimate on the migrant indicator variable is insignificant in all cases. The differences in socioeconomic family background therefore seem to account for the entire gap in education outcomes between migrant children and their native peers. In other words, we observe no particular barrier for migrant children to be recommended to and be placed into upper secondary school once background characteristics are taken into account.

Table 6.5: Linear Decomposition (OLS, Full Sample)

	(1)	(2)	(3)	(4)
Recommendation	<i>Upper/Int. vs. Lower Track</i>		<i>Upper vs. Int./Lower Track</i>	
Migration Background	-0.101 (0.03)***	-0.006 (0.03)	-0.199 (0.04)***	-0.021 (0.04)
Regional Characteristics	Yes	Yes	Yes	Yes
Household Characteristics	No	Yes	No	Yes
Parental Characteristics	No	Yes	No	Yes
<i>N</i>	770	770	770	770
<i>R</i> ²	0.058	0.137	0.077	0.248
<i>AIC</i>	744.9	701.5	1081.0	947.0
<i>BIC</i>	809.9	822.3	1146.0	1067.8
First Enrollment	<i>Upper/Int. vs. Lower Track</i>		<i>Upper vs. Int./Lower Track</i>	
Migration Background	-0.112 (0.04)***	0.020 (0.04)	-0.189 (0.04)***	-0.008 (0.04)
Regional Characteristics	Yes	Yes	Yes	Yes
Household Characteristics	No	Yes	No	Yes
Parental Characteristics	No	Yes	No	Yes
<i>N</i>	770	770	770	770
<i>R</i> ²	0.138	0.259	0.098	0.296
<i>AIC</i>	846.6	753.3	1058.9	891.9
<i>BIC</i>	911.6	874.1	1124.0	1012.7
Latest Enrollment	<i>Upper/Int. vs. Lower Track</i>		<i>Upper vs. Int./Lower Track</i>	
Migration Background	-0.071 (0.03)**	0.015 (0.03)	-0.161 (0.04)***	0.024 (0.04)
Regional Characteristics	Yes	Yes	Yes	Yes
Household Characteristics	No	Yes	No	Yes
Parental Characteristics	No	Yes	No	Yes
<i>N</i>	770	770	770	770
<i>R</i> ²	0.030	0.134	0.075	0.276
<i>AIC</i>	289.2	226.5	1085.0	920.4
<i>BIC</i>	354.3	347.3	1150.0	1041.2

Source: SOEP, own calculations.

Note: Clustered standard errors by household in parentheses. Regional characteristics: federal states, population density. Household characteristics: household income, number of children, single parent household. Parental characteristics: parents' years of education, age, employment status. Other control variable: gender.

*** significant at 1%; ** significant at 5%; * significant at 10%.

6.5.2 Matching Decomposition

Table 6.6 presents the decomposition results based on propensity score matching. As stated above, we obtain these results by kernel matching.⁸ The matching quality is satisfactory. The overlap between the groups of migrant children and native children is sufficient in our sample and, hence, we do not drop any observations due to the common support restriction (see Figure A6.1 in the Appendix). After matching, mean standardized differences are substantially reduced, any significant differences in the means of the covariates disappear, and the pseudo- R^2 is low (see Table A6.4 in the Appendix). This indicates that no systematic differences between the two groups of migrant and native children remain.

Table 6.6: Matching Decomposition (Kernel Matching, Full Sample)

Outcome	Sample	Migrants	Natives	Difference	SE
Recommendation	Unmatched	0.743	0.830	-0.086***	0.031
(Upper/Intermediate vs. Lower Track)	Matched	0.743	0.736	0.007	0.050
Recommendation	Unmatched	0.335	0.526	-0.191***	0.039
(Upper vs. Intermediate/Lower Track)	Matched	0.335	0.398	-0.064	0.048
First Enrollment	Unmatched	0.661	0.761	-0.100***	0.035
(Upper/Intermediate vs. Lower Track)	Matched	0.661	0.673	-0.012	0.051
First Enrollment	Unmatched	0.322	0.506	-0.184***	0.039
(Upper vs. Intermediate/Lower Track)	Matched	0.322	0.359	-0.038	0.048
Latest Enrollment	Unmatched	0.857	0.928	-0.071***	0.023
(Upper/Intermediate vs. Lower Track)	Matched	0.857	0.839	0.017	0.047
Latest Enrollment	Unmatched	0.409	0.561	-0.152***	0.039
(Upper vs. Intermediate/Lower Track)	Matched	0.409	0.418	-0.009	0.053
# Observations Total			770		
# Observations On Support			770		

Source: SOEP, own calculations.

Note: Standard errors are bootstrapped (200 replications).

*** significant at 1%; ** significant at 5%; * significant at 10%.

The results of the matching decomposition basically mirror the results of the linear decomposition. The significant native-migrant differences in the three outcome variables that exist before matching disappear after matching and become insignificant. This again shows that differences in socioeconomic family background entirely explain the observed gaps between migrant and native children. However, although the estimates lack statistical significance, the matching decomposition indicates that some economic significance of the unexplained gap remains. Controlling for socioeconomic family background, migrants are

⁸The matching algorithm is implemented using the PSMATCH2 Stata ado-package by Leuven and Sianesi (2003). Throughout this chapter, the decomposition results using kernel matching are based on a bandwidth parameter of 0.06. Results remain virtually the same with bandwidth parameters of 0.02 and 0.2.

about 6 percentage points (4 percentage points) less likely to be recommended for (to enroll in) the upper secondary school track. These estimates are about three times larger than in the linear decomposition. However, with respect to our third outcome which is measured at a later stage of secondary education, there is no evidence of any unexplained part of the gap. The estimate is virtually zero. These findings may tentatively indicate that moving along secondary schooling, there is some room for migrant children to use second chances and to improve their relative position with respect to native children over time.

6.6 Sensitivity Analysis

We assess the robustness of our main results in several dimensions. First, we include a measure of cognitive ability in our analysis. Second, we split our sample according to socioeconomic family background. In these two dimensions, we only report the results of matching decompositions as linear decompositions lead to similar results. Finally, we briefly summarize the results of additional robustness checks.

6.6.1 Ability

One potentially important, but so far omitted factor is the children's cognitive ability. It might be of particular importance in our context since pupils are supposed to be tracked according to their ability. *A priori* and conditional on socioeconomic background, there seems to be no obvious reason to expect differences in the ability distributions of migrant and native children. It is, however, possible that parental production functions of immigrant parents systematically deviate from those of native parents or that there is variation in some unobserved characteristics between migrant and native families. Conditional on cognitive ability, migrant and native pupils might also be differently affected by or able to cope with a disadvantaged family background. We therefore include a measure of cognitive skills in this part of our analysis.

Similar to our main decomposition exercise, we decompose the native-migrant gap into a part explained by average background characteristics as well as cognitive skills, and into an unexplained part which possibly reflects migrant-specific factors. We use a measure of cognitive skills that is available for a subgroup of individuals in our sample. It is part of the *SOEP*'s youth questionnaire since 2006.⁹ This ability measure includes three dimensions of cognitive skills testing verbal, numerical and figural potentials. Importantly, it is argued that fluid rather than crystallized intelligence is captured (Solga et al., 2005).

⁹See Solga et al. (2005) and Schupp and Herrmann (2009) for a general description. Studies using this measure include Uhlig et al. (2009) and Protsch and Dieckhoff (2011).

The measure should thus reflect inherent abilities which are stable over time and are not influenced by education, experiences and the course of life.¹⁰ Given that this assumption holds, we can use this measure even though it is elicited only around the age of 17 years in our data.

Table A6.1 displays the results of the matching decomposition when we include this ability measure. Information on cognitive skills is available for 449 individuals. Among those are 138 children with a migration background. We exclude 18 observations due to the common support restriction. The results for the unmatched sample are very similar to our full sample results, both with respect to magnitude and statistical significance. We find negative differences for every outcome between the native and migrant group. However, results after matching are slightly different than in the full sample. The native-migrant gaps remain insignificant, but they turn positive for all but one outcome variable in the matched sample. These positive differences are moreover in some cases quite substantial as they exceed 10 percentage points for two of our outcome variables. Given the same socioeconomic family background *and* the same cognitive ability, migrant children appear *less* likely to be recommended for the lowest secondary school track than native children. We find a similar result for the latest enrollment at this type of secondary school. Importantly, these changes compared to our main results are not due to the reduced sample, but due to the inclusion of the ability measure.¹¹

These tentative findings seem to be roughly in line with Luthra (2010). Similar to her results, we find at least a weak indication of a possible migrant *advantage* over native children when we additionally include a measure of cognitive ability. This could potentially point to migrant-specific factors actually working in a different direction than expected. For example, there could be positive discrimination *in favor* of migrant children – at least once they share the same cognitive skills and background characteristics as their native peers. Alternatively, migrant children with similar inherent ability may be better able to cope with a disadvantaged background than native children.

6.6.2 Socioeconomic Status

The main argument to split the sample according to socioeconomic family background is that migrant families with low socioeconomic status are overrepresented in the full sample. To see whether effects are heterogeneous with respect to family background, we use net household income as an approximation of socioeconomic status and split the full sample at the median income of migrant families.¹²

¹⁰See Cattell (1987) for a discussion of the distinction between fluid and crystallized intelligence.

¹¹Results for the reduced sample *without* including the ability measure are available upon request.

¹²The median net household income of migrant families is € 2744.82 in the full sample.

Table A6.2 displays the matching decomposition results for the low income sample. With 261 observations, its sample size is approximately one third of the full sample. Among the observations are 116 migrant children, from which 2 observations lack comparable native children. The native-migrant education gaps before matching are negative, but not as substantial as in the full sample. Moreover, most differences lack statistical significance – which could be due to the smaller sample size. All differences turn positive after matching, but they are not statistically different from zero. Aside from the small sample size, this seems to indicate that native children from families with low socioeconomic background face similar difficulties in the education system as migrant children with similar background. Moreover, there are indications that unexplained gaps between these two groups do not exist even *before* matching.

Table A6.3 displays results of the matching decomposition for the high income sample. This sample comprises 502 observations, of which 114 children are from migrant families. 10 of these migrant children lack comparable natives and are thus excluded. The results in this sample are similar to the full sample results. Before matching, there are significant native-migrant education gaps in terms of almost all outcomes. These differences are comparable in magnitude to the full sample results – if at all, they are slightly less pronounced. After matching, the differences decrease and some even turn slightly positive, but the gaps do not exhibit statistical significance anymore.

The results for these two samples therefore underline the importance of controlling for socioeconomic background characteristics. Whereas native and migrant children from households in the lower part of the income distribution appear to differ not much in terms of education outcomes (even without controlling for additional characteristics, i.e., before matching), children in the upper part do substantially differ in this regard. The native-migrant education gaps only disappear for those children once we carefully control for differences in socioeconomic background characteristics.

6.6.3 Additional Robustness Checks

We perform four additional sensitivity analyses concerning the composition of our sample (results not reported here). First, we restrict the sample to second generation migrants in a more narrow sense, i.e., children with *two* immigrant parents, thus excluding children with one migrant and one native parent. Second, we only consider children who attended pre-school education. In our sample, migrants are about 8 percentage points less likely to attend pre-school education than natives – and almost every native child (about 97 percent) attends pre-school education. Third, we assess the sensitivity of our results concerning different legislations with respect to teachers' recommendations. In

some federal states – namely Schleswig-Holstein, Hamburg, Lower Saxony, North-Rhine Westphalia, Hesse, Rhineland-Palatinate, Saarland and Berlin – recommendations are not necessarily binding. We therefore only consider families living in federal states with non-binding recommendations. These three robustness checks yield similar results to those obtained using the full sample.

Fourth, we are concerned about the migrant children’s diverse ethnic backgrounds, i.e., the countries their parents originally came from. Migrant-specific factors might be more or less prevalent for different ethnic groups due to, e.g., cultural distance to Germany. Unfortunately, the number of observations in our data is too low to perform the decomposition analysis on each ethnic group separately. We therefore conduct our main analysis solely considering migrant children with a guest worker background. This group of second generation migrants is the largest in our sample and also the one with the least favorable family background. Qualitatively, the results are similar to our main results. After matching, however, we find that guest worker migrant children are still significantly less likely to receive recommendations for and to enroll at the upper secondary school. Both gaps amount to 13 percentage points. These results suggest that for this group, migrant-specific factors seem to play a role at earlier stages in the education system. However, in line with our main results, the unexplained part of the gap disappears when these children progress in the education system, i.e., when considering track attendance at the age of 17.

6.7 Conclusions

Education is widely perceived as the main channel through which migrant families could economically catch up with natives. Although there is some intergenerational progress in education outcomes for second generation migrants, the performance deficits in comparison to native peers remain substantial. This chapter therefore investigates to what extent the native-migrant education gap in Germany is due to compositional differences in parental background and household characteristics between these two groups, and to what extent it is associated with migrant-specific or other factors. In other words, if migrant and native children shared the same socioeconomic background, would we still observe differences in education outcomes?

To answer this question, we apply two different decomposition strategies: linear decompositions as well as decompositions based on matching techniques. Moreover, we examine the issue with respect to three outcomes related to secondary school placement following the same individuals over time. In particular, we study whether migrant and native children receive different teacher recommendations by the end of primary school, whether they actually enroll in different school types and whether there are differences in

educational enrollment at age 17. Our results suggest that, conditional on socioeconomic background, migrant pupils are equally likely to receive recommendations for or to enroll at any secondary school type. Also the gap in education outcomes at age 17 appears to be explained entirely by differences in socioeconomic family background. Hence, there is no indication that a migration background *per se* hinders the educational progression of second generation migrants (in recent years). Our findings thus point at more general inequalities in the transition to secondary schooling rather than at a migrant-specific problem.

There are some characteristics of Germany's education system that appear related to our findings (see, e.g., Crul and Vermeulen, 2003). For example, children enter school only at the age of 6 years, and thus a very important stage in the children's development process has already passed. Moreover, most children attend school on a half-day basis and face-to-face contact hours with teachers are below average. Germany also tracks relatively early by international standards. Children from families with a disadvantaged socioeconomic background are thus given little time to pull themselves out of their disadvantaged starting position. Finally, Germany is well below average with respect to the amount of supplementary help and support available to children inside and outside school. Although all these factors may create migrant-specific barriers to educational progression, they seem to create similar barriers for natives from a disadvantaged family background. Future research may analyze the channels through which this "socioeconomic" gap exactly emerges. It may also be interesting to investigate whether and how this gap affects labor market outcomes.

6.8 Appendix

Table A6.1: Matching Decomposition (Kernel Matching, Ability Sample)

Outcome	Sample	Migrants	Natives	Difference	SE
Recommendation	Unmatched	0.739	0.830	-0.090**	0.040
(Upper/Intermediate vs. Lower Track)	Matched	0.750	0.646	0.104	0.086
Recommendation	Unmatched	0.341	0.524	-0.184***	0.050
(Upper vs. Intermediate/Lower Track)	Matched	0.367	0.314	0.053	0.078
First Enrollment	Unmatched	0.645	0.752	-0.107**	0.046
(Upper/Intermediate vs. Lower Track)	Matched	0.692	0.676	0.043	0.079
First Enrollment	Unmatched	0.290	0.492	-0.202***	0.050
(Upper vs. Intermediate/Lower Track)	Matched	0.317	0.326	-0.002	0.066
Latest Enrollment	Unmatched	0.862	0.929	-0.067**	0.029
(Upper/Intermediate vs. Lower Track)	Matched	0.883	0.791	0.110	0.079
Latest Enrollment	Unmatched	0.384	0.537	-0.153***	0.051
(Upper vs. Intermediate/Lower Track)	Matched	0.408	0.335	0.083	0.074
# Observations Total			449		
# Observations On Support			431		

Source: SOEP, own calculations.

Note: Besides the usual control variables, we additionally control for cognitive abilities, which are measured in the SOEP youth questionnaire since 2006. See main text for further details. Standard errors are bootstrapped (200 replications).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A6.2: Matching Decomposition (Kernel Matching, Low Income Sample)

Outcome	Sample	Migrants	Natives	Difference	SE
Recommendation	Unmatched	0.681	0.731	-0.050	0.057
(Upper/Intermediate vs. Lower Track)	Matched	0.684	0.584	0.100	0.102
Recommendation	Unmatched	0.250	0.366	-0.116**	0.058
(Upper vs. Intermediate/Lower Track)	Matched	0.246	0.243	0.003	0.081
First Enrollment	Unmatched	0.578	0.634	-0.057	0.061
(Upper/Intermediate vs. Lower Track)	Matched	0.588	0.577	0.011	0.098
First Enrollment	Unmatched	0.259	0.352	-0.093	0.058
(Upper vs. Intermediate/Lower Track)	Matched	0.263	0.238	0.025	0.081
Latest Enrollment	Unmatched	0.819	0.855	-0.036	0.046
(Upper/Intermediate vs. Lower Track)	Matched	0.816	0.798	0.017	0.089
Latest Enrollment	Unmatched	0.319	0.448	-0.129**	0.060
(Upper vs. Intermediate/Lower Track)	Matched	0.316	0.295	0.021	0.086
# Observations Total			261		
# Observations On Support			259		

Source: SOEP, own calculations.

Notes: The low income sample includes observations for which the household income is below the median household income of migrant families. Standard errors are bootstrapped (200 replications).

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A6.3: Matching Decomposition (Kernel Matching, High Income Sample)

Outcome	Sample	Migrants	Natives	Difference	SE
Recommendation	Unmatched	0.807	0.863	-0.056	0.038
(Upper/Intermediate vs. Lower Track)	Matched	0.808	0.790	0.018	0.066
Recommendation	Unmatched	0.421	0.585	-0.164***	0.053
(Upper vs. Intermediate/Lower Track)	Matched	0.433	0.493	-0.060	0.081
First Enrollment	Unmatched	0.746	0.807	-0.061	0.043
(Upper/Intermediate vs. Lower Track)	Matched	0.750	0.722	0.028	0.068
First Enrollment	Unmatched	0.386	0.562	-0.176***	0.053
(Upper vs. Intermediate/Lower Track)	Matched	0.394	0.453	-0.059	0.076
Latest Enrollment	Unmatched	0.895	0.954	-0.059**	0.025
(Upper/Intermediate vs. Lower Track)	Matched	0.894	0.918	-0.023	0.052
Latest Enrollment	Unmatched	0.500	0.598	-0.098*	0.053
(Upper vs. Intermediate/Lower Track)	Matched	0.519	0.478	0.041	0.084
# Observations Total			502		
# Observations On Support			492		

Source: SOEP, own calculations.

Notes: The high income sample includes observations for which the household income is above the median household income of migrant families. Standard errors are bootstrapped (200 replications).

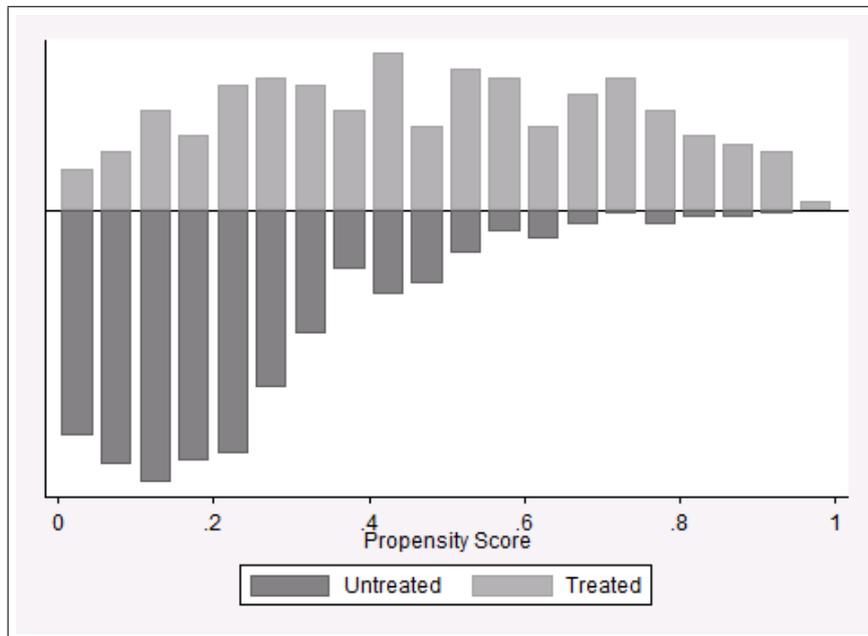
*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A6.4: Summary of Matching Quality (Full Sample)

	Before Matching	After Matching
Mean Standardized Difference	25.673	5.406
Median Standardized Difference	21.247	4.230
Pseudo- R^2	0.212	0.020

Source: SOEP, own calculations.

Figure A6.1: Distribution of Propensity Scores (Full Sample)



Source: SOEP, own calculations.

Note: Treated: migrant children; untreated: native children.

Chapter 7

Concluding Remarks

Main Findings

This dissertation studies the search behavior of unemployed individuals, their reintegration into the labor market as well as ways to prevent unemployment. Unemployment involves psychic costs, reduces output and aggregate income, increases inequality and erodes human capital. Despite the unemployment rate in Germany having decreased since 2005, the fraction of long-term unemployed still represents slightly more than one third of all unemployed (Bundesagentur für Arbeit, 2012a), whereas this share lies below in countries such as Austria, Canada, Denmark, and Sweden (OECD, 2012).¹ Moreover, in countries such as Greece and Spain, unemployment rates amount to 25 percent. Improving knowledge concerning the behavior of the unemployed and about prevention therefore reflect important topics for academic research and policy. The findings of this thesis may also serve for a better understanding of unemployment mechanisms in other countries. Chapter 2, Chapter 3 and Chapter 4 investigate the unemployed's search behavior, characteristics and future labor market outcomes. The subsequent two chapters focus on hiring discrimination with the access to jobs being an important factor for employment opportunities and secondary school education given the high correlation between unemployment and education.

Within the context of the lack of migrant intergenerational improvement, Chapter 2 addresses the question of whether unemployed second generation migrants have higher reservation wages than first generation migrants. This chapter is the first to empirically test the hypothesis of increasing reservation wages from one migrant generation to the next. Two extensions of the basic of job search model provide theoretical justifications for this hypothesis, where in both cases, changing frames of reference are identified as a

¹Long-term unemployment in this case is defined by unemployment spells that last longer than 12 months.

channel through which the phenomenon of increasing reservation wages may arise. Empirical findings confirm the hypothesis of increasing reservation wages from one migrant generation to the next. In as far as German language skills or self-evaluated returns to characteristics reflect a person's frames of reference, there is empirical support that changing frames of reference at least partly explain this gap. First, additionally controlling for reference groups via German language skills leads to a decreasing and statistically insignificant reservation wage gap. Although language skills may be viewed as part of a person's human capital, these skills are endogenously determined and depend on the individual's social network and social interactions, thus at least partly reflecting frames of reference. Second, a decomposition of the reservation wage gap reveals that the coefficient effect drives the unconditional reservation wage gap between the two migrant generations. This suggests that second generation migrants evaluate the returns to their characteristics, such as the expected returns to their education, higher than first generation migrants.

Chapter 3 investigates economic preferences of the unemployed, their effects on subsequent employment prospects and whether any such differences might explain the reemployment gap between natives and second generation migrants in Germany. Accordingly, this chapter provides novel and direct evidence on the relationship between economic preferences, attitudes and labor market reintegration of natives and second generation migrants. The results indicate differences between natives and second generation migrants with respect to preferences and attitudes, which mainly lie in attitudes towards risk and in positive reciprocity. For instance, second generation migrants show a significantly higher willingness to take risks, and are less likely to have a low amount of positive reciprocity when compared to natives. These differences also matter in terms of economic outcomes, and more specifically in terms of employability two months after unemployment entry, as individuals with a high willingness to take risks are found to have a significantly lower employment probability, even when controlling for other observable characteristics. The mechanism through which this occurs is very likely the reservation wage, which is found to be higher for individuals with a lower degree of risk aversion. Search intensity may reflect a further channel reinforcing the direct effect of risk attitudes on reservation wages.

Chapter 4 investigates the effect of residual happiness on future labor market outcomes. Residual happiness displays higher (or lower) satisfaction levels than would be predicted by a number of demographic and socioeconomic characteristics, and is interpreted as some sort of underlying inner disposition. Therefore, this chapter provides a deeper understanding concerning what subjective well-being may influence and possible mechanisms, as well as fresh insights regarding the determinants of reemployment and reentry wages. There is a statistically significant inverted U-shaped effect of residual happiness on an unemployed

individual's future reemployment and reentry wages. Further investigation offers three mechanisms that also appear to be interrelated, and have not previously been shown in this context: *a*) happiness matters mainly for future self-employment and less for standard employment; *b*) happiness matters only for male unemployed and not for females; and *c*) the concept of locus of control is able to explain part of the effect. These findings are in line with Oishi et al. (2007), who state that a slight dissatisfaction can serve as motivation to achieve more, earn more money, and in other words, to (self-)improve. Therefore, maximizing happiness does not necessarily represent the goal to be considered by policy-makers. Instead, *optimizing* happiness appears to be the enduring and desirable long-term ambition.

Chapter 5 presents empirical evidence on the effects of anonymous job applications in a particular labor market, namely the annual job market for Ph.D. economists, thereby contributing to the small literature on anonymous job applications. Data from a randomized experiment conducted among applicants for a post-doctoral research position at a European-based economic research institution in 2010/2011 are analyzed. The empirical analysis shows that anonymous job applications are generally not associated with a higher or lower probability of receiving an invitation for a job interview. Nevertheless, it is found that while female applicants have a higher probability of receiving an interview invitation than male applicants with standard applications, this difference disappears with anonymous job applications. This finding may initially appear to be unexpected, given that women are usually considered one of the groups that anonymous job applications are supposed to serve. However, this finding may relate to female researchers being favored within this particular labor market – or, more specifically, at this particular institution – to promote their chances in research and academia. The results concur with the often discussed notion that anonymity prevents employers from favoring minority applicants when credentials are equal – at least during the initial stage of the hiring process. Moreover, there is evidence that the recruiters tend to rely more strongly on the “traditional” quality signal of top journal publications when confronted with anonymous job applications. Therefore, whether anonymous job applications are implemented should depend on the characteristics of the particular, narrowly defined labor market. For example, it appears important to take into account the extent of discrimination as well as the characteristics of the hiring process.

Chapter 6 investigates whether the native-migrant education gap would disappear if migrant and native children shared the same socioeconomic background. To answer this question, linear decompositions as well as decompositions based on matching techniques are applied to arrive at a picture that is robust to methodological variations. This chapter

further contributes to the literature by examining three different outcomes for the *same* individuals, spanning a crucial period in children's educational careers around and after their transition into secondary schooling, which moreover vary in the degree to which they are influenced by teachers, parents and children. The results suggest that, conditional on socioeconomic background, migrant pupils are equally likely to receive recommendations for enrollment or to actually enroll at any secondary school type. Furthermore, the gap in education outcomes at the age of 17 appears to be explained entirely by differences in socioeconomic family background. Hence, there is no indication that a migration background *per se* hinders the educational progression of second generation migrants (in recent years). The findings thus point to more general inequalities in the transition to secondary schooling rather than to a migrant-specific problem. Some characteristics of Germany's education system appear related to these findings, such as children only entering school at the age of 6 years, most children attending school on a half-day basis and thereby face-to-face contact hours with teachers being below average, and relatively early tracking. Consequently, children from families with a disadvantaged socioeconomic background are given little time to pull themselves out of their disadvantaged starting position. Finally, Germany is well below average with respect to the amount of supplementary help and support available to children, both inside and outside school.

Future Research and Policy Conclusions

This section illustrates possible avenues for further research, also discussing potential shortcomings of the empirical analyses, and providing possible policy conclusions.

The empirical analysis in Chapter 2 suffers from a lack of a direct measure of reference groups and therefore has to rely on approximations, which are assumed to pick up changing frames of references. Moreover, first and second generation migrants differ in terms of their countries of origin, and while adding them as control variables may not entirely take these differences into account, propensity score matching may possibly reduce these worries. Further research could investigate other information concerning job search behavior, such as search channels and the number of applications as well as how the reservation wage gap translates into future reemployment probabilities of first and second generation migrants and the quality of their future jobs.

Unfortunately, Chapter 3 is unable to provide an answer to the question of why second generation migrants lack behind natives in their reemployment probabilities, or at least differences in economic preferences under study do not appear as a contributing factor. The long-term effects of non-cognitive characteristics regarding labor market outcomes certainly deserve broader attention, including the quality of jobs. Moreover, if such data are

available, including first generation migrants in the analysis could help to understand any adaptation over migrant generations in terms of economic preferences and reemployment probabilities.

Chapter 4 does not use a clear exogenous shock to instrument happiness, and consequently there may be remaining doubts concerning the endogeneity issue. Moreover, for future research it would be important to investigate whether results largely differ between the cross-sectional and fixed effects residual happiness approach. This analysis is only representative of the selected unemployment population in Germany. Future research investigating gender effects regarding happiness as a driver of outcomes could shed light upon whether significant differences between men and women also exist outside the labor market context. Furthermore, the connection between happiness and personality traits and self-employment should be investigated in greater detail whenever possible, to better understand the driving forces behind their relationship.

Given the very specific labor market under study in Chapter 5, it is difficult to generalize from these findings, which is compounded by the rather low number of observations. Therefore, further research on anonymous job applications in different labor markets is required. Moreover, investigating cross-country differences with respect to factors such as the application cultures (e.g., the amount of information about job candidates in applications) and hiring/firing costs could help to understand where anonymous job applications can fulfill their full potential.

There may be some measurement error of the recommendation variable in Chapter 6, given that it displays subjective and retrospective information provided by the interviewed children. However, further analysis, for example regarding observed downward deviations of first secondary school enrollment compared with previous recommendations, shows that this behavior does not systematically differ between native and migrant children, and accordingly should pose no harm to the analysis. The specific mechanisms through which the effect of socioeconomic background arises should be given more attention in the future, in order to counteract these trends. Furthermore, it would certainly be interesting to investigate exactly how this gap affects these individuals' later labor market outcomes.

The questions investigated in this thesis have rather different starting points. Is it possible to quantify the importance of the different factors that have been analyzed? In the following, an attempt towards this is made. Chapter 6 tackles the German education system and therefore a fundamental factor for an individual's working life. Regarding native-migrant gaps in economic outcomes and also the importance of the socioeconomic background, reducing inequalities rather early would decrease structural differences between groups. If statistical discrimination (Phelps, 1972) was the main channel of hiring

discrimination, reducing early inequalities in the education system would reduce the need for anonymous job applications as statistical discrimination should subsequently decrease. Furthermore, some scholars claim that very early investments in child development such as in pre-school or even before the age of three are essential, representing *the* cornerstone for reducing inequalities (Heckman, 2008; Doyle et al., 2009). However, according to Becker (1971), discrimination may also be taste-based. This type of discrimination could rather be solved by making applications in the hiring process anonymous, thereby increasing the chances of equal treatment between job candidates with comparable educational attainment and other qualifications. Therefore, education may prevent unemployment or enhance employment for certain individuals in a fundamental way, whereas anonymous job applications may contribute to lowering a more specific barrier within the labor market.

By analyzing the search behavior and characteristics of newly unemployed individuals, the preceding three chapters adopt a rather different yet similarly important starting point. The empirical results are certainly important steps towards understanding human behavior while unemployed. However, it appears slightly more challenging to draw clear policy implications from these chapters that investigate the reservation wage evolution over two migrant generations, economic preferences and life satisfaction of the unemployed. Fairly new strands of the literature are investigated, and therefore the findings may appear to be rather small steps towards actual policy implications.

Potential policies could however take into account the development of reservation wages of first and second generation migrants by systematically monitoring their search behavior, so that reservation wages would adapt or converge towards a value optimal for productive reemployment. However, Chapter 2 does not provide any results on later employment probabilities or wages, and it thus remains unclear how the reservation wage distribution between migrant generations translates into actual outcomes, which would be important for the design of policies. The findings on risk aversion from Chapter 3 offer interesting perspectives, for instance with regard to the design and targeting of active labor market policy. It may be reasonable to specifically focus on less risk averse individuals with measures such as job search requirements and monitoring, which potentially lower the expectations and reservation wages of those unemployed individuals. Moreover, as previously stated, it would be important to analyze the long-term effects of non-cognitive characteristics and possible learning or adaptation processes during the unemployment spell to be aware of these processes when designing policies. Given the results of Chapter 4, the least and most satisfied men appear to be the group at the highest risk of long-term unemployment, and therefore any potential policies should focus on them. However, as the channels for the least and most satisfied are likely to be entirely different, one would need to first

prevent the risk of depression and second the risk of insufficient pressure during the job search process, by monitoring these unemployed individuals. Another important aspect besides reemployment itself involves the job quality, which may be measured by wages (as in Chapter 4) or job satisfaction questions. Similar to reemployment, the most and least satisfied individuals appear to be less successful in this respect. Policies should therefore be carefully designed, also taking job quality into consideration.

This dissertation and these final discussions emphasize that unemployment displays a complex issue with many starting points before and after the actual incidence of unemployment, where individuals, employers, and policy makers all play crucial and mutually interdependent roles.

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German Summary

Ausgangslage und Problemstellung

Arbeitslosigkeit scheint in den letzten Jahren in Deutschland zu einem gewissen Maß ihre Bedrohlichkeit verloren zu haben. Wurde das Land im Jahr 1999 noch als “kranker Mann Europas” bezeichnet und litt unter hoher Arbeitslosigkeit, so konnte sich Deutschland im Jahr 2010 mit dem Titel “Motor von Europa” schmücken und die Arbeitslosenquoten waren bereits unter diejenigen vor der Krise der Jahre 2008 und 2009 gefallen. Zum Jahresende 2012 waren rund 2,7 Millionen Menschen arbeitslos, was einer Arbeitslosenquote von 6,5 Prozent entspricht. So niedrig war dieser Wert zuletzt im Jahr 1991. Als Hauptgründe für die stabile und günstige Entwicklung des Arbeitsmarktes gelten sowohl die strukturellen Arbeitsmarktreformen der Jahre 2002 bis 2005 als auch die flexiblen Reaktionen der Firmen während der Wirtschaftskrise, die zu vergleichsweise milden Auswirkungen der Krise in Deutschland führten. Die günstige Entwicklung auf dem deutschen Arbeitsmarkt steht in starkem Kontrast zu den Entwicklungen in anderen Ländern wie etwa in den Vereinigten Staaten, in Irland oder in Spanien, in denen sich die Arbeitslosenquote im Zuge der Krise zwischen 5 und 12 Prozentpunkte deutlich erhöht hat. Im Ergebnis weisen Spanien und Griechenland im Jahr 2012 Arbeitslosenquoten von rund 25 Prozent auf, was die beiden Länder diesbezüglich zu den tragischen Spitzenreitern innerhalb der OECD-Länder macht. Aber auch in Deutschland – und obwohl die Arbeitslosenquote seit 2005 kontinuierlich sinkt – beträgt der Anteil der Langzeitarbeitslosen an der Gesamtzahl der Arbeitslosen weiterhin über 30 Prozent. Dieser Anteil ist damit höher als in Ländern wie etwa Österreich, Dänemark, Schweden und Kanada. Insbesondere Langzeitarbeitslosigkeit verursacht jedoch substantielle psychologische Kosten. Darüber hinaus sinkt die Produktion und das Volkseinkommen, Ungleichheiten verstärken sich und ein Verlust von Humankapital tritt ein. Arbeitslosigkeit stellt daher fortwährend ein wichtiges Thema sowohl für die akademische Forschung als auch für die Politik dar – und das nicht nur in Zeiten, die von außergewöhnlich hohen Arbeitslosenquoten geprägt sind.

Die Reintegration von Arbeitslosen in den Arbeitsmarkt sowie die Prävention von Arbeitslosigkeit sind dabei zwei Punkte von besonderer Bedeutung. Diese beiden Themen sind dabei nicht neu und wurden auch bereits in unterschiedlichen Studien beleuchtet, sie werden jedoch in dieser Dissertation aus anderer Perspektive und auf originelle Art untersucht. So werden die Forschungsergebnisse zu der Entwicklung des Reservationslohns über Generationen von Migranten, der Persönlichkeit, dem subjektiven Wohlbefinden, der Diskriminierung im Bewerbungsprozess und dem Schulsystem möglicherweise zukünftig eine größere Rolle spielen und können zu einem umfassenderen Verständnis sowohl des Verhaltens von Arbeitslosen als auch von institutionellen Hindernissen im Arbeitsmarkt führen.

Warum sind die genannten Aspekte wichtig? Manche Bevölkerungsgruppen weisen ein höheres Arbeitslosigkeitsrisiko auf als andere. So ist in Deutschland seit den 1970ern die durchschnittliche Arbeitslosenquote von Personen mit Migrationshintergrund wesentlich höher als diejenige von Einheimischen. Zudem verläuft der Anpassungsprozess der wirtschaftlichen Integration über die Generationen von Migranten eher langsam. Da Erwerbsbiografien immer flexibler werden, wird auch der Prozess der Arbeitsplatzsuche immer wichtiger, in dem Reservationslöhne eine zentrale Rolle spielen. Unterschiede zwischen der ersten und zweiten Generation arbeitsloser Migranten in Bezug auf ihr Suchverhalten können daher zum besseren Verständnis der schwachen wirtschaftlichen Integration beider Generationen beitragen. Nicht-kognitive Fähigkeiten oder auch Persönlichkeitseigenschaften können ökonomische Ergebnisvariablen über Faktoren wie Humankapital oder andere sozioökonomische und demografische Merkmale hinaus beeinflussen. Zum besseren Verständnis des Einflusses von Präferenzen und Einstellungen werden empirische Erkenntnisse benötigt, welche möglicherweise auch Unterschiede am Arbeitsmarkt zwischen Deutschen und Migranten der zweiten Generation erklären können. Die Erforschung der Lebenszufriedenheit gewinnt auch in der ökonomischen Literatur immer mehr an Bedeutung. Erkenntnisse über Lebenszufriedenheit als Einflussfaktor und nicht als Ergebnisvariable sind jedoch noch selten, wobei die grundlegende Frage ist, inwieweit zufriedene Personen für eine Gesellschaft vorteilhaft sind. Insbesondere der Zusammenhang zwischen der Zufriedenheit von Arbeitslosen und deren zukünftigem Arbeitsmarkterfolg ist von Interesse, um so eine mögliche motivierende Rolle von Lebenszufriedenheit zu erkennen. Diskriminierung auf dem Arbeitsmarkt ist immer noch verbreitet, wobei sie insbesondere im Bewerbungsprozess eine zentrale Rolle spielt. Ungleiche Jobeinstiegschancen zwischen Bevölkerungsgruppen können wichtige Auswirkungen auf deren weitere kurz- und langfristige Arbeitsmarkterfolge haben. Diskriminierung stellt ein Marktversagen dar, denn es sollte das Interesse jedes Arbeitgebers sein, die produktivsten Arbeitnehmer

einzustellen – unabhängig von Merkmalen wie etwa Geschlecht oder einem etwaigen Migrationshintergrund. Anonymisierte Bewerbungen stellen eine Möglichkeit dar, Diskriminierung im Bewerbungsprozess zu reduzieren, jedoch ist die empirische Evidenz zu deren Effekten bislang noch nicht ausreichend. Anonymisierte Bewerbungen stoßen jedoch an ihre Grenze, falls strukturelle Ungleichheiten zwischen Gruppen existieren bevor diese in den Arbeitsmarkt oder in einen neuen Job eintreten. Bildung gilt als ein entscheidender Faktor für den späteren Arbeitsmarkterfolg. Außerdem ist die Wahrscheinlichkeit, arbeitslos zu werden höher für Geringqualifizierte, so dass Bildung einen essentiellen Bereich zur Untersuchung von Arbeitslosigkeit darstellt.

Diese genannten Aspekte verdeutlichen die Komplexität des Themas Arbeitslosigkeit und die vielfältige Entwicklung der Literatur zu diesem Thema. Eine differenzierte Betrachtung aus unterschiedlichen Perspektiven scheint daher unumgänglich. Da jedoch die (Wieder-)Beschäftigung das übergeordnete Hauptziel in Bezug auf Arbeitslosigkeit darstellt, sind die zentralen Fragestellungen dieser Dissertation die folgenden: Erstens, was erleichtert die Reintegration von Arbeitslosen in den Arbeitsmarkt? Und zweitens, welche Maßnahmen können Arbeitslosigkeit von vornherein unterbinden? Diese Dissertation widmet sich mit entsprechenden empirischen Beiträgen dem Suchverhalten und den Eigenschaften von Arbeitslosen und außerdem Möglichkeiten, Arbeitslosigkeit zu vermeiden beziehungsweise Beschäftigung zu fördern.

Ergebnisse dieser Dissertation

Für die empirischen Analysen werden unterschiedliche Datenquellen verwendet. Kapitel 2, Kapitel 3 und Kapitel 4 basieren auf dem *IZA Evaluationsdatensatz S*, der Surveyinformationen über Personen enthält, die zwischen Juni 2007 und Mai 2008 in Deutschland arbeitslos wurden. In Kapitel 5 werden Daten von Bewerbenden aus einem randomisierten Experiment untersucht. Die empirische Analyse in Kapitel 6 basiert auf Daten des *Sozioökonomischen Panels (SOEP)*, einer repräsentativer Längsschnittstudie von privaten Haushalten in Deutschland.

Kapitel 2 beschäftigt sich mit arbeitslosen Migranten der ersten und zweiten Generation. Dabei wird zum ersten Mal die Hypothese steigender Reservationslöhne von einer Generation zur nächsten untersucht. Dies kann als mögliche Erklärung für die größtenteils ausbleibende wirtschaftliche Integration beider Generationen von Migranten dienen. Zwei Erweiterungen des grundlegenden Suchmodells liefern theoretische Argumente für diese Hypothese, welche durch die Änderung der jeweiligen Referenz- bzw. Vergleichsgruppe erklärt wird. Die empirischen Ergebnisse bestätigen die Hypothese steigender Reservationslöhne von einer Generation zur nächsten. Deutsche Sprachkenntnisse und

die Selbsteinschätzung von Renditen individueller Charakteristika (u.a. Bildungsrenditen) dienen als Approximationen für die Vergleichsgruppe einer Person. Sofern diese Approximationen zutreffen, werden empirische Belege für die Hypothese der Veränderung der Vergleichsgruppe als Mechanismus steigender Reservationslöhne gefunden.

Kapitel 3 untersucht die ökonomischen Präferenzen von arbeitslosen Einheimischen und Migranten der zweiten Generation und deren Einfluss auf die Wiederbeschäftigungswahrscheinlichkeit zwei Monate nach Eintritt in Arbeitslosigkeit. Unterschiede bei Risikoeinstellungen, Zeitpräferenzen, Vertrauen und Reziprozität können möglicherweise Teile der Diskrepanz der Wiederbeschäftigungsquoten zwischen Deutschen und Migranten der zweiten Generation erklären. Der Beitrag dieses Kapitels zur bestehenden Literatur besteht aus der neuartigen und direkten empirischen Evidenz über den Zusammenhang zwischen ökonomischen Präferenzen, Einstellungen und der Reintegration von Einheimischen und Migranten der zweiten Generation in den Arbeitsmarkt. Letztere weisen eine höhere Risikobereitschaft auf und die Wahrscheinlichkeit für eine geringe positive Reziprozität ist im Vergleich zu Deutschen niedriger. Diese Unterschiede können die niedrigere Beschäftigungswahrscheinlichkeit von Migranten der zweiten Generation jedoch nicht erklären. Personen mit höherer Risikobereitschaft weisen zudem eine niedrigere Wiederbeschäftigungswahrscheinlichkeit auf, was höchstwahrscheinlich mit höheren Reservationslöhnen von risikofreudigen Personen zusammenhängt.

Kapitel 4 geht der Fragestellung nach, ob Lebenszufriedenheit einen Einfluss auf die Wiederbeschäftigungswahrscheinlichkeit zwölf Monate nach Eintritt in die Arbeitslosigkeit und auf zukünftige Löhne ausübt. Damit wird ein wichtiger Beitrag über die Auswirkungen von Lebenszufriedenheit auf ökonomische Ergebnisvariablen und zudem neue Erkenntnisse über Determinanten der Reintegration in den Arbeitsmarkt geliefert. Hierbei wird das Residuum einer Lebenszufriedenheitsregression als erklärende Variable benutzt, welches die Abweichung der individuellen Lebenszufriedenheit von dem Wert angibt, der auf Grundlage sozioökonomischer und demografischer Merkmale vorausberechnet wird. Dadurch soll ein gewisser konstanter Faktor der Lebenszufriedenheit erfasst werden. Die Ergebnisse zeigen, dass Zufriedenheit einen inversen U-förmigen Effekt auf die Wiederbeschäftigungswahrscheinlichkeit und auf zukünftige Löhne hat. Weitere Untersuchungen führen in diesem Zusammenhang zu drei neuen Erkenntnissen: *a)* Lebenszufriedenheit hat hauptsächlich einen Einfluss auf die zukünftige Aufnahme von Selbstständigkeit; *b)* nur Männer erfahren Auswirkungen von Lebenszufriedenheit; und *c)* das Konzept des "locus of control" (Kontrollüberzeugungen) kann Teile des Effektes erklären. Zusammenfassend zeigt sich demnach, dass der optimale Wert von Lebenszufriedenheit im Hinblick auf das Erreichen von Leistungszielen nicht notwendigerweise der höchste zu sein scheint.

Die folgenden zwei Kapitel ergänzen die vorherigen Kapitel durch den Fokus auf Prozesse, die Arbeitslosigkeit verhindern bzw. Beschäftigung fördern sollen. Können anonymisierte Bewerbungen, welche keine Angaben über die Identität des Bewerbenden wie z.B. das Geschlecht und die Herkunft enthalten, Diskriminierung im Bewerbungsprozess verringern? Diese Fragestellung wird in Kapitel 5 untersucht, welches einen wichtigen Beitrag zur relativ überschaubaren Literatur über Effekte dieser Bewerbungsverfahren liefert. Hierzu werden Daten von einem randomisierten Experiment mit Bewerbenden auf eine Post-Doc Stelle an einem europäischen Wirtschaftsforschungsinstitut untersucht. Es zeigt sich im Ergebnis, dass anonymisierte Bewerbungen generell keinen Effekt auf die Wahrscheinlichkeit haben, zu einem Bewerbungsgespräch eingeladen zu werden. Jedoch werden Frauen häufiger eingeladen, wenn ihre Bewerbungen auf herkömmliche Art betrachtet werden. Dieser Effekt verschwindet mit anonymisierten Bewerbungen. Dieser Befund unterstützt somit die Sichtweise, dass anonymisierte Bewerbungen aktive Fördermaßnahmen unterrepräsentierter Gruppen unterbinden können – zumindest in der ersten Stufe des Bewerbungsprozesses. Außerdem scheinen mit anonymisierten Bewerbungen bestimmte Informationen – im konkreten Fall die Veröffentlichungen in renommierten Fachzeitschriften – eine größere Bedeutung zu erfahren. Ob der Einsatz anonymisierter Bewerbungsverfahren sinnvoll ist, hängt daher von der konkreten Ausgangssituation und den Umständen ab. So ist das Ausmaß der Diskriminierung von Bedeutung, aber auch andere Merkmale (z.B. die Anzahl der Bewerbenden) spielen eine wichtige Rolle.

Existieren jedoch strukturelle Unterschiede zwischen gewissen Bewerbendengruppen, stoßen anonymisierte Bewerbungen an ihre Grenze. Ein zentraler Punkt ist hierbei die (Aus-)Bildung, welche in Kapitel 6 anhand des deutschen Schulsystems untersucht wird. Insbesondere werden die anhaltenden Unterschiede in Bezug auf den Besuch der weiterführenden Schulen zwischen Kindern mit und ohne Migrationshintergrund erforscht, welche sich durch einen höheren Anteil von Kindern mit Migrationshintergrund an Hauptschulen widerspiegelt. Dies kann zum einen durch Unterschiede im durchschnittlichen sozioökonomischen Hintergrund und zum anderen durch migrationsspezifische Merkmale entstehen. Durch den Einsatz von linearen ökonometrischen Methoden und Matchingmethoden entsteht ein methodisch-robustes Bild, diese beiden möglichen Erklärungen voneinander zu trennen. Darüber hinaus erweitern die Analysen die bisherige Literatur durch die simultane Untersuchung von drei unterschiedlichen Ergebnisvariablen für dieselben Personen. Die empirischen Ergebnisse zeigen, dass Unterschiede im durchschnittlichen Familienhintergrund zwischen deutschen Kindern und Kindern mit Migrationshintergrund die Unterschiede bei Empfehlungen für weiterführende Schulen, bei Einschulraten auf weiterführenden Schulen und beim Schulbesuch mit 17 Jahren vollständig erklären können.

Diese Erkenntnisse deuten damit auf allgemeine Ungleichheiten und Hindernisse beim Übergang auf weiterführende Schulen im deutschen Schulsystem hin, die sich auf den sozioökonomischen Status der Familien zurückführen lassen und ihren Ursprung nicht in einem etwaigen Migrationshintergrund haben.

Schlussfolgerungen

Im Folgenden werden Ansätze für weiterführende Forschungsvorhaben, potenzielle Einschränkungen der empirischen Analysen und mögliche politische Handlungsempfehlungen diskutiert.

Die empirische Analyse in Kapitel 2 beruht auf Approximationen von Vergleichsgruppen, da derartige Informationen nicht direkt verfügbar sind. Um unterschiedliche Herkunftsländer der ersten und zweiten Generation genauer zu berücksichtigen, könnten Matchingmethoden angewendet werden. Weitere Forschung könnte einerseits andere Informationen über das Suchverhalten der Migranten und andererseits zukünftige Arbeitsmarkterfolge untersuchen. Kapitel 3 kann mit Hilfe der Ergebnisse nicht zur Erklärung der unterschiedlichen Wiederbeschäftigungsquoten von Deutschen und Migranten der zweiten Generation beitragen. Langfristige Effekte von nicht-kognitiven Fähigkeiten auf arbeitsmarktökonomische Ergebnisvariablen (einschließlich der Jobqualität) und die Einbindung von Migranten der ersten Generation in diese Analysen bedürfen weiterer Aufmerksamkeit. In Kapitel 4 wird kein klarer exogener Schock als Instrument für die Lebenszufriedenheit verwendet, wodurch mögliche Restzweifel in Bezug auf das ggf. vorhandene Endogenitätsproblem bestehen könnten. Künftige Forschung könnte zudem potenzielle Unterschiede zwischen dem Querschnitts- und Fixed Effects-Residuum-Ansatz genauer in den Fokus nehmen. Unterschiede zwischen Männern und Frauen in Bezug auf die Auswirkungen von Lebenszufriedenheit und der Zusammenhang mit Persönlichkeitseigenschaften und Selbstständigkeit stellen weitere Ansatzpunkte für künftige Untersuchungen dar. Bei den Ergebnissen aus Kapitel 5 ist zu berücksichtigen, dass der untersuchte Arbeitsmarkt sehr speziell und die Stichprobe relativ klein ist. Weitere empirische Evidenz ist daher von Nöten, auch im Hinblick auf internationale Unterschiede bei Bewerbungskulturen, um herauszufinden, in welchen Zusammenhängen anonymisierte Bewerbungsverfahren sinnvoll einzusetzen sind. Die Information über Grundschulempfehlungen in Kapitel 6 kann Messfehler enthalten, da sie auf retrospektiven und subjektiven Angaben der befragten Jugendlichen beruht. Es zeigt sich jedoch, dass sich offenkundige Ungenauigkeiten in diesen Angaben nicht systematisch zwischen Migranten und Deutschen unterscheiden. Somit sollten sich etwaige Messfehler nicht auf die wesentlichen Ergebnisse der Analysen auswirken. Weitere Forschung könnte sich jedoch den genauen Mechanismen widmen, durch die der

Effekt des sozioökonomischen Hintergrundes entsteht - auch, um diesem Effekt möglicherweise entgegensteuern zu können. Die späteren Arbeitsmarkterfolge der untersuchten Jugendlichen sind in diesem Zusammenhang natürlich von großem Interesse und sollten untersucht werden, sobald die entsprechenden Daten verfügbar sind.

Die untersuchten Fragestellungen in dieser Dissertation haben teils sehr unterschiedliche Ansatzpunkte. Kann man die relative Bedeutung der einzelnen Kapitel auch im Hinblick auf politische Handlungsempfehlungen quantifizieren? Die folgenden zwei Abschnitte verfolgen diese Absicht. So beschäftigt sich Kapitel 6 mit dem deutschen Bildungssystem und daher mit einer fundamentalen Determinante des späteren Arbeitsmarkterfolges. In Bezug auf die untersuchten Unterschiede zwischen Deutschen und Migrant*innen bei ökonomischen Ergebnisvariablen und dem starken Zusammenhang mit dem sozioökonomischen Hintergrund würde sich eine frühzeitige Reduzierung dieser Ungleichheiten höchstwahrscheinlich positiv auf die weitere Entwicklung im Arbeitsmarkt auswirken. Wenn in diesem Fall hauptsächlich statistische Diskriminierung hinter der Diskriminierung im Bewerbungsprozess steckt, würden geringere Ungleichheiten z.B. im Bildungssystem die Notwendigkeit anonymisierter Bewerbungen verkleinern. Es gibt darüber hinaus auch Wissenschaftler, die zur Reduzierung von Ungleichheiten für einen noch früheren Ansatz im Kindergarten oder vor dem Alter von drei Jahren plädieren. Wenn jedoch Diskriminierung auf Vorurteilen basiert, stellen anonymisierte Bewerbungen eine wichtige Lösungsmöglichkeit dar, um Chancengleichheit basierend auf Qualifikationen zu gewährleisten. Somit können Bildung auf grundlegende Weise und anonymisierte Bewerbungen punktuell das Risiko individueller Arbeitslosigkeit verringern bzw. die Chance auf Beschäftigung für gewisse Personengruppen erhöhen.

Die vorherigen drei Kapitel dieser Dissertation haben mit der Analyse des Verhaltens und der Eigenschaften von Arbeitslosen einen anderen Ansatzpunkt. Da im Fokus dieser Analysen eher neuartige Forschungsgebiete stehen, gestaltet sich die Formulierung klarer politischer Handlungsempfehlungen als eine größere Herausforderung. Mögliche Ansatzpunkte bestehen aber z.B. darin, die intergenerationale Entwicklung der Reservationslöhne von Migrant*innen zu berücksichtigen, indem das Suchverhalten so kontrolliert wird, dass die Reservationslöhne zu einem optimalen Wert für die Wiederbeschäftigung konvergieren. Jedoch geht Kapitel 2 nicht auf Wiederbeschäftigungsquoten oder Löhne ein, so dass es offen bleibt, inwieweit sich die Verteilung der Reservationslöhne der beiden Generationen in Ergebnisvariablen übersetzen. Dies wäre jedoch für den Entwurf von Politikmaßnahmen wichtig. Die Ergebnisse aus Kapitel 3 weisen interessante Perspektiven für aktive Arbeitsmarktpolitik auf, die speziell auf risikofreudige Personen gerichtet werden könnten, um ihre Erwartungen und somit ihre Reservationslöhne zu senken. In diesem

Fall wäre es zudem interessant, langfristige Effekte zu untersuchen, um Anpassungs- und Lernprozesse im Verlauf der Arbeitslosigkeit besser zu verstehen. Die Resultate aus Kapitel 4 deuten darauf hin, dass sehr unzufriedene und sehr zufriedene männliche Arbeitslose ein höheres Risiko für Langzeitarbeitslosigkeit aufweisen und somit im Fokus möglicher Politikmaßnahmen stehen sollten. In diesem Zusammenhang sollte jedoch berücksichtigt werden, dass die verantwortlichen Mechanismen für beide Gruppen höchstwahrscheinlich unterschiedlich sind und man zum einen dem Risiko der Depression und zum anderen dem Risiko des ausbleibenden Druckes während der Arbeitssuche vorbeugen sollte. Da außerdem die sehr unzufriedenen und sehr zufriedenen Arbeitslosen weniger erfolgreich in Bezug auf den zukünftigen Lohn erscheinen, sollten Politikmaßnahmen neben der Wiedereingliederung auch die Qualität einer anschließenden Erwerbstätigkeit berücksichtigen.

Diese Dissertation und die abschließende Diskussion verdeutlichen erneut die Komplexität des Themas Arbeitslosigkeit, bei dessen weiterer Erforschung auch künftig die Berücksichtigung unterschiedlicher Ansatzpunkte und Perspektiven notwendig sein wird. Entscheidende Rollen spielen dabei sowohl die Arbeitsangebotsseite, die Arbeitsnachfrage-seite als auch die politischen Entscheidungsträger.

English Summary (Abstracts)

Reservation Wages of First and Second Generation Migrants

This chapter analyzes the reservation wages of first and second generation migrants. Based on recently collected and rich survey data of a representative inflow sample into unemployment in Germany, the hypothesis that reservation wages increase from first to second generation migrants is empirically tested for the first time. Two extensions of the basic job search model, namely an unknown wage offer distribution and different reference standards, provide theoretical justifications for this conjecture. In both extensions, changing frames of reference are identified as a channel through which the phenomenon of increasing reservation wages may arise. In as far as language skills or self-evaluated returns to characteristics reflect a person's frames of reference, this possible mechanism is empirically supported.

Economic Preferences and Attitudes of Unemployed Natives and Migrants

This chapter provides novel and direct evidence on the economic effects of risk attitudes, time preferences, trust and reciprocity while comparing unemployed natives and second generation migrants. Analyzing an inflow sample into unemployment in Germany shows differences between the two groups mainly in terms of risk attitudes and positive reciprocity. Second generation migrants have a significantly higher willingness to take risks and they are less likely to have a low amount of positive reciprocity when compared to natives. It is also found that these differences matter in terms of economic outcomes, and more specifically in terms of the employment probability about two months after unemployment entry. The employment probability is observed to be significantly lower for individuals with a high willingness to take risks. Some evidence suggests that this result is channeled through reservation wages and search intensity.

Subjective Well-Being, Reemployment and Wages

Subjective well-being is primarily treated as an outcome variable in the economic literature. However, is happiness also a driver of behavior and life's outcomes? Rich survey data of recent entrants into unemployment in Germany show that a significant inverted U-shaped relationship exists between residual happiness and an unemployed individual's future reemployment probability and the reentry wage. Residual life satisfaction displays higher (or lower) satisfaction levels than would be predicted by a number of socioeconomic and demographic characteristics. This chapter is the first to show that happiness is mainly a predictor for self-employment and less for standard reemployment. Related findings suggest that happiness matters for male unemployed, and the concept of locus of control is able to explain part of the effect. If reemployment and higher wages are considered desirable outcomes for the unemployed individual and society, the shape of the effect suggests an optimal level of happiness, which is not necessarily the highest.

Anonymous Job Applications of Fresh Ph.D. Economists

Discrimination in recruitment decisions is well documented. Anonymous job applications may reduce discriminatory behavior in hiring. This chapter analyzes the potential of this approach in a randomized experiment with fresh Ph.D. economists on the academic job market using data from a European-based economic research institution, thereby contributing to the small literature on anonymous job applications. If included in the treatment group, characteristics such as name, gender, age, contact details and nationality were removed. Results show that anonymous job applications are in general not associated with a higher or lower probability to receive an invitation for a job interview. However, it is found that while female applicants have a higher probability to receive an interview invitation than male applicants with standard applications, this difference disappears with anonymous job applications. Furthermore, evidence shows that certain professional signals are weighted differently with and without anonymization.

Decomposing the Native-Migrant Education Gap

This chapter investigates second generation migrants and native children at several stages in the German education system to analyze the determinants of the persistent native-migrant gap. One part of the gap can be attributed to differences in socioeconomic background and another part remains unexplained. Faced with this decomposition problem, linear and matching decomposition methods are applied in the empirical analysis to arrive

at a picture that is robust to methodological variations. This chapter further contributes to the literature by examining three different outcomes for the *same* individuals spanning a crucial period in children's educational careers around and after their transition into secondary schooling. Accounting for differences in socioeconomic background, migrant pupils are found to just as likely receive recommendations for enrollment or to actually enroll at any secondary school type as native children. Also the gap in education outcomes at the age of 17 appears to be explained entirely by differences in socioeconomic family background. Comparable natives, in terms of family background, thus face similar difficulties as migrant children. These results point to more general inequalities in secondary schooling in Germany which are not migrant-specific.

List of Publications

Chapter 2:

- Reservation Wages of First and Second Generation Migrants (with A.F. Constant, U. Rinne and K.F. Zimmermann), IZA Discussion Paper No. 5396, 2010.
 - Other version: Reservation Wages of First and Second Generation Migrants (with A.F. Constant, U. Rinne and K.F. Zimmermann), CEPR Discussion Paper No. 8208, 2011.
 - Other version: Reservation Wages of First and Second Generation Migrants (with A.F. Constant, U. Rinne and K.F. Zimmermann), DIW Berlin Discussion Paper No. 1089, 2010.

Chapter 3:

- Economic Preferences and Attitudes of the Unemployed: Are Natives and Second Generation Migrants Alike? (with A.F. Constant, U. Rinne and K.F. Zimmermann), *International Journal of Manpower*, 32, 825-851, 2011.
 - Other version: Economic Preferences and Attitudes of the Unemployed: Are Natives and Second Generation Migrants Alike? (with A.F. Constant, U. Rinne and K.F. Zimmermann), IZA Discussion Paper No. 5380, 2010.
 - Other version: Economic Preferences and Attitudes of the Unemployed: Are Natives and Second Generation Migrants Alike? (with A.F. Constant, U. Rinne and K.F. Zimmermann), CEPR Discussion Paper No. 8207, 2011.
 - Other version: Economic Preferences and Attitudes of the Unemployed: Are Natives and Second Generation Migrants Alike? (with A.F. Constant, U. Rinne and K.F. Zimmermann), DIW Berlin Discussion Paper No. 1088, 2010.

Chapter 4:

- Don't Worry, Be Happy? Happiness and Reemployment, IZA Discussion Paper No. 7107, 2012.

Chapter 5:

- Anonymous Job Applications of Fresh Ph.D. Economists (with U. Rinne and K.F. Zimmermann), *Economics Letters*, 117(2), 441–444, 2012.
 - Other version: Anonymous Job Applications of Fresh Ph.D. Economists (with U. Rinne and K.F. Zimmermann), IZA Discussion Paper No. 6100, 2011.

Chapter 6:

- Kick it like Özil? Decomposing the Native-Migrant Education Gap (with U. Rinne and S. Schüller), IZA Discussion Paper No. 6696, 2012.
 - Other version: Kick it like Özil? Decomposing the Native-Migrant Education Gap (with U. Rinne and S. Schüller), SOEPpapers No. 508, 2012.

Annabelle Krause – Curriculum Vitae

*Mein Lebenslauf wird aus datenschutzrechtlichen Gründen
in der elektronischen Version meiner Arbeit nicht veröffentlicht.*

