

Stefan Gruber

The Long-term Consequences of Migration

Subjective Well-being and Cognitive Abilities of
Older Migrants in Europe



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Following my own multicultural experiences and due to the many friends from all over the world I acquired in the past years, I consider the topic of migration as much more than a pure research topic. At the present time in which many countries experience a renaissance of nationalist paradigms, I plead for an open society in which people are valued no matter where they come from.

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Chapter 1

Introduction

1.1 Background

The topic of migration has gained increasing attention in Europe within the past decades, in social sciences but also in politics and in the societal discussion. One of the peaks of the discussion was reached in 2015 as a consequence of the so-called ‘migration crisis’. During this year, a total of 4.7 million people immigrated to one of the EU member states with the war in Syria being the biggest driver of immigration.¹ However, Europe has factually become an immigration continent long before 2015. Figures show a steep increase of residents in European countries who were born outside their country of residence from 23 million in 1985 (United Nations 1998) to more than 54 million in 2016 (Eurostat 2017a). Of these 54 million, 19.3 million were born in a different EU member state than the one in which they were residing in 2016 (ibid.). According to the Migration Policy Institute (2017), this makes the European Union “(...) *the world’s best research laboratory on legal, transnational migration*”. Migration has become one of the central aspects of the European demography being a more substantial contributor to the growth of the population than natural growth (Penninx et al. 2006).

The countries within Europe are experiencing very different migration patterns both in scale and in time (Penninx et al. 2006). While some countries in Central and Western Europe such as Switzerland, Belgium and France, have a long history of immigration that goes back to the time before World War II (WWII), other countries like Germany, Sweden, Austria and the Netherlands started to experience immigration for the first time in the decades following WWII. The Southern European countries such as Italy, Spain, Portugal, and Greece used to be emigration countries until the 1980s. Today, they are facing a new experience

¹ At the same time 2.8 million people emigrated from the EU (Eurostat 2017a).

of immigration mainly as a consequence of their geographic location. In contrast to that, most of the Eastern European countries are nowadays confronted with emigration and transit migration. The different patterns are accompanied with what is often referred to as ‘new geography of migration’ meaning that motives, composition, origins, destinations, and forms of international migration get more and more diverse as a consequence of globalization. In the European context, the increasing heterogeneity of international migration patterns led to an ambivalent political reaction. *“On the one hand, the EU (and its predecessors) created essentially a fundamental right to move and settle within the EU area for citizens and residents of its member states. On the other hand, EU member states have developed restrictive and defensive immigration policies to keep out unskilled-for migrants. This amounts to the paradoxical trend towards ‘free mobility’ for those within, and increasing closure for those outside the EU”* (Penninx et al. 2006: 9).

Besides the increase in migration flows, population ageing is another central challenge for the current and future Europe. Being the result of a simultaneous decrease of fertility rates and an increase in life expectancies, already by 2020 a quarter of Europeans will be over 60 years of age (European Commission 2014). This will have impacts on many different aspects of the European society including the economy, family and household structures, as well as the national social security and health care systems. The interaction between fertility, mortality and migration determines the extent of changes in the age composition in the different European countries. In 2016, the old-age dependency ratio across the EU member states ranges between the lows of 20.4 percent in Ireland and 20.5 percent in Luxembourg as well as the highs of 32.0 percent in Germany, 33.1 percent in Greece, and 34.3 percent in Italy (Eurostat 2017b).² Although population ageing in Europe takes a common direction, its extent and pace varies across the different European countries.

As King (2014) correctly notes, too little research exists exploring the ‘intersectionalities’ of ageing, including those brought out in a migratory setting. King identifies three strands of research on ageing and migration: (i) research that focuses on older people who are left behind by migration, (ii) research that concentrates on people who migrate in later life, often at or around retirement, and (iii) research on those who migrate as younger people and who then age

² The old-age dependency ratio measures the number of elderly people (persons aged 65 years and over) as a share of those of working age (here defined as persons aged above 16 and below 65 years).

abroad. Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE), the third group is in the focus of this thesis. On average, migrants in the SHARE sample migrated more than thirty years ago. This makes the SHARE database tailor-made for the central research question: What are the long-term consequences of migration?

The question on the consequences of migration can be addressed from different perspectives. One perspective is the one of the sending countries. Migration is selective with regard to socio demographic characteristics and skills. High skilled workers are more likely to move to another country than low-skilled workers (Biavashi et al. 2016). This skill bias in emigration is often referred to as ‘brain drain’, which possibly harms the economic development of sending countries. Indeed, it can imply a loss of public resources invested in emigrants’ education, can reduce the sending country’s productive capacity, and can worsen the business environment, especially in small economies (Ratha et al. 2011). However, recent findings have challenged this perspective. They show that sending countries may even benefit from emigration of high skilled persons through remittances, transfer of social norms and institutions, technological diffusion as well as increases of labour income (Di Giovanni et al. 2015; Ahmed et al. 2016; Biavashi et al. 2016).

Another perspective is the one of destination countries. As noted by Spencer (2003), net migration into Europe is increasing and has become the largest component of population change. The demographic development in most European receiving countries tends to imply an ageing workforce, which ultimately results in a decline of the population in working age and leads to a need for human resources in those countries. This type of labor demand induced migration is often referred to as ‘replacement migration’ (e.g. Coleman 2002). As not only net migration is increasing but also as the range of origin countries has become wider leading to growing diversity of languages and cultures, the central challenge for the (European) host countries is to provide opportunities for integration (Spencer 2003). Focusing on the economic aspects and stressing that the effects of immigration depend on the particular migration that is under consideration as well as on the particularities of the receiving economy, Dustman et al. (2007) discuss a variety of channels by which immigration can affect the receiving country: (i) wages or employment effects on native workers, (ii) changes in output structure, technology and competitiveness, (iii) fiscal effects, through benefit claims and contributions to the tax or welfare system, (iv) effects on house

prices, (v) effects through the creation of new jobs and opportunities, and (vi) complementarities and additions to the skill base. Mostly addressing one of the aspects for a specific immigration context, the majority of the existing literature concludes that natives in receiving countries are either not affected or better off through immigration in the long run (e.g. Ahmed et al. 2016; Biavashi et al. 2016). Beyond that, Somerville and Sumption (2009) stress that not all natives in the destination countries may benefit from immigration. Especially vulnerable groups of the society may be negatively affected because they enter into closer competition with immigrants.

The third perspective is the central one for this thesis. It addresses the question: What are the long-term consequences of migration for migrants themselves? Moving temporarily or permanently to another country is a fundamental event that affects many aspects of an individual's life. For a long time, a great share of the existing research has focused on the economic consequences of migration. Recently, social scientists have given increasing attention to how moving to another country affects the non-economic aspects of migrants' life (e.g. Amit and Litwin 2010; Tucci et al. 2014). Given the growing representation of older migrants within the ageing population of Europe, exploring the specific life situation of this group and understanding how migration influences their later life is getting more and more relevant.

This volume is composed of three studies. The first one focuses on subjective well-being (SWB) and includes all migrants observed within Europe, both intra- and non-European migrants. The central research question of this study is whether the SWB level of migrants from various origin contexts differs from the level of European-born natives in one out of eleven destination countries under consideration.³ Besides the exploration of the individual characteristics associated with the observed immigrant-native gap, this study also includes structural factors on the macro-level by investigating whether differences between destination countries with regards to the size of the immigrant-native gap are related to the national family reunion policy as measured by the Migrant Integration Policy Index (MIPEX).

The second study raises the question whether migration pays off in the long run, both in terms of income and subjective well-being. The heterogeneity within the group of migrants is considerably reduced by focusing on migrants from Poland

³ Henceforth the term 'natives' is used for people who were born in the destination country, have the destination country's citizenship and are still living there at the time of the interview.

and the Czech Republic who migrated to one of their three main destination countries in the database, namely Austria, Sweden, or Germany. In contrast to the first study, the second paper uses people in Poland and the Czech Republic who did not migrate (stayers) as reference group to gain a deeper insight into the consequences of migration itself.⁴

The third study deviates in its dependent variable (DV) from study 1 and 2. Here, the question on the long-term consequences of intra-European migration for cognitive functioning in later life is addressed, again by using stayers in the origin country as reference group. The following introductory chapter is structured as follows: The next section outlines definitions and types of migration. The subsequent two sections describe the state of research on the relation between (i) migration and well-being and (ii) migration and cognitive functioning. This is followed by a comprehensive overview on migration theories and the concept of acculturation before outlining specific theoretical arguments regarding the influence of migration on well-being and cognition. The last part contains a short summary of the three studies.

1.2 Definitions and types of migration

Until now there is still no universal definition of migration. “[A]s they result from distinct political, social, economic and cultural contexts, definitions of migration are highly varied in nature. This makes comparison difficult not only because statistical criteria differ, but because these differences reflect real variations in migration’s social and economic significance, depending on the particular context” (Castles 2000a, cited by Düvell 2006: 5).

With reference to Boyle (1998), Castles (2000b) defines migration as the process of crossing the boundary of a political or administrative unit for a certain minimum period. Internal migration refers to a move from one area to another within one country. International migration means crossing the frontiers which separate the countries or states from another. Applying the foreign born concept of migration, the studies at hand focus on international migration. A person is defined as migrant if she or he was born in another country than the country of residence at the time of the interview.

⁴ Henceforth the term ‘stayers’ is used for people who were born in the origin country and are still living there at the time of the interview.

International migrants can be divided up into the following categories (Castles 2000b): (i) temporary labor migrants, (ii) high skilled business migrants who move within the internal labor markets of transnational corporations and international organizations, (iii) irregular migrants who enter a country without the necessary permits, (iv) persons who are forced to migrate due to wars or other causes like environmental catastrophes (v) people migrating for reasons of family reunification, and (vi) people who return to their countries of origin after a period in another country, also referred to as ‘return migrants’.

The individual reasons for and causes of migration are most probable linked to the individual consequences of migration, especially for SWB. If a person was forced to migrate the challenge of dealing with the new life situation might be different as opposed to a person migrating of her/his own free will. Unfortunately, the database does not contain information on the reasons for migration. Migrants in the dataset are most probable a combination of the different migration types. However, study 2 which focuses on one specific migration context addresses this empirically. Forced migration from the Czech Republic and Poland as a consequence of WWII is excluded by using information on the time of migration.

1.3 What we know so far about the relation between migration and well-being

Psychological research differentiates between two types of well-being: (i) hedonic well-being reflecting subjectively determined positive mental states and usually being measured with questions on pleasure and happiness (Ryan and Deci 2001) and (ii) eudaimonic well-being focusing on measures like autonomy, aspirations and motivation (Kagan 1992). Many studies in the field of well-being research use either happiness or quality of life measures, and thereby address the hedonic well-being type. In contrast to that, we use the CASP index as measure for well-being. CASP stands for the sub-dimensions control, autonomy, self-realization, and pleasure. As it will be further outlined in the studies 1 and 2, this measure combines both hedonic and eudaimonic aspects of well-being and is designed to quantify the subjective well-being of older people. Von dem Knesebeck et al. (2005) provide further information on the CASP-12 index as available in SHARE.

The research on life satisfaction and well-being of migrants can be divided into two groups: (i) studies analyzing differences between migrants and natives in the

destination country and (ii) studies interested in the consequences of migration by using stayers in the origin country as reference group. While the majority of studies comparing migrants to natives focuses on either physical health or mental health differences, the number of studies analyzing well-being differences is relatively low. Using SHARE data, Amit and Litwin (2010) analyze the Israeli migration context. Differentiating between various ethnic groups, the authors find that especially recent arrivals from the Former Soviet Union have low levels of well-being. Kämpfer (2014) uses data from the German Socio-Economic Panel. The author finds that the life satisfaction of migrants living in Germany is significantly lower than the one of German born natives. Safi (2010) uses data from the European Social Survey (ESS) and investigates disparities in different life satisfaction measures between first- and second-generation immigrants on the one hand, and natives in thirteen European countries on the other hand. The results indicate that immigrants are relatively dissatisfied with their life and that this relative dissatisfaction does not diminish with time and across generations. These studies commonly focus on determinants of SWB on the individual level. Apart from demographic characteristics (such as gender and age) and migration-specific variables (like length of residence, language skills, and having the citizenship of the destination country), the so far existing research identifies the health status, social networks, psychological factors and economic conditions as the main individual determinants for the well-being of migrants. A research gap not addressed by these studies is why the well-being of migrants differs between destination countries and which structural factors could be associated with differences on the country level.

Conducting research on 63 countries, Bonini (2008) finds that 19 percent of the variation of SWB can be explained by structural factors on the macro-level. Research on migrants' SWB that also integrates macro-level factors is still very scarce up to date. Using data from the ESS including 30 countries, Hadjar and Backes (2013) find evidence that the SWB gap between migrants and natives is larger in countries with a high GDP and smaller in countries with rather inclusive immigrant integration policies. Also using ESS data, a recent study by Kogan et al. (2017) suggests that migrants are likely to be more satisfied in host countries with welcoming attitudes of the native-born towards immigrants whereas they tend to be less satisfied in countries with higher levels of economic inequality.

More research combining individual factors on the micro-level with structural factors on the macro-level is needed to gain deeper knowledge about the multidimensional determinants of migrants' SWB. In this context, older migrants as a group of increasing importance in the European population structure are insufficiently addressed by the existing research. Due to a potentially higher need for care, older migrants might be particularly affected by national family reunion policies.

The classical comparison with the native reference group does not provide sufficient information on the consequences of migration itself. Therefore, the second group of studies compares the performance of emigrants to the well-being of similar people in the country of origin. Bartram (2013) is one of the first authors raising the question whether migrants from poorer countries who move to wealthier countries end up happier for having migrated. Using data from the ESS, the study finds that migrants generally appear to be happier than those who have remained in the countries of origin. Nevertheless, the author also finds evidence that this difference is the result of positive selection due to a greater tendency towards migration among people with higher levels of happiness. In addition, the results of Bartram show significant variations between origin countries: While migrants from Russia, Turkey, and Romania turn out to be happier than the respective group of stayers, Polish emigrants seem to be unhappier than Polish stayers. Baykara-Krumme and Platt (2016) compare the life satisfaction of older migrants from specific regions in Turkey with that of non-migrants and return migrants of similar age. The authors show that both Turkish migrants and return migrants experience higher life satisfaction in old age than stayers. Nikolova and Graham (2014) analyze household income and well-being as outcomes. They find that migration increases the household income and enhances subjective well-being and further conclude that the positive income gains can be one channel through which migration enhances SWB. However, various authors have emphasized the role of relative income when analyzing group disparities in happiness and well-being (e.g. Clark and Senik 2010; Easterlin 1995). In this context, migrants are an interesting group as they are confronted with different possible reference points: natives in the new destination country on one side and stayers in the origin country on the other. A research gap that remains unaddressed by the existing literature is to shed light on the connection between the relative income situation of migrants and potential long-term gains in SWB through migration.

1.4 What we know so far about the relation between migration and cognition

While there are several studies on the well-being consequences of migration, much less is known about the effects of migration for cognitive abilities, especially about the long-term effects for migrants in later life. The existing literature on the consequences of migration for cognitive abilities concentrates on Latin American immigration to the U.S. The central research question is whether the healthy immigrant effect (HME) extends to indicators of cognitive functioning.⁵ Applying the classical comparison between immigrants and U.S. born or Canadian natives, the results of the different studies are inconclusive. While some studies suggest that the HME extends to cognitive functioning (Kopeck et al. 2001; Hill et al. 2012a), the majority finds no significant difference between migrants and natives (e.g. Nguyen et al. 2002; Miranda et al. 2011). In contrast to that, the results of Haan et al. (2011) indicate that migration modifies the lifetime trajectory of socioeconomic status leading to heterogeneity in cognitive aging in later life. The author finds that Mexican immigrants to the US may actually have poorer cognitive functioning than their native counterparts. The literature points to gender, language, and age at migration as important factors associated with the consequences of migration for cognitive functioning.

The scarce existing research on the relation between migration and cognition points to important individual factors. So far there is no research on the intra-European migration context. Additionally, the previous studies compare migrants to Canadian or US-born natives. As outlined before, this comparison does not allow drawing conclusions regarding the consequences of migration itself. To identify the effect of migration on cognitive abilities, a comparison to stayers in the respective origin country and the application of specific methods that account for selection are necessary.

⁵ The finding that immigrants are often found to be healthier than their native counterparts is referred to as ‘healthy immigrant effect’. The literature names the following reasons: (a) the migration process requires good health (health selection), (b) immigrants in poor health return to countries of origin (salmon bias), and (c) migrants tend to avoid risky health behaviors (Hill et al. 2012b; Cunningham et al. 2008; Lopez-Gonzalez et al. 2005). The initial health advantage of migrants tends to wane with length of residence in the destination country which is often explained by acculturative stress, substandard living and working conditions of migrants and adoption of risky health behaviors (Antecol and Bedard 2006; Vega and Amaro 1994).

1.5 Theoretical framework

Although the three studies apply different methodological procedures and partly focus on different outcomes, they jointly approach the question of how migration affects the life situation of migrants. By focusing on the long-term consequences of migration in later life, they build on similar theoretical concepts and assumptions that have been proposed to further study the relation between migration and well-being (study 1 and 2) as well as between migration and cognitive functioning (study 3). The central research question about long-term consequences of migration is strongly connected to the causes of migration and the motivation behind moving to another country. In the following sections, sociological and economic theories on migration as well as on the connected process of acculturation are introduced before drawing on concrete theoretical concepts on the consequences of migration for subjective well-being and cognition.

Migration theories

The classical theory of migration goes back to the work of Ravenstein (1885) whose naturalistic approach distinguishes between ‘countries of dispersion’ and ‘countries of absorption’. Based on the analysis of British census data he developed his ‘laws of migration’ that he considered as universal. Many years later, Lee (1966) published his ‘theory of migration’ in which he identifies factors encouraging and factors inhibiting migration, both depending on conditions in the origin country, conditions in the destination country as well as individual characteristics of migrants like age and marital status. Ravenstein and Lee belong to the first authors considering the selectivity in the process of migration. Their approaches are often referred to as ‘push and pull factor’ model, which goes back to Myrdal (1944) who identifies poverty and oppression as push factors as well as the employment possibilities and civil rights as pull factors for migration of African-Americans from the South to the North of the United States.

Being criticized for its inability to determine dominant factors (de Haas 2008), the classical theory was followed by the *neoclassical theory of migration*. It is still the dominant approach in explaining the causes of migration up to today. In its basic model, the neoclassical approach focuses on the macro-level and predicts a linear relationship between wage differentials and migration flows (Massey et al. 1993; Borjas 2008). In extended neoclassical models, migration is determined by expected rather than actual earnings and the probability of employment (Bauer

and Zimmermann 1999). Sjaadstad (1962) enriched the neoclassical framework with the human capital theory by including socio-demographic characteristics of individuals as important determinants of migration at the micro-level. Human capital endowments, skills, age, marital status, gender, occupation, labor market status together with individual preferences and expectations are assumed to have a strong effect on the propensity to migrate (Bonin et al. 2008). The underlying assumption of the neoclassical approach is that migration is primarily stimulated by rational considerations of relative economic and psychological benefits and costs. The costs include direct expenses such as transportation costs, opportunity costs of foregone earnings and opportunities at home as well as psychological costs related to separation from family and friends (Nikolova and Graham 2014). An individual considers moving to another country if the expected utility from migration exceeds the costs. The model of 'subjective expected utility' (Esser 1980; Jong and Fawcett 1981) extends Sjaadstad's approach by emphasizing that migrants will choose the destination where the expected utility is the highest. The neoclassical approach has been criticized for having a too optimistic view of migration which is not necessarily a voluntary process with the goal of utility maximization (Kurekova 2011). Additionally, it has been criticized for ignoring the influence of policies leading to the emergence of new theoretical perspectives (ibid.). Some of them will be briefly discussed in the following.

The *new economics theory of migration* shifts the focus from independent and utility maximizing individuals to families and households (Stark 1991). Migration is viewed as a household decision in response to income risk and to the failure of specific markets like the labor or the insurance market (Massey et al. 1993). While being able to analyse both determinants and consequences of migration, the new economics approach has been criticized for being too focused on the sending-side, for ignoring dynamics within families and households and for its problems in isolating the effects of market failures from other income and employment related determinants (Kurekova 2011).

Putting more emphasis on historical-structural conditions, the multidisciplinary and macro-scale approach of the *world system theory* links the determinants of migration to structural changes in world markets. Migration is considered as a function of globalization, increased interdependence of economies and the emergence of new forms of production (Massey et al. 1993; Silver 2003). However, it is difficult to derive testable hypotheses from this approach.

The *dual labor market theory* relates migration to structural changes in the economy. Piore (1979) argues that migration is driven by conditions of labor demand rather than supply. In advanced economies there is a demand for low-skilled jobs that domestic workers refuse to take up. As immigration becomes desirable and necessary to fill the jobs, policy choices in the form of active recruitment efforts follow the needs of the market. One example is the guest worker migration to Germany and other European countries between the 1950s and 1970s as a response to the economic growth during this period in combination with labor shortage caused by WWII.

However, economic reasons alone cannot explain the migration process. In contrast to the predominantly economic approaches presented so far, the sociological perspective focuses on migration systems and social networks. The *migration systems theory* developed by Mabogunje (1970) assumes that migration mainly takes place between migration systems defined as states with close historic, cultural, and economic connections (Kritz and Zlotnik 1992). According to the theory, migration policies are as important as social networks of migrants to understand the dynamics of migration (Düvell 2006).

With a very close approach, the *network theory of migration* builds on Bordieu's social capital approach (1986) and considers networks as accumulated social capital. The existence of networks influences the decisions of migrants regarding their destinations (Vertovec 2002; Dustmann and Glitz 2005). Migrant's networks enhance the likelihood of migration because the costs and risks involved in the migration process are reduced. One of the main contributions of the theory is that it helps to explain how migration patterns tend to form different migration regimes (Faist 2000).

Many of these theoretical approaches on the causes of migration indicate that migration is a selective process regarding socio-demographic characteristics, skills, and social networks. With reference to the Rubin Causal Model (RCM), this means that the assignment to treatment (migration) is non-random (Rubin 1974). There are methods that attempt to correct for the assignment mechanism like propensity score matching used in study 2. Angrist et al. (1996) also show that the instrumental variables estimand as applied in study 3 can be embedded in the RCM.

Acculturation

Many societies become culturally plural as a consequence of increasing international migration. People from many countries and of many cultural backgrounds come to live together in one diverse society. In one of his widely cited articles, Berry (1997) raises the question: What happens to individuals who have developed in one cultural context and then attempt to live in a new cultural context? With reference to Redfield et al. (1936), acculturation is defined as “*those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups*” (Berry 1997: 7). In other words, acculturation refers to the changes that groups and individuals undergo when they come into contact with another culture (Williams and Berry 1991). Graves (1967) differentiates between acculturation as a collective phenomenon and acculturation as an individual psychological process. This distinction is relevant because not all individuals of a group participate to the same extent in the acculturation process being experienced by their group. Usually, the different cultural groups are not equal in power in a purely numerical but also in an economic and political sense (Berry 1990). Consequently, acculturation in practice tends to induce more change in one of the groups (the non-dominant group) than in the other (the dominant group). Terms such as ‘minority’ or ‘mainstream’ emphasize these differences in power.

In its original form, acculturation is conceptualized as a unidimensional process in which the retention of the heritage culture and the acquisition of the receiving culture are both opposing ends of a single continuum (Gordon 1964). Berry extended this original version by developing a model of acculturation in which receiving culture acquisition and origin culture retention are considered as independent dimensions (Schwartz et al. 2010). Under the strong and not always realistic assumption that the members of the non-dominant group have the freedom to choose how they acculturate, these two dimensions intersect in Berry’s model to create four categories of acculturation strategies: (i) the *assimilation* strategy describes individuals of the non-dominant group who do not wish to maintain their cultural identity and seek daily interaction with other cultures; (ii) *separation* is the opposite strategy of individuals who hold on to their original culture and at the same time wish to avoid interaction with individuals of the ‘new culture’; (iii) in the *integration* strategy there is some degree of cultural integrity maintained, while at the same time individuals seek to participate as an integral part of the larger social network; (iv) *marginalisation* is defined as a strategy in

which there is little possibility or little interest in both cultural maintenance and having relations with individuals from other cultural backgrounds.

Individuals and groups may have varying attitudes towards these four strategies of acculturation. Preferences for one acculturation strategy over others can vary, depending on context and time period. The location of social interaction might play a role here, too. While more cultural maintenance and less intergroup contact may be sought in private domains, this might be different in public spheres like the workplace. Additionally, the national context of the destination country may constrain the choice of the strategy. According to Berry (1997), policies in the destination countries can be assimilationist, integrationist, or segregationist and therefore promote one or the other acculturation strategy.

Berry (1997) differentiates between moderating factors prior and moderating factors during the acculturation process. Former ones include (i) age, gender, pre-acculturation, (ii) status, motivation, expectations, (iii) cultural distance regarding language or religion, and (iv) personality. The latter include (i) migration phase, (ii) acculturation strategies, (iii) coping strategies and resources, (iv) social support and (v) societal attitude, i.e. prejudices and discrimination. All these factors influence the way how individuals respond to changes in the environmental demands connected to the acculturation process. This individual response to changing environmental demands is referred to as 'psychological adaptation' defined as a set of internal psychological outcomes including a clear sense of personal and cultural identity, good mental health, and the achievement of personal satisfaction in the new cultural context (ibid.).

Furthermore, there is an increased 'fit' between the migrant and the new cultural context when the assimilation or integration strategies are pursued, and when attitudes in the receiving country are accepting of the acculturating individual and group (ibid.). Sometimes, however, a 'fit' is not achieved resulting in separation/segregation and marginalization strategies. The individuals then settle into a pattern of conflict which possibly leads to acculturative stress or even psychopathology (ibid.). However, Beiser et al. (1988) emphasize that for most acculturating individuals some long-term positive adaptation to the new cultural context usually takes place.

The original model of acculturation as proposed by Berry (1980) has been criticized in several respects, leading to a 'rethinking' of the approach (Schwartz et al. 2010). First, the validity of marginalization as a strategy of acculturation has been questioned. Empirical studies using clustering methods have found that the

marginalization strategy is applied by a very small or even non-existing number of migrants. Additionally, scales that attempt to measure marginalization typically turn out to have poor reliability and validity in comparison with scales for the other categories (Schwartz and Zamboanga 2008; Unger et al. 2002). Second, according to Berry's original model, the acculturation strategies characterize all migrants equally regardless of the type of migration, the origin context, and the destination country (Rudmin 2003). To understand acculturation, it is however necessary to include the interactional context in which it occurs including characteristics of the migrants themselves, their socioeconomic status and resources, the countries they come from, the context of the destination country, as well as their fluency in the language of the destination country (Schwartz et al. 2010).

In an extension of his model, Berry (2006a) enumerates four categories of migrants: voluntary immigrants, refugees, asylum seekers, and sojourners.⁶ Migrants who are regarded as contributing to the receiving country's economy like voluntary immigrants who work in required professions such as engineers may be welcomed, whereas refugees and asylum seekers, as well as immigrants from lower socioeconomic status may be viewed as a burden for the destination country's resources (Steiner 2009). Plus, they may be more likely to face stigmata and discrimination. Migrants who are rejected or discriminated against in the receiving society may have more trouble adapting and may resist adopting the practices, values, and identifications of the receiving culture (Rumbaut 2008).

Therefore, the outcomes of acculturation can be conceptualized in three different ways. Berry (2006b) calls the first concept *behavioral shifts* referring to changes in an individual's behavioral repertoire in the form of adjustment or assimilation. Those changes can take place rather easily and are usually non-problematic. The second notion is *acculturative stress*. It refers to an outcome of acculturation in which greater levels of conflict are experienced, and in which the experiences are judged to be problematic. In the third approach, *psychopathology*, acculturation is almost always seen as problematic causing 'insurmountable stressors' that require assistance. Since acculturation integrates both positive aspects e.g. in the form of new opportunities as well as negative aspects such as discrimination, the stress conceptualization matches best the range of affect experienced during acculturation (ibid.).

The process of acculturation in the non-dominant group is considered as one of the main differences between migrants and both natives in the destination

⁶ Sojourners denotes temporary stayers.

country and stayers in the origin country. The concept of acculturative stress as a consequence of migration will be a central theoretical argument in the upcoming sections. On a hypothetical level, the stress associated with migration and the acculturation process may have long-term effects on both the subjective well-being and the cognitive abilities of migrants.

Migration and subjective well-being

As previously outlined, one assumption of the economic theories of international migration is that in case of voluntary migration the migration decision is motivated by the goal of utility maximization. According to the neoclassical theory of migration, individuals evaluate the costs and benefits of migration and consider moving to another country if the expected utility from migration exceeds the costs. Based on well-being studies, there is growing consensus that income-based measures of benefits and costs are insufficient to understand all aspects of migration (Nikolova and Graham 2014). Therefore, it is important to draw on non-pecuniary outcome measures such as subjective well-being and quality of life to gain a comprehensive understanding of the long-term consequences of migration.

For a long period, the set-point theory has dominated the field of well-being research. The central claim of the theory is that people may react strongly to life events in the short run, but that they eventually return to a genetically determined set point of well-being (Lykken and Tellegen 1996). However, recent evidence challenges this assumption. Although some adaptation takes place, studies using large-scale longitudinal data have shown that certain life events like divorce or unemployment lead to long-term changes in SWB (Diener et al. 2006; Lucas et al. 2003). The question is whether migration is such a life event with lasting effects on SWB.

In one of his extensions of the acculturation approach, Berry (1997) stresses that the national context of the destination country may constrain the choice of the acculturation strategy. In a similar manner, several other approaches like the *capabilities approach* of Sen (1993) and the host society *environment approach* by Maxwell (2010) highlight that the institutional setting and the legal situation of immigrants in the place of destination play a major role for social integration outcomes. The *social production function theory* holds that people's well-being is a function of both individual and structural resources and constraints (Ormel et al. 1999). Based on these approaches, the first study takes into account both macro-

level factors, i.e. the family reunion policy of the destination country, as well as individual factors at the micro-level.

At the individual level, acculturative stress might be one reason for the differences observed in the SWB outcome between migrants and natives in the destination country (study 1) as well as between migrants and stayers in the origin country (study 2). The general literature on well-being identifies health, education, social ties, and income as the most important resources and constraints for subjective well-being (Ormel et al. 1999). Focusing on the economic situation of migrants, the second study raises the question in how far a change in income through migration might affect migrants' SWB. The impact of income on SWB does not only depend on the absolute income but also on the relative income position. External and internal reference points can be distinguished. An internal reference point refers to the comparison of an individual to oneself, either to one's own past income (adaptation) or to one's expected future income (aspirations). Both adaptation and growing aspirations might have the consequence that changes in income through migration might have only moderate effects on SWB. Regarding external reference points, migrants could compare themselves to those who remained in the origin country or to natives in the destination country. According to Gelatt (2013) immigrants maintain simultaneous reference groups. Therefore, both the relative income of migrants with regard to stayers in the origin country and with regard to natives of the destination country will be addressed in study 2.

Migration and cognitive functioning

Migration might have a positive or a negative effect on cognitive abilities in later life. On the one side, acculturation processes could have beneficial consequences due to the need to adapt to a new environment. There is growing evidence that the human brain changes structurally in response to changing environmental demands (Mechelli et al. 2004). One of the largest changes connected to migration is functioning in another language than the mother tongue. The cognitive demands connected to bilingualism might have a positive effect on the cognitive functioning of migrants both in the short and in the long run. The age of acquisition and the closeness between the languages spoken in the origin country and the destination country are crucial factors in this respect. Glymour and Manly (2008) point out segregation as an additional factor which potentially leads to a reduction of adaptation processes.

Besides, acculturative stress associated with migration could lead to reduced cognitive abilities in the long run. Living in a foreign country in minority status, experiences of discrimination, ‘cultural dissonance’ between one’s native culture and the destination country’s culture can all lead to high levels of acculturative stress (Suarez-Orozco and Qin 2006; Vega and Rumbaut 1991). Over time, the stress associated with difficult immigration and acculturation experiences could undermine cognitive functioning through physiological mechanisms. Primate studies have shown that social hierarchies influence stress hormones and induce hippocampal damage among low status animals (Sapolsky et al. 1990). Also for humans, the overexposure to stress hormones has shown to be sufficient to disrupt or even damage the hippocampus, the region of the brain that regulates memory, orientation, and the rate of cognitive decline (McEwen and Sapolsky 1995; McEwen 2002).

1.6 Summary of the three studies

The following section provides a short overview of the three studies of this thesis. The central similarity of the projects is that they all contribute to a deeper insight on the long-term consequences of migration. The data source in each of the projects is SHARE, a multidisciplinary panel study with focus on health, aging, socioeconomic status, and social networks of respondents from 20 European countries plus Israel aged 50 and above. SHARE was started in 2004 and is administered biennially via computer-assisted personal interviews (CAPI). The interviews for the latest wave six were conducted in 2015 and the data were released in March 2017. As the first study was published in December 2016, the fifth wave was the latest panel wave that could be included in this project (release 5.0.0). Studies 2 and 3 also include data from the sixth wave of SHARE apart from the other regular SHARE panel waves 1, 2, 4, and 5 (release 6.0.0). The data from the third wave of SHARE (SHARELIFE) contain retrospective life histories.⁷ Both structure and content differ from the regular panel waves. Therefore, the third wave is not included in most of the analyses. Only study 2 uses some of the information from SHARELIFE in one of the analytical steps.

Compared to other datasets, SHARE offers two major advantages when studying the consequences of migration. First, due to the variety of countries

⁷ More information on SHARELIFE is available at <http://www.share-project.org/data-documentation/waves-overview/wave-3-sharelife.html>.

and the large amount of respondents, migrants can be compared to both natives in the destination and stayers in the respective origin country.⁸ Second, the long duration of stay of the migrants in the sample allows for studying the consequences of migration in a long-term perspective.

On the other side, one of the main disadvantages of the database is that sufficient language knowledge is a precondition for participating in the SHARE interview. This might lead to a selective migrant sample due to an underrepresentation of migrants who do not fulfill this precondition. Fluency in the destination country's language is important for the labour market integration of migrants (e.g. Rumbaut 1997). Therefore, one would expect that excluding persons with insufficient language skills will particularly affect migrants of low socioeconomic status. Examining data collected in the contact phase of the SHARE survey on persons who did not participate in the SHARE interview due to language barriers, Hunkler et al. (2015) investigate the coverage of the migrant population in SHARE. “[E]ven though SHARE was not designed to specifically survey migrants, we [the authors] conclude that it is a viable dataset for analysing migrants aged 50 and older both within and across countries” (Hunkler et al. 2015: 202).

Study 1: Differences in subjective well-being between older migrants and natives in Europe

Well-being and social integration of older migrants have not yet received adequate attention in the existing literature. Studies on the subjective well-being of migrants in later life are scarce and the influence of the institutional conditions in receiving societies on migrants' SWB has hardly been accounted for. However, different policy contexts might affect immigrants' quality of life in various ways. Immigration legislation in Europe is as diverse as its member states. Migrants' SWB is likely to be afflicted in countries where institutional barriers to achieve social integration are considerably high.

This study explores the differences in SWB between migrants and non-migrants in eleven European destination countries and addresses three research questions: (i) whether there is an immigrant-native gap regarding SWB, (ii) which individual factors reduce potential group disparities, and (iii) whether differences in the size of the immigrant-native gap between countries are associated with

⁸ Approximately 297,000 interviews from about 120,000 individuals have been conducted between the first and the sixth wave of SHARE. Further information on respondent numbers per country is available at <http://www.share-project.org/>.

structural factors on the macro-level. Institutional factors are accounted for in terms of family reunion policies as measured by the Migrant Integration Policy Index (MIPEX).⁹ Particularly bringing the family together might be a major factor promoting the subjective well-being and social integration of migrants in their receiving societies. A person's feeling of comfort and security increases once the family members reside in one place which might be especially relevant for older people with a potentially higher need for care and support.

Using a pooled sample of waves 1, 2, 4 and 5 of SHARE (release 5.0.0) and applying multivariate random effects (RE) regression models, the results show a significant SWB gap between migrants and non-migrants that diminishes with increasing age. While migrants from Northern and Central Europe have similar SWB levels as natives in the destination countries, Southern European, Eastern European, and Non-European migrants have significantly lower levels of SWB than the native population. The immigrant-native gap becomes smaller but remains significant after controlling for sociodemographic characteristics and health, the financial situation, having the host country's citizenship, age at migration, and length of residence. Additionally, it is found that the size of the SWB gap varies largely across countries. Current family reunion policies correlate with these country differences. The immigrant-native gap is larger in countries with restrictive and smaller in countries with open family reunion policies.

The results of the study indicate that migrants' SWB can be improved by providing the preconditions for equal access to economic resources, by streamlining naturalization and citizenship regulations, and by promoting the family's integration in terms of easy access and sufficient associated rights for family members.

Study 2: Does migration pay off in the long run? Income and subjective well-being of Eastern European migrants aged 50+

This study focuses on two specific origin countries with the Czech Republic and Poland in order to reduce the birth-country related heterogeneity within the group of migrants. Migrants from these two origin countries constitute one of the main migrant groups within Europe and the largest group of migrants in SHARE. Their main destination countries in the dataset are Austria, Germany, and Sweden. The

⁹ MIPEX is a collaborative study of 25 organizations that assigns scores from 0 to 100 for different policy areas across 38 countries including all EU member states. For further information see Huddleston et al. (2015) or <http://www.mipex.eu/>.

study examines whether migration from Eastern Europe to a wealthier Western European country pays off in the long run – both in terms of income and subjective well-being. The classical comparison with the native reference group as applied in the first study and by most other studies in this research area does not necessarily provide sufficient information on the consequences of migration itself. For this, a comparison of the performance of a migrant group abroad with a group of people with similar characteristics in the country of origin is necessary.

In this paper, the first interview of each respondent from one of the regular SHARE panel waves 1, 2, 4, 5, or 6 (release 6.0.0) is used. Migrants' advanced age and long duration of stay allow for studying the long-term consequences of migration. However, immigration from the Czech Republic and Poland to Germany and Austria is special due to historic displacements at the end of WWII and afterwards. A large number of German nationals grew up and resided in the formerly occupied territories of the German Reich beyond the Oder-Neisse line (now Poland) and Sudetenland (now Czech Republic). The forced 'germanization' of millions of non-Germans in those areas during wartime triggered strong resentment and the expulsion of German settlers after the war. In Germany and Austria, the majority of Czech and Polish migrants in the sample are ethnic Germans who relocated during or shortly after WWII. As the analysis should not entail this group of forced migrants, all respondents who emigrated up to 1950 to one of the two destination countries are excluded. Additionally, all migrants who reside less than three years in the new destination country are excluded because the research intends to highlight the long-term consequences of migration.

Applying propensity score matching (PSM), group inequalities are examined in four analytical steps. First, the absolute income gains of those who left to those who stayed both overall and separately for each of the three destination countries is being compared. Second, the study takes a closer look at the relative income position of immigrants within each destination country (i.e. comparison to Austrian, German, and Swedish born natives). Third, the study examines whether there are migrant-stayer differences in terms of SWB and whether they deviate between the three destination countries. Lastly, the sample of migrants is being divided in different groups according to their relative income position to further investigate whether and in how far it influences migrants' SWB.

The findings indicate that in comparison to stayers with similar characteristics, migrants have significant income gains in all three destination countries. From an economic point of view the answer to the research question whether migra-

tion pays-off in the long run is: yes, it does. However, these income gains do not seem to translate into equivalent well-being gains, which might be connected to processes of adaptation and growing aspirations. In one of the three Western European destination countries (Sweden), the SWB levels of Eastern European migrants are not significantly higher than the SWB levels of similar stayers. Gaining entry to a wealthier country does not necessarily improve the lives of migrants with regards to well-being. One factor being associated with migrants' SWB is the relative income position within the destination country. We observe significant SWB gains among migrants whose income is better than the average income of stayers and close to the average income of natives. Therefore, achieving a similar income position relative to natives might play a decisive role in determining good well-being of migrants in the long run. Further research is needed to shed light on the causal effect of migration on well-being in later life and which other relevant micro- and macro-level factors might determine the long-term impact of migration on migrants' well-being.

Study 3: The long-term effect of intra-European migration on cognitive functioning

The third study raises the question 'What is the long-term effect of intra-European migration for cognitive abilities in later life?' The project combines two important developments, both with growing importance for Europe. The first one is intra-European migration. Of the more than 500 million inhabitants of the EU member states, 19.3 million persons were born in a different EU country than the one they are residing. The second important development addressed in this paper is cognitive ageing. Cognitive ability levels are of growing importance especially in ageing societies as they predict individual productivity better than any other observable individual characteristics.

On the theoretical level it remains unclear whether migration has a positive or negative effect on cognitive abilities in later life. On the one side, migration could have beneficial consequences for cognition due to the need to navigate novel cultural environments and because of the cognitive demands of functioning in a second language. On the other side, acculturative stress could lead to reduced cognitive abilities in the long run because psychosocial stress can disrupt or even damage the hippocampus which is the region of the brain that regulates memory, orientation, and the rate of cognitive decline.

Cognitive functioning in SHARE is measured via four different tasks: (i) a numeracy test, (ii) an immediate and (iii) a delayed ten word recall test for episodic memory and (iv) a verbal fluency test. After standardizing the different cognitive measures, principal component analysis is used to generate a normally distributed cognition index.

To identify the effect of migration on cognitive abilities, one has to resolve issues caused by endogeneity. Bütikofer and Peri (2016) find evidence that high levels of cognitive ability are associated with a higher propensity to migrate to another location. Their results indicate that endogeneity is a serious concern that needs to be addressed methodologically when analyzing the effect of migration on cognition. By using stayers in the European origin countries as reference group for migrants who moved to another European country and by applying an instrumental variable approach (IV) in the first analytical step and fixed effects growth curve models (FE) in the second step to analyse possible differences regarding the process of cognitive ageing, the empirical strategy of this study allows the measurement of the effect of migration on cognitive functioning in later life.

The results of the IV models indicate that migration turns out to have a negative effect on the level of cognitive abilities. The effect gets weaker but remains at significant level when excluding the language sensitive verbal fluency test from the analysis. Separate models for men and women indicate rather different language barriers than a different effect of migration. Furthermore, the findings show that age at migration and having the citizenship of the destination country are factors influencing the effect size. Regarding the process of cognitive decline, the FE models of the second analytical step do not show significant differences between migrants and stayers. Cognitive decline seems to be determined by other factors.

Note

The studies of this thesis use data from SHARE Waves 1, 2, 4, 5 and 6. Study 1 is based on release 5.0.0 (DOIs: 10.6103/SHARE.w1.500, 10.6103/SHARE.w2.500, 10.6103/SHARE.w4.500, 10.6103/SHARE.w5.500), studies 2 and 3 are based on release 6.0.0 ((DOIs: 10.6103/SHARE.w1.600, 10.6103/SHARE.w2.600, 10.6103/SHARE.w4.600, 10.6103/SHARE.w5.600, 10.6103/SHARE.w6.600), see Börsch-Supan et al. (2013) for methodological details. The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857,

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Chapter 2

Differences in subjective well-being between older migrants and natives in Europe¹⁰

2.1 Background

Demographic aging and international migration have transformed the European population structure significantly. Many people with migration background have resided in their destination countries for a long time and have become an integral part of society. Given the everlasting flows of migration in- and outside of Europe, the social integration of immigrants has become an important part of research.

A growing body of literature uses either physical/mental health- or well-being-related measures as indicators for social integration (Solé-Auró and Crimmins 2008; Lanari and Bussini 2012; Hadjar and Backes 2013; Ladin and Reinhold 2013; Lanari et al. 2015; Levecque and Van Rossem 2015; Malmusi 2015; Sardadvar 2015). Studies on the subjective well-being (SWB) of migrants in later life are scarce and the influence of the institutional conditions of receiving societies on migrants' SWB has hardly been accounted for. Most studies in this field focus on person-related characteristics. Apart from demographic features (such as gender and age) and migration-specific variables (like length of residence, language skills, and citizenship), they identify economic conditions, health status, social networks, and psychological factors as the main determinants of SWB (Amit and Litwin 2009; Tucci et al. 2014; Kämpfer 2014). However, it is important to cap-

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ture potential influences at the macrolevel as well, especially because immigration policies are very heterogeneous across Europe and because large debates on immigration control and integration policies have been on the political agenda in numerous countries. Yet, there is limited knowledge on how these policies affect the SWB of migrants, particularly in later life.

Conducting research on 63 countries, Bonini (2008) finds that 19 percent of the variation of SWB can be explained by contextual and 81 percent by individual-specific factors. Two recent studies detect a significant relationship of integration policies with migrants' self-reported health (Malmusi 2015) and SWB (Hadjar and Backes 2013). In the latter, Hadjar and Backes find evidence that the SWB gap between migrants and natives is larger in countries with a high GDP and smaller in countries with rather inclusive immigrant integration policies as measured by the Migrant Integration Policy Index (MIPEX).

Our study extends this new strand of research on well-being-related differences between migrants and natives that combines micro- and macrolevel factors using data from the Survey of Health, Aging and Retirement in Europe (SHARE). We contribute to existing research by analyzing the SWB of older migrants as a group of increasing importance in the European population structure (Warnes et al. 2004). As Amit and Litwin (Amit and Litwin 2009) point out, the integration of older immigrants has not yet received adequate attention within the literature.

By running our analysis in a cross-national setting we are able to account for institutional influences at the macrolevel, thereby focusing on family reunion policies, which turned out to be most influential for SWB among all MIPEX policy areas. Apart from family reunification, the MIPEX also contains the policy areas labor market mobility, education, political participation, access to nationality, long-term residence, and anti-discrimination. As the association with SWB was rather weak for these policy areas, we restrict our analysis to family reunion policies. Especially older migrants who are or will be in need for care might benefit from policies that facilitate family reunification.

“(...) [S]ince the societal SWB level is an indicator of social integration (...)” (Hadjar and Backes 2013: 646) we assume that integration is achieved once the SWB-levels of migrants and natives are similar (Greenman and Xie 2008; Kämpfer 2014). Our main research questions are 1) whether there are any differences in SWB among migrants in relation to the respective native 50+ populations in different European countries, 2) which individual factors play a decisive role in

reducing potential group disparities, and 3) if differences in the immigrant-native gap between countries are associated with different family reunion policies.

2.2 Conceptual framework

The Social Production Function Theory holds that people's well-being is a function of individual and structural resources and constraints. At the individual level, the most important ones are health, education, income, and social ties (Ormel et al. 1999). Since the integration process takes place over time and with increasing exposure to the host culture, immigrants' length of residence in the destination country and their social connectedness have to be accounted for (Gordon 1964; Berry et al. 2006). At the macrolevel, the social infrastructure, laws, regulations, and norms represent key resources and constraints (Ormel et al. 1999). Assimilation is a process in which laws and institutions play an important role in affecting immigrants' integration process. According to Sen's "Capabilities" approach, political and institutional settings limit and structure the opportunities of individuals (Sen 1993). The Host Society Environment approach by Maxwell highlights that the geographic variation of integration outcomes depends on the legal situation of immigrants in the place of destination (Maxwell 2010). Access to citizenship and political participation play a major role here. Apart from that, studies have shown that cultural and institutional characteristics inherent to the place of origin (e.g., language proximity to destination country, labor market regulations, education system, transferability of skills and certificates) are crucial for the integration process (Tubergen et al. 2004; Kämpfer 2014).

Immigrant legislation in Europe is as diverse as its member states. Different policy contexts affect immigrants' quality of life in various ways and thus the extent to which they feel integrated into the host society (Hadjar and Backes 2013). Migrants' SWB is likely to be afflicted in countries where institutional barriers to achieve social integration are considerably high. Particularly bringing the family together is a major factor promoting the subjective well-being and integration of migrants in their receiving societies (Strasser et al. 2009). A person's feeling of comfort and security increases once the family members reside in one place. This is especially the case for older people who are in need of care and support. Among the above-mentioned policy areas, the MIPEX measures the conditions for family reunification across 38 countries including all EU countries.

MIPEX is a collaborative study of 25 organizations that was started in 2004 and assigns scores from 0 to 100 for each policy area (Huddleston et al. 2015). High-scoring policy regimes promote the family's integration in terms of extensive eligibility for family members, manageable requirements for their kin, fairly secure residence status, and sufficient associated rights (e.g., equal access to schools, jobs, housing and social programs). Bureaucratic procedures are quick and free of charge. Low-scoring policy regimes are fairly selective and bureaucratic. They favor migrants with high incomes and stable jobs and implement relatively restrictive procedures for family members in terms of eligibility, conditions, security of status, or associated rights.

In our sample of 11 countries, the country with the highest MIPEX score regarding family reunion policies is Spain with an average value of 87 for the years 2007 to 2013. Families are allowed to reunite once their sponsor can provide basic housing and legal income based on the general Spanish standards for families. Procedures are fast and more rights-based and secure than in any other country. Eligibility is granted to partners and was expanded to adult children in 2009. While Sweden (79), Belgium (75), and Italy (74) also have comparably high scores, Luxembourg (62), the Netherlands (59), Germany (58), and France (51) range in the middle of the MIPEX classification. Austria (49) and Switzerland (47) belong to the countries with the lowest scores. Only Denmark (36) falls short of them. There immigrants have to wait longer to reunite than in most other developed destination countries. The requirements are highly restrictive including a points-based system, an immigration test, and high fees. Additionally, adult children and parents can only reunite under exceptional circumstances (Oezcan 2004; Efnayayi et al. 2005; MIPEX 2015).

Taking this into consideration, we anticipate the immigrant-native gap in SWB to be more pronounced in countries with restrictive family reunion policies (i.e., low MIPEX family reunion scores) and smaller in countries with more open policies (i.e., high MIPEX family reunion scores).

2.3 Methods

This study uses waves 1, 2, 4, and 5 of SHARE (Börsch-Supan 2016). The overall sample comprises more than 120,000 individuals. In order to maintain the maximum number of observations per country, we restrict the sample to all regular SHARE waves and exclude wave 3, which is about respondents' life histories. We

include all migrants (i.e., respondents born in a country other than the country of interview) and natives (i.e., respondents born in the country of interview and having its citizenship) aged 50 to 85. The observation numbers drop drastically after age 85. Furthermore, we keep all SHARE countries containing at least 100 individual migrants: Austria (AT), Belgium (BE), Switzerland (CH), Germany (DE), Denmark (DK), Spain (ES), France (FR), Italy (IT), Luxembourg (LU), Netherlands (NL), and Sweden (SE). Israel, Greece, Portugal, and the Eastern European states Czech Republic, Estonia, Hungary, Poland, and Slovenia are excluded due to a limited number of migrants and partially very specific migration histories (i.e., Israel, Czech Republic, and Estonia).

Using multivariate random effects (RE) regression models with individual-level clustered robust standard errors we examine differences in SWB between migrants and natives. The dependent variable CASP is a measure for the self-assessed quality of life and well-being of respondents. Quality of life can be operationalized in different ways depending on the field of research (e.g., financial assets in economics or health in medicine). Within the social sciences, good SWB is characterized by a positive state of mind and high levels of life satisfaction (Cummins et al. 2004). A common instrument to measure SWB is the Satisfaction with Life Scale. However, considering the age structure of SHARE respondents, we opt for CASP, a measure that is designed to quantify the perceived quality of life and subjective well-being of older respondents, initially developed in a population aged 65 to 75 years (Hyde et al. 2003; Sim et al. 2011). CASP does not only cover aspects of life satisfaction and health, but also social circumstances and functional limitations. It includes questions concerning the domains control, autonomy, self-realization, and pleasure (CASP). SHARE contains an abridged version of CASP that encompasses 12 out of originally 19 items by reducing each of the domains to the three strongest items. In order to do so the statistical analysis used to produce the original 19 item scale was replicated (Von dem Knesebeck et al. 2005). The score is the sum of all 12 items, which yields a minimum value of 12 and a maximum value of 48. The overall mean in our sample is 38.3 (SD: 6.1).

The control variables in this analysis include the following measures: age, sex, marital status, household size (i.e., the number of people per household), number of children, level of education measured by the 1997 version of the International Standard Classification of Education (ISCED), employment status (i.e., retired, employed or self-employed, unemployed, sick, homemaker, other), health (number of chronic diseases), and financial difficulties (original question wording: Thinking of your household's total monthly income, would you say that your household is able to make ends meet... a) with great difficulty, b) with some difficulty, c) fairly easily or d) easily). We generated a binary variable that equals 1 if the household has great or some difficulty and 0 if the household is able to make ends meet fairly easily or easily.

Our independent variables are the migration-related measures citizenship status, age at migration below/above 18, and length of residence. Apart from these individual factors, we use the average family reunion MIPEX score per country of the period 2007 to 2013 as macrolevel indicator.

2.4 Results

Descriptive statistics separated by migrants and non-migrants are presented in Table 2.1. Overall, about 8 percent of all observations ($N = 104,589$) in the sample are from respondents born in another country than the one they are living in at the time of interview. Regarding our dependent variable, migrants show on average only a slightly lower CASP value than natives. Comparing the sociodemographic characteristics, we see no striking differences between migrants and natives, with two exceptions: Migrants make up a higher share of people with financial difficulties and, unexpectedly, the educational level measured according to the International Standard Classification of Education (ISCED-97) is slightly higher among migrants. Latter holds for all migrant groups except Southern European migrants (tabulation not shown). Two thirds of the migrants have the citizenship of the country of residence. They mostly migrated a long time ago. The mean length of residence in the host country is 40.3 years. While the majority of them migrated after the age of 18 or far beyond, one third moved abroad in their early childhood or adolescence, most likely along with their families. This shows that the migrant population in SHARE is special not only in respect to age but also in the sense that most of the migrants have already been living in the host country for a very long period.

Table 2.1: Descriptive statistics of the sample (natives compared to migrants)

	Natives		Migrants	
	N (obs.) = 95,940		N (obs.) = 8,649	
	Percent	Mean (SD)	Percent	Mean (SD)
CASP		38.4 (6.0)		37.9 (6.1)
Age		65.1 (9.0)		63.8 (9.0)
Female	53.9		55.1	
Married/reg. partnership	72.6		69.7	
Household size		2.1 (0.9)		2.2 (1.1)
Number of children		2.2 (1.4)		2.3 (1.5)
Education (ISCED 1997)				
– None	11.5		10.4	
– Primary level	18.8		13.8	
– Lower secondary level	17.0		12.3	
– Upper secondary level	29.4		30.1	
– Post-secondary non-tertiary	3.3		4.5	
– First stage of tertiary	18.7		25.4	
– Second stage of tertiary	0.6		1.2	
Employment status				
– Retired	51.7		46.2	
– Employed/self-employed	29.6		32.9	
– Unemployed	2.8		5.4	
– Permanently sick/disabled	3.3		4.5	
– Homemaker	11.5		9.7	
– Other	1.2		1.3	
Financial difficulties	27.3		34.8	
Having chronic disease(s)	60.0		59.2	
Citizenship	100.0		66.6	
Migration after age 18	0		64.1	
Years in destination country		equal to age		40.3 (17.7)
Total	91.7		8.3	

Source: Own calculations based on SHARE release 5.0.0.

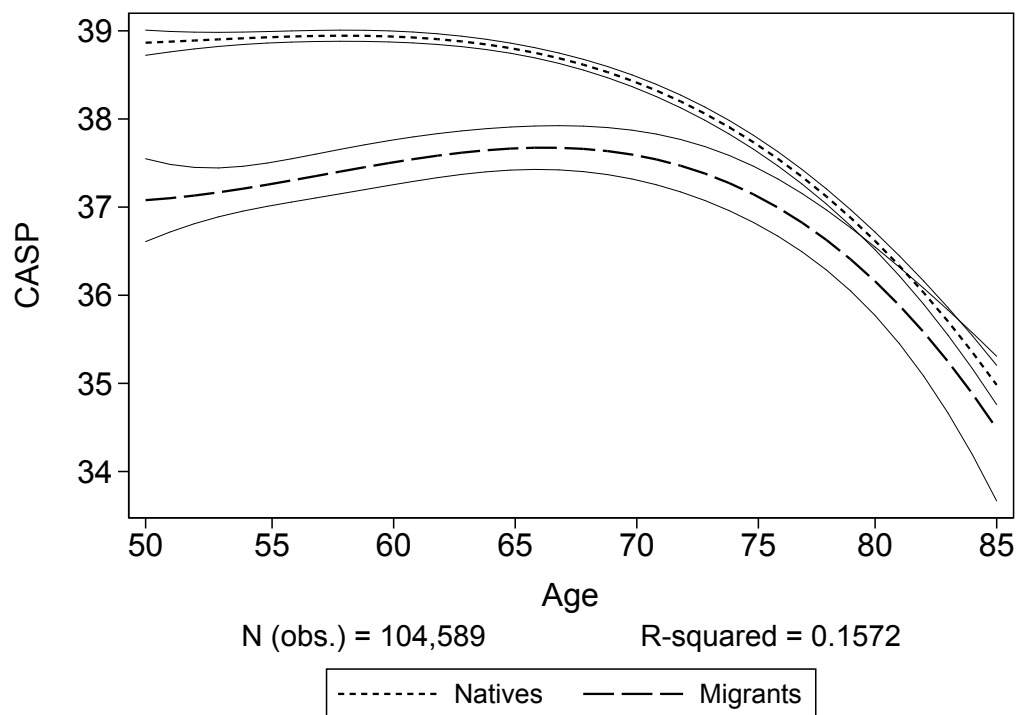
Table 2.2: Distribution of migrants' origin regions by destination country

Country	Northern/Central European	Eastern Europe	Southern Europe	Non- European	Number of Observations
Austria	34.5	39.3	9.2	17.0	882
Germany	31.3	37.4	7.9	23.4	1,342
Netherlands	22.8	3.2	6.3	67.7	505
France	14.7	3.7	23.6	57.9	1,265
Denmark	48.2	7.7	4.5	39.6	311
Switzerland	54.5	11.3	21.2	13.0	1,301
Sweden	60.4	17.9	3.2	18.5	853
Spain	18.4	10.2	3.3	68.1	392
Italy	28.2	7.1	12.2	52.6	156
Belgium	38.5	4.3	30.3	26.9	1,055
Luxembourg	39.7	5.0	43.5	11.9	504
Total N	3,120	1,356	1,406	2,682	8,564
Total %	36.4	15.8	16.4	31.3	100.0

Source: Own calculations based on SHARE release 5.0.0.

Table 2.2 shows the distribution of migrants and their origin regions (i.e., Northern/Central Europe, Eastern Europe, Southern Europe, and non-European areas) across all destination countries. For 85 migrants the information on region of origin is missing. The table shows that the distribution of all migrant groups is very heterogeneous across countries, which makes it necessary to control for country fixed effects in our regression models. Overall, migrants from Northern/Central Europe immigrating to other countries in Northern and Central Europe (Denmark, Switzerland, Sweden, and Belgium) are the largest group with 36 percent, followed by non-Europeans with 31 percent. Especially non-European migrants might exhibit lower levels of SWB because high institutional barriers can hamper their social integration (e.g., legal access to labor market depending on citizenship). A closer look at the countries with the highest share of non-European migrants shows that in the Netherlands they are mainly from Indonesia and the former Dutch territories in the Caribbean, in France and Italy mainly from Northern Africa, and in Spain mainly from Latin America and Morocco (not shown here). Both migrants from Southern and Eastern Europe make up about 16 percent in total, with the former representing the highest share in Luxembourg (mainly from Portugal) and the latter being the largest group in Austria and Germany (mainly from former Yugoslavia, former Czechoslovakia, and Poland).

Figure 2.1: CASP of natives and migrants by age



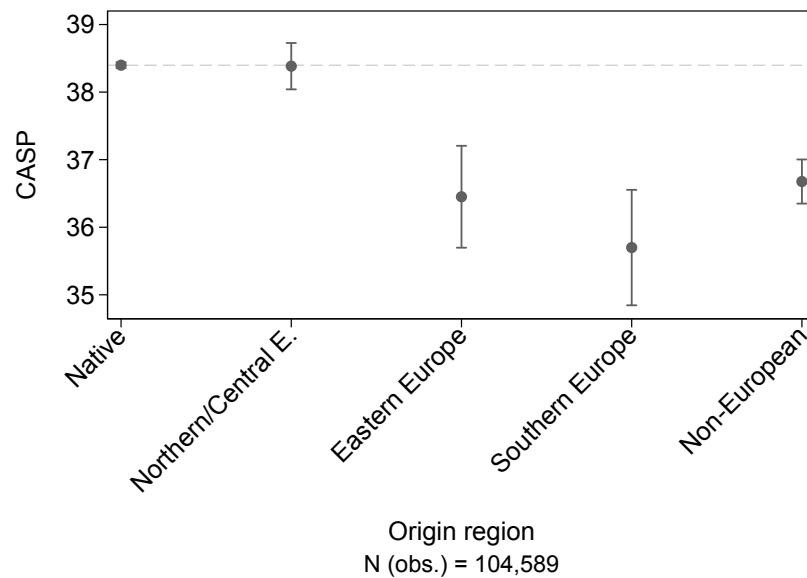
Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave, country.

Source: Own calculations based on SHARE release 5.0.0.

As the first step of our analysis, we explore the differences in SWB between migrants and natives by running random effects regression models to estimate group-specific growth curves controlling for age, time of interview (wave), and country. In Figure 2.1, it can be seen that within the older population and compared to natives, migrants show significantly lower levels of subjective well-being. The differences decrease with increasing age and become statistically insignificant beyond the age of 78.

Figure 2.2 displays the immigrant-native gap by origin regions. The horizontal line represents the CASP level of non-migrants. For Northern/Central European migrants no significant differences can be observed. Their SWB level is almost equal to the one of natives. Eastern European, Southern European, and non-European migrants show CASP levels that are significantly lower than the levels of the native population. Surprisingly, the gap is largest for Southern European and not – as expected – for non-European migrants.

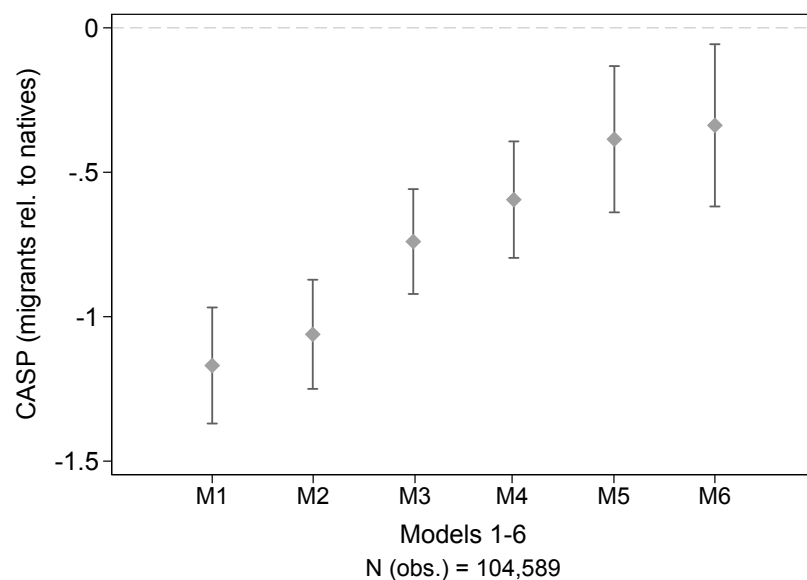
Figure 2.2: Predicted values of CASP by migrants' origin region (reference: natives)



Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave, country.

Source: Own calculations based on SHARE release 5.0.0.

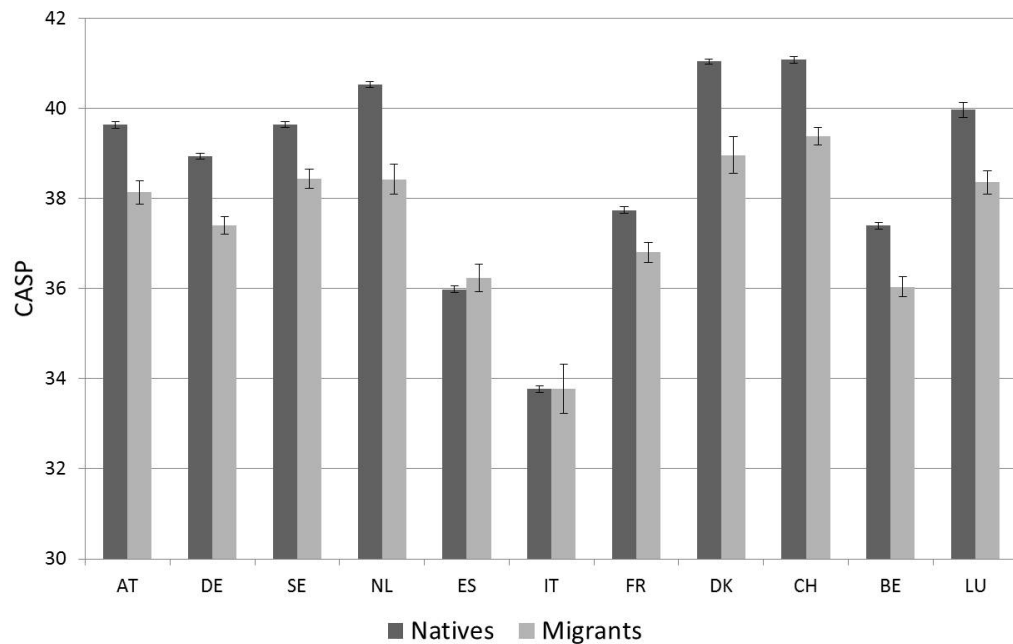
Figure 2.3: Random effects regression models 1 to 6; DV: CASP



Note: Differences based on average marginal effects with 95% CIs and standard errors estimated from multivariate RE regression models with individual-level clustered robust standard errors.

Source: Own calculations based on SHARE release 5.0.0.

Figure 2.4: Predicted values of CASP for natives and migrants, by country



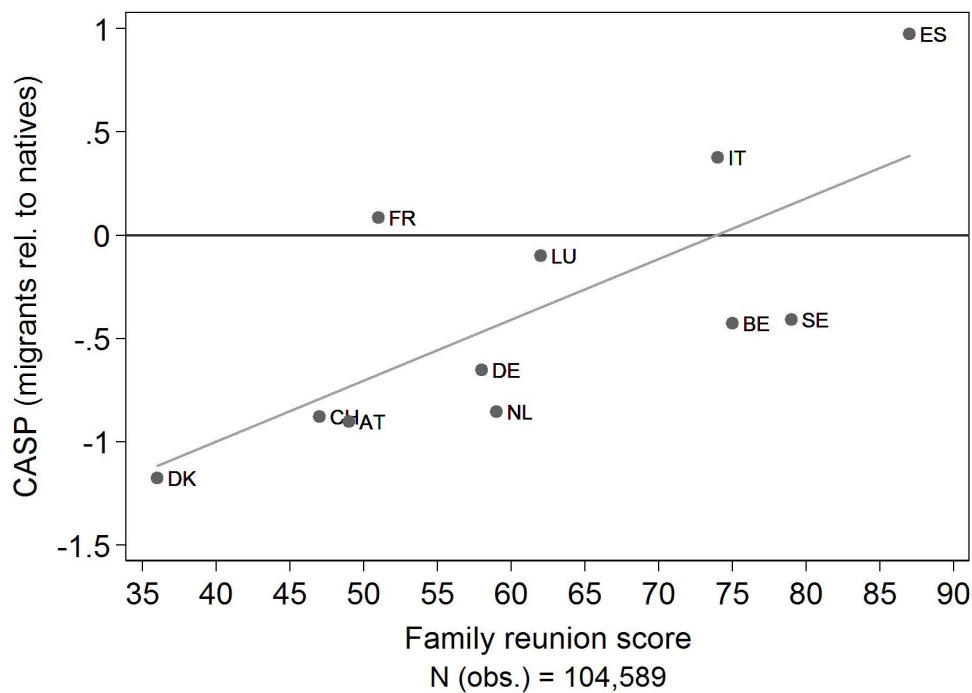
Note: Predictive margins with 96% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave and country.

Source: Own calculations based on SHARE release 5.0.0.

Next, we examine individual factors that may have an impact on reducing the immigrant-native gap by estimating multivariate random effects regression models. As illustrated in Figure 2.3, we start with a basic model (M1) controlling for age, time of interview (wave), country and then stepwise add additional control variables: sociodemographic characteristics and health (M2) and having financial difficulties (M3). Then we add our independent variables: having the citizenship of the country of residence (M4), having migrated before/after the age of 18 (M5), and finally length of residence (M6; for natives the latter equals age). It can be observed that each model contributes to explaining the variation in SWB between migrants and natives. While sociodemographic characteristics and health (M2) do not show large effects, the gap becomes considerably smaller after accounting for the financial situation (M3), having the citizenship of the country of residence (M4), and having migrated before the age of 18 (M5). The years migrants have resided in the destination country (M6) slightly contribute to reducing the gap. After all, even after controlling for all individual characteristics in the full model, the immigrant-native gap remains significant.

By moving our analysis to the country level, we first analyze the group differences between countries by controlling only for age, time of interview (wave),

Figure 2.5: Country correlation matrix of the immigrant-native gap in CASP and the MIPEX family reunion score



Note: Differences based on average marginal effects estimated from RE regression models with individual-level clustered robust standard errors.

Source: Own calculations based on SHARE release 5.0.0.

and country. The predictive margins in Figure 2.4 illustrate that there are large variations concerning the size of the immigrant-native gap across countries. Migrants have a lower level of SWB than the respective native population in all countries with the exceptions of Spain and Italy. The differences are largest in the Netherlands and Denmark.

Since we observe great variation in terms of integration policies in Europe, we complete our analysis by exploring to what extent the country disparities are associated with their institutional framework. Controlling for all individual factors (M6), Figure 2.5 plots the differences in SWB of migrants relative to natives (y-axis) against the country-specific average score in the MIPEX policy area family reunion (x-axis). The horizontal zero line represents the SWB level of natives. The slope of the graph clearly shows a positive association with family reunion policy context. The immigrant-native gap is comparably large in countries with low MIPEX scores (i.e., rather restrictive family reunion policies) and becomes smaller among countries with higher scores (i.e., more open family reunion policies).

For instance, controlling for all individual factors, the CASP score of migrants in Denmark is on average one CASP point lower than the one of natives, whereas in Spain it is one CASP point higher than in the native reference group.

Running separate models by gender shows that the immigrant-native gap is similar for men and women (see Figures A2.1 and A2.2 in the appendix). The results turned out to be robust against replacing CASP with life satisfaction as measure for the quality of life [min: 0; max.: 10]. As life satisfaction is only available in waves 2, 4, and 5 the sample size is smaller compared to the CASP models (see Figures 2.3 and 2.4 in the appendix).

2.5 Discussion

The present study focuses on older migrants and explores the differences in SWB between migrants and non-migrants in different European countries. While most studies employ only individual variables, our analysis also integrates institutional factors by including policy context in terms of family reunion policies. Apart from destination effects, we also account for origin effects by examining the role of migrants' region of origin. The major findings of this study are specified in the following paragraphs.

We detect significant differences in SWB between older migrants and non-migrants that decline with increasing age. While SWB differences are starker for migrants originating from Southern and Eastern Europe as well as for non-European migrants compared to native born, the SWB levels of migrants from Northern and Central Europe are comparable to those of non-migrants. This is consistent with the results by Kämpfer (2014) who finds significant differences between migrants and natives for Germany and identifies migrants from Southern Europe as well as from Turkey and former Yugoslavian countries as the groups with the lowest SWB levels.

Moreover, the immigrant-native gap in SWB does not diminish largely after adding socioeconomic status and health, which belong to the key correlates of SWB (Diener et al. 2008; Schüz et al. 2009). This may have to do with the fact that the migrants and non-migrants in our sample do not vary largely with regard to sociodemographic characteristics and health. Material resources strongly contribute to SWB and social integration (Böhnke 2008). Our data suggest that having no financial difficulties significantly diminishes the immigrant-native differences in SWB. Apart from that, migration-related factors help reducing the

group disparities: While Tucci et al. (2014) find that citizenship does not play an important role in reducing the SWB gap in Germany, our findings show that having the citizenship of the destination country reduces the SWB gap for migrants. Additionally, having migrated at an early age and the length of residence in the host country turn out to be important factors. Young migrants who grew up and were educated in the destination societies and migrants who have resided in their host countries for a considerable amount of time tend to be better assimilated than migrants who arrived recently and/or at later ages. This is in accordance with the empirical findings formulated by Gordon (1964) and Berry et al. (2006).

On the country level we observe considerable variation across countries regarding the size of the SWB gap. This variation is correlated with the institutional context: The more open and inclusive a country's family reunion policy, the smaller the SWB gap for migrants. The findings are in line with the Capabilities approach by Sen (1993) and the Host Society Environment approach by Maxwell (2010) who stress the importance of structural conditions for promoting integration. They are also consistent with Hadjar and Backes (2013) who detect a positive correlation between the overall MIPEX score and SWB.

Nevertheless, some limitations should be considered when interpreting these results. The migrant population in SHARE is special because it includes migrants aged 50 years and older who stayed in their destination countries and speak the corresponding language proficiently. Considering that low levels of SWB might be a reason to return to the country of origin (Mara and Landesmann 2013) and that language skills are a major source of social integration (Gordon 1964; Rumbaut 1997), the SWB levels of the migrants in our sample might be biased upwards. Future research should examine whether the results also hold for younger migrants and the oldest old. Apart from that, Diener (1994) pointed out that personality-related variables (e.g., self-esteem) play an important role for the individual SWB. Since this information is not part of the data, we could not account for personality characteristics.

Concerning policy implications, our results indicate that migrants' SWB can be improved by (1) providing the preconditions for equal access to economic resources, by (2) streamlining naturalization and citizenship regulations, and by (3) fostering an integrative receiving context. Promoting the family's integration in terms of easy access and sufficient associated rights for family members increases migrants' SWB and facilitates their social integration. Sponsoring the re-

unification of family members is especially meaningful for older migrants who are or will be in need for care. In the long run, this helps relieving the social security systems of the destination countries and strengthens social cohesion.

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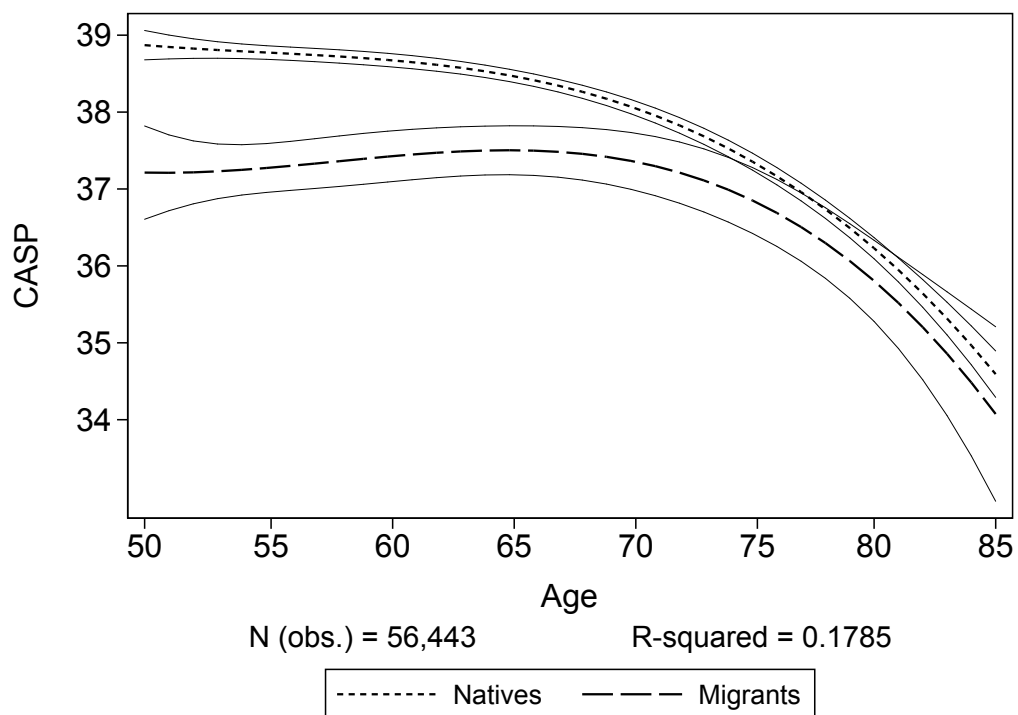
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Appendix

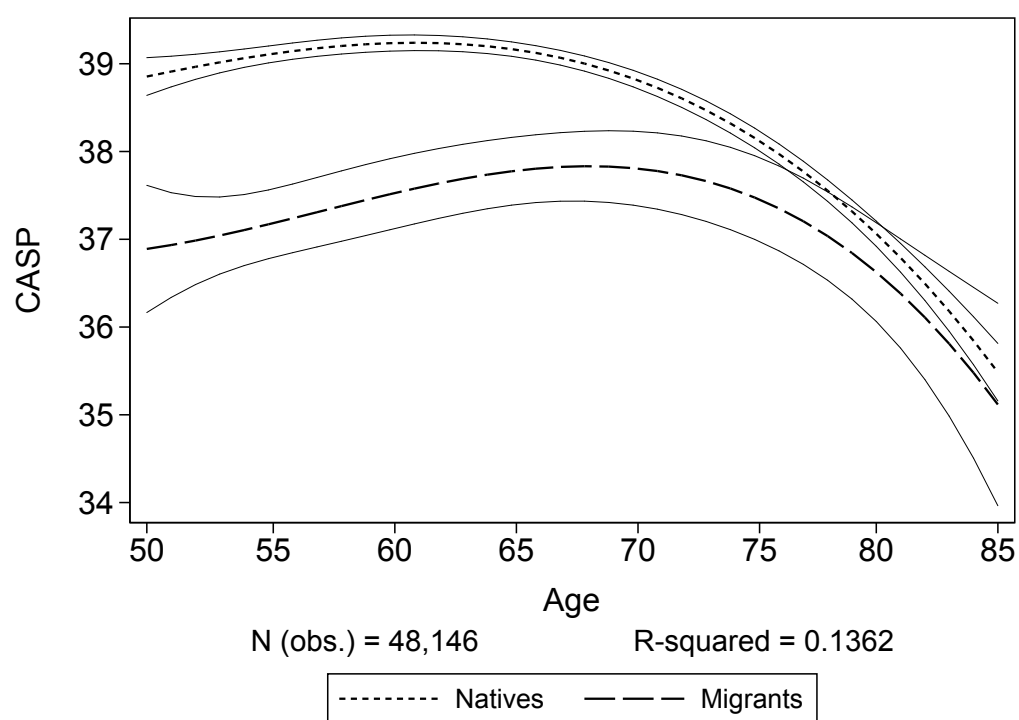
Figure A2.1: CASP of female natives and migrants by age



Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave, country.

Source: Own calculations based on SHARE release 5.0.0.

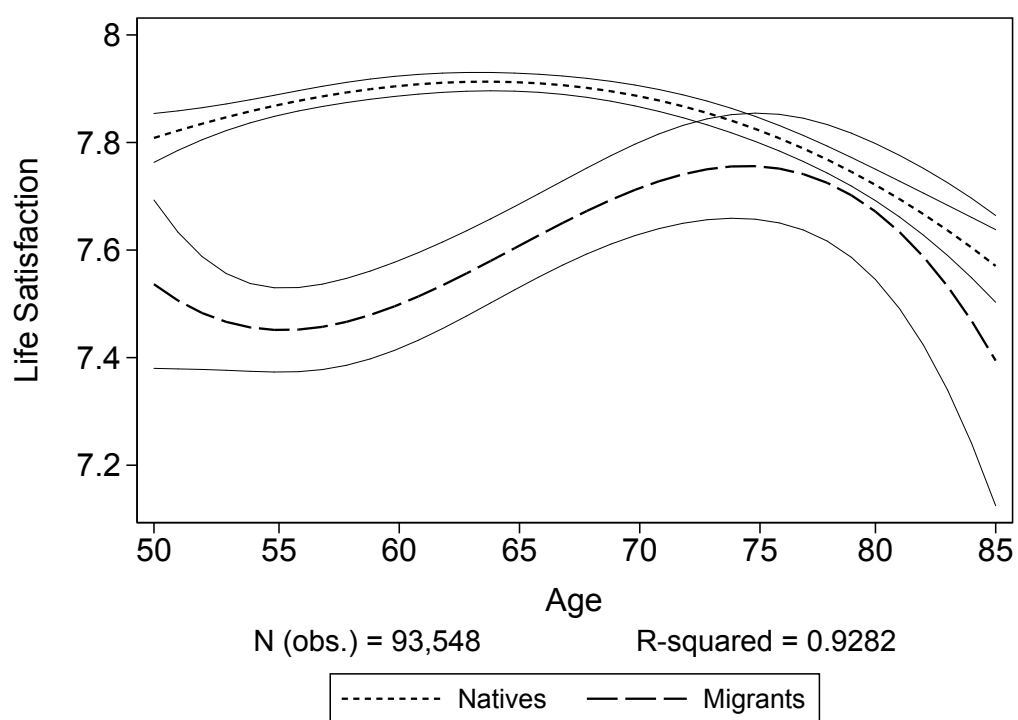
Figure A2.2: CASP of male natives and migrants by age



Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave, country.

Source: Own calculations based on SHARE release 5.0.0.

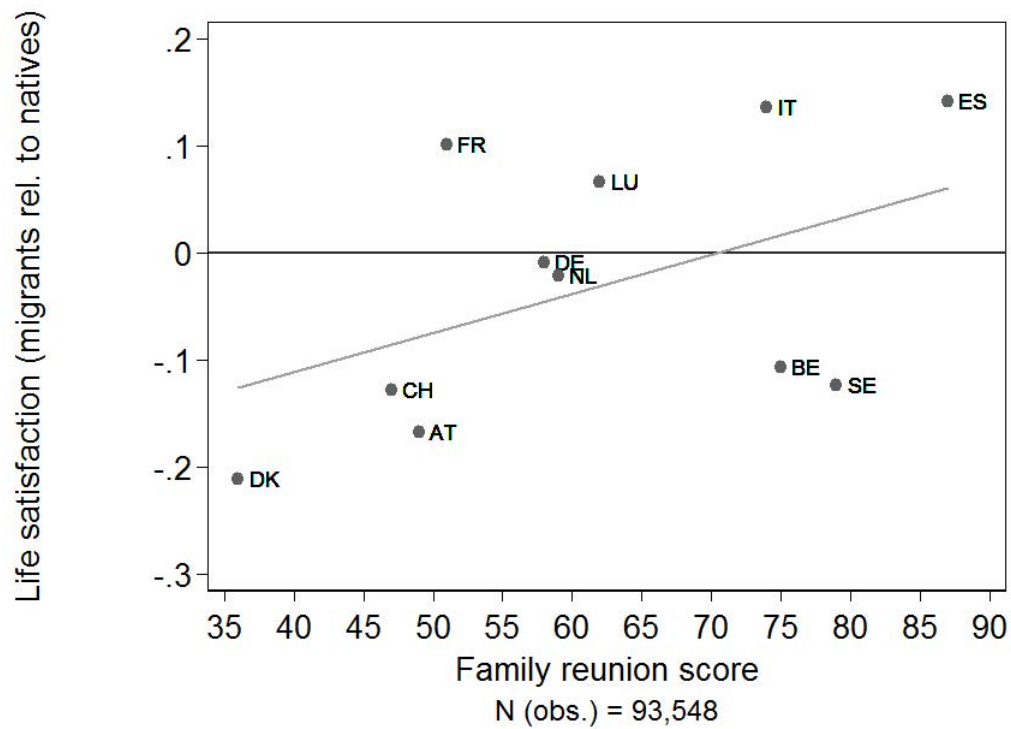
Figure A2.3: Life satisfaction of natives and migrants by age



Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors; controlling for age, wave, country.

Source: Own calculations based on SHARE release 5.0.0.

Figure A2.4: Country correlation matrix of the immigrant-native gap in life satisfaction and the MIPEX family reunion score



Note: Predictive margins with 95% CIs and standard errors estimated from RE regression models with individual-level clustered robust standard errors.

Source: Own calculations based on SHARE release 5.0.0.

Chapter 3

Does migration pay off in the long run? Income and subjective well-being of Eastern European migrants aged 50+¹¹

3.1 Background

Even though the individual driving forces of migration may differ, it can be argued that the majority of Eastern European migrants who move to a wealthier Western European country voluntarily share a common goal: the improvement of their economic living conditions and their quality of life in the destination country. But does migration really pay off in the long run? The aim of this study is to explore the income and well-being gains of older migrants who moved from the Czech Republic or Poland to Germany, Austria, or Sweden and whether the outcomes are connected with each other.

In 2016, 19.3 million persons out of about 500 million people living in the European Union were born in an EU member state different from their country of residence (Eurostat 2016). With 4.3 million, Germany is the country with the highest number of people born in another EU country (5.3 percent of the German population) (ibid.). The share of EU immigrants is even higher in Austria with 8.2 percent and 5.4 percent in Sweden. Austria, Germany, and Sweden belong to the main destinations for migrants from other European countries (ibid.). In contrast, Poland and the Czech Republic belong to the three European countries

¹¹ This chapter is coauthored with Gregor Sand.

with the highest numbers of net emigration (Raymer et al. 2011). Romania is the only country with a higher emigration count.

Migration – no matter if intra-European or international – is often considered as a possible means to mitigate the consequences of population aging (Alho 2008; Lanzieri 2013) while others argue that immigration has only a limited impact and needs to be combined with policies aimed at increasing fertility and labor force participation (Bijak et al. 2008; Camarota 2005). Since the existing literature mainly focuses on younger migrants, one important aspect is usually missing in the discussion on replacement migration: The aging process also pertains to migrants that grow old abroad. To date, little is known about the well-being of older migrants and the long-lasting consequences of migration.

This paper is structured as follows: The next section summarizes previous research findings and points out the research gaps addressed by this study. This is followed by a description of the particular historical context of migration from the Czech Republic and Poland to Austria, Germany, and Sweden as a consequence of World War II (WWII). Theoretical considerations are followed by an introduction of the data source and the methods used. After presenting the results, the section on robustness checks also includes a discussion of limitations. The final section contains concluding remarks.

3.2 Previous findings and contribution

A great share of the extant literature has focused on the economic performance and labor market integration of migrants (e.g. Fleischmann and Dronkers 2010; Kogan 2011; van Tubergen et al. 2004). However, social scientists have given increasing attention to how moving to another country affects the non-economic aspects of migrants' life such as happiness, subjective well-being (from now on referred to as SWB), and the perceived quality of life (e.g. Amit and Litwin 2010; Tucci et al. 2014).

In general, high levels of well-being are positively correlated with labor market productivity (Oswald et al. 2009), income (De Neve and Oswald 2012), and health outcomes (Graham et al. 2004). Happier immigrants are less likely to be dependent on the host nations' welfare and healthcare systems (Ivlevs 2014), an argument that becomes especially relevant for older migrants. Most studies exploring the well-being of migrants are confined to their destination countries and use the native population as reference group. They generally find a

significant gap between the two groups, with migrants showing lower levels of happiness or SWB than natives (Malmusi 2015; Safi 2010; Sand and Gruber 2016). However, the classical comparison with the native reference group does not necessarily provide sufficient information on the consequences of migration itself.

Two additional approaches and the combination of both are helpful to assess the influence of migration and post-migration experiences on specific outcomes more accurately: first, comparing the performance of similar migrant groups in different destinations and second, comparing the performance of a migrant group abroad with a group of people with similar characteristics in the country of origin, so-called stayers (Agyemang et al. 2012). Bartram (2013a) finds similar happiness levels among migrants from Eastern Europe in comparison to stayers, with some exceptions: While migrants from Russia, Turkey, and Romania are happier, Polish migrants are unhappier than stayers. Baykara-Krumme and Platt (2016) show that Turkish migrants (and return migrants) experience higher life satisfaction in old age than stayers. This is in line with Nikolova and Graham (2014) who find that migration does not only improve the material situation, but also the SWB of migrants from transition to advanced economies.

Various authors have stressed the importance of analyzing group disparities in happiness and well-being, thereby highlighting the role of relative income (e.g. Clark and Senik 2010; Easterlin 1995; Ferrer-i-Carbonell 2005). In this context, migrants are an interesting population as they are confronted with different reference groups: natives in the new destination country and stayers in the origin country. Studying the main migrant groups in Germany, a recent study by Akay et al. (2017) finds that their origin countries act as a “natural comparator” for migrants: Migrants’ SWB decreases with increasing GDP per capita of the origin country. However, it is argued that the importance of the country of origin declines with duration of stay and the degree of assimilation.

The long-term impact of moving abroad on the quality of life and well-being of the immigrant population in receiving countries is not easy to determine, especially due to the lack of adequate data. Therefore, the aim of this study is to have a closer look at the income and well-being disparities of older and settled migrants compared to their counterparts in the places of origin in order to gain a better understanding of the benefits of migration. We contribute to previous research by including the long-term perspective. The sample from the Survey of Health, Ageing and Retirement in Europe (SHARE) is comprised of

older respondents who have resided in the destination country for a substantial amount of time (on average 30 years). Respondent matching allows for comparing the performance of migrants in different destinations using similar individuals of two reference groups: those who stayed in the place of origin and the native population in each place of destination. This study may shed light on the connection between the relative income situation of migrants and potential SWB gains through migration. Our focus is on respondents from the Eastern European countries of the Czech Republic and Poland. They constitute the largest group of migrants in the dataset and one of the main migrant groups within Europe. Their main Western European destination countries in the dataset are Austria, Germany, and Sweden.

Migration from the Czech Republic and Poland to Austria, Germany, and Sweden

Immigration from the Czech Republic and Poland to Germany and Austria is special due to historic displacements at the end of World War II and afterwards. A large number of German nationals grew up and resided in the formerly occupied territories of the German Reich beyond the Oder-Neisse line (now Poland) and Sudetenland (the northern, western, and southern border regions of Bohemia which now belong to the Czech Republic). The forced “germanization” of millions of non-Germans in those areas during wartime triggered strong resentment and the expulsion of German settlers after the war. Most expellees found refuge in the West or East German occupation zones, others settled in Austria or other parts of Europe (Madajczyk 1999; Prauser and Arfon 2004).

Overall, the German exodus affected more than 12 million refugees from East Prussia, Pomerania, Brandenburg, Silesia and Sudetenland, but also from the more remote areas such as Volga (Russian territory), Hungary, Romania, Croatia, Serbia, Slovenia, and the Baltic region. Virtually all German civilians residing in Poland (about 8 million) and Czechoslovakia (about 3 million) had left their home places forcefully or voluntarily by the end of the 1950s (Faulenbach 2005; Prauser and Arfon 2004; Schneider 2005).

In 1953, ethnic German refugees and expellees from the formerly occupied eastern territories of the German Reich who were not already German nationals became entitled to German citizenship under the Federal Law on Refugees and Exiles. This law resulted in continuing immigration of those who were persecuted or discriminated for their German or alleged German ethnicity between 1945 and 1990 (“Aussiedler”). The majority of ethnic Germans immi-

grated up to the 1950s and managed to become an integral part of German or Austrian society. However, the more recent their immigration, the more difficult it became in terms of adaptation to language and integration (Faulenbach 2005; Prauser and Arfon 2004; Schneider 2005).

In the case of Sweden, 30,000 survivors from Nazi concentration camps were granted resettlement after the end of WWII, a great number of them were Polish citizens. Apart from that, Sweden accepted labor migrants and refugees from Warsaw Pact countries between the 1960s and the 1980s. The new arrivals usually found quick access to the Swedish labor market and society. Many of them were granted permanent residence (Westin 2006).

In Germany and Austria, the majority of Czech and Polish migrants in the sample are ethnic Germans who relocated during or shortly after WWII. As our analysis should not entail this group of forced migrants, we exclude all respondents who emigrated up to 1950. Therefore, the migrant samples of Austria and Germany decrease considerably. As opposed to that, no such constraint appears in Sweden, where major immigration movements took place from the 1960s onwards, with the largest inflow of Eastern European immigrants in the 1980s.

3.3 Theoretical framework

Theories of international migration generally assume that the migration decision is motivated by the goal of income maximization. According to the standard individual-level migration model developed by Sjaastad (1962), migrants evaluate the costs and benefits of migration. The costs include direct expenses such as transportation costs, language courses, and visa fees; opportunity costs of foregone earnings and opportunities at home; as well as psychological costs related to separation from family and friends (Nikolova and Graham 2014). An individual considers moving to another country if the expected utility from migration exceeds the costs.

H1: As the economic gains should exceed the costs, we expect that migrants who have moved from Eastern Europe to a wealthier Western European country have higher income levels than similar stayers.

Based on well-being studies, there is growing consensus that income-based measures are insufficient to understand all aspects of migration (Nikolova and Graham 2014). Regardless of the motives to migrate, it is important to draw on

non-pecuniary outcome measures such as SWB to gain a comprehensive understanding of the long-term consequences of migration. Well-being indicators are useful to represent individual utility (Clark et al. 2008). Therefore, they could reflect the real economic and perceived welfare gains of immigration.

A change in income through migration might affect migrants' SWB. The impact of income on SWB does not only depend on the absolute income but also on the relative income position of an individual. In this context, external and internal reference points can be distinguished. An external reference point refers to the comparison of an individual with a distinct demographic group such as the social network or colleagues at the workplace. An internal reference point refers to the comparison of an individual to oneself, either to one's own past income (adaptation) or to one's expected future income (aspirations). Adaptation means that individuals get used to their circumstances, insofar as changes in income only have moderate effects on SWB. The same applies to growing aspirations. If aspirations rise with own actual income, then the effect of income on SWB is muted (Clark et al. 2008).

Empirical research has shown that adaptation and growing aspirations lead to a vanishing effect of income on SWB over time. Using data from the German Socio-Economic Panel, Di Tella et al. (2010) find that 65 percent of the current year's impact of income on happiness is lost over the following four years. For different European countries, the Leyden Group finds that a current increase of one dollar in the household income drops to an experienced increase of 60 cents in peoples' income evaluation after about two years (van Praag and Frijters 1999). An important implication of these findings is that the time of observation is an important factor. If individuals are observed right after an income gain, a different income effect on SWB is measured than several years later.

H2: Due to processes of adaptation and growing aspirations, we expect that the income gain of those who migrated compared to similar stayers (H1) does not translate into a comparable gain in SWB in the long-run.

Regarding external reference points, migrants could compare themselves to those who remained in the home country or to similar natives in the destination country. According to Akay et al. (2017), migrants seem to regard their home countries as natural comparators. The economic situation in the place of origin plays a decisive role in determining the SWB levels of migrants. Gelatt (2013, p. 39) finds that "(...) *the relationship between various measures of subjective social*

standing and subjective well-being suggests that immigrants maintain simultaneous reference groups (...)". In other words, immigrants' point of reference can be both home and destination country. This depends on their involvement in transnational associations or businesses and their connection with members of the origin country. Again, the time of observation becomes a major factor in this respect. While shortly after migration, it can be expected that the reference group are mainly stayers, increasing time abroad might lead to growing importance of natives in the destination country, at least as an additional reference group.

H3a: As the majority of migrants in the SHARE sample migrated a long time ago, we expect that their comparison group has shifted from stayers in the origin country to natives in the destination country.

H3b: The SWB gains of those who migrated are higher in countries with a better income position relative to natives.

3.4 Data and methods

Data

We use the first interview of each respondent from the regular panel waves 1, 2, 4, 5, or 6 of SHARE (Börsch-Supan 2017). SHARE was started in 2004 and is a multidisciplinary panel study on health, aging, socioeconomic status, and social networks of respondents from 20 European countries plus Israel aged 50 or over (Börsch-Supan et al. 2013). The survey is administered biennially via computer-assisted personal interviews (CAPI). Compared to other datasets, SHARE has two major advantages when studying the consequences of migration. First, due to the variety of countries and the large amount of respondents, migrants can be compared to both natives in the destination and stayers in the origin country. Second, the long duration of stay allows for studying the long-term impact of migration.

The overall SHARE sample comprises more than 120,000 individuals. The sample at hand includes migrants (i.e. respondents born in the Czech Republic and the former territory of Czechoslovakia or Poland who migrated after 1950 and are now living in Austria, Germany, or Sweden), stayers (i.e. respondents born and living in the Czech Republic and the former territory of Czechoslovakia or Poland), and natives (i.e. respondents born in and having the citizenship of Austria, Germany, or Sweden) aged 50 to 85. Respondents older than 85 and other

possible origin and destination countries represented in SHARE are excluded due to limited case numbers.

Since this analysis focuses on the long-term consequences of migration on SWB, migrants who recently moved to their new destination country are excluded. According to the definition of Massey (1986), a person is a migrant if she/he has lived in the destination country for three continuous years. For this reason, all observations of migrants who have resided three years or less in the destination country are dropped from the analysis ($n = 15$). It should be noted that this definition of long-term is more restrictive than definitions applied by international organizations such as OECD or UN that consider a long-term migrant as someone who has lived in the new destination for just one year.

Dependent variables

The income measure is generated by taking the net household income for each individual adjusted by household size and the relative purchasing power parity (PPP) of the country of residence. This adjustment makes it possible to explore income differences across countries. In order to maximise the number of observations, we take the imputed household income as provided by SHARE.

In regard to SWB, psychological research differentiates between two types of well-being: hedonic and eudaimonic. The hedonic type equates well-being with pleasure and happiness (Ryan and Deci 2001). It focuses on subjectively determined positive mental states. In contrast, the eudaimonic type focuses on experiences that are objectively good for the person (Kagan 1992). It is measured by questions on autonomy, determination, interest and engagement, aspirations and motivation, and a sense of meaning, direction, or purpose in life (Clark et al. 2008). Correlational analyses indicate that both hedonic and eudaimonic dimensions are associated with well-being, with more robust associations observed among the eudaimonic dimension (McMahan and Estes 2011).

Considering the age structure of SHARE respondents, we opt for CASP, a measure that is designed to quantify the perceived quality of life and subjective well-being of older people. CASP was initially developed in a population aged 65 to 75 years (Hyde et al. 2003; Sim et al. 2011). It does not only cover aspects of life satisfaction and health, but also social circumstances and functional limitations. It includes questions concerning the domains control, autonomy, self-realization, and pleasure (CASP). While the first three domains represent the eudaimonic aspects of well-being, the last one captures hedonic traits. SHARE contains an

abridged version of the CASP-19 index that encompasses 12 out of originally 19 items by reducing each of the domains to the three strongest items. In order to do so, the statistical analysis used to produce the original 19 item scale was replicated (Von dem Knesebeck et al. 2005). The score used as dependent variable is the sum of all 12 items. After transformation, the score yields a minimum value of 0 and a maximum value of 36.

Control variables

We use standard sociodemographic indicators such as age, gender, marital status, having children, and country of origin (Czech Republic or Poland) as control variables. Apart from that and in line with Ormel et al. (1999), we include key personal resources that are associated with SWB: the number of chronic diseases as an indicator for physical health (0 = no chronic disease, 1 = one chronic disease, 2 = two or more chronic diseases) and education (in years). Additionally, we control for employment status (i.e. being retired, self-employed/employed, or other employment status such as homemaker or being permanently sick).

Method

Group inequalities are examined in three analytical steps: First, we compare the absolute income gains of those who left to those who stayed both overall and for each migrant group in the three destination countries. Second, we look at the relative income position of immigrants within each destination country (i.e. the comparison to Austrian, German, and Swedish natives). Third, we examine whether there are migrant-stayer differences in terms of SWB and whether they deviate between destination countries. Since we consider relative income as an important factor for individual well-being, it is linked to our central outcome variable SWB by analyzing the effect heterogeneity for three migrant groups: (a) those who have a lower income than stayers, (b) those whose income is above the mean income of stayers but below the income of natives, and (c) those with a household income above the one of natives. Additionally, we focus on group (b) to further explore a potential relationship of the relative income position with migrants' SWB levels.

Stata 14 and the `psmatch2` command (Leuven and Sianesi 2003) are employed to perform Propensity Score Matching (PSM). PSM is a statistical matching technique that attempts to estimate the effect of a treatment by choosing a comparison or control group that consists of individuals as similar as possible

in observable characteristics to individuals of the treated group (i.e. proxies for the counterfactual mean), but who did not receive the treatment (Caliendo and Kopeinig 2008). For the purpose of this analysis, migrants are considered as the treatment group, while stayers (reference group in steps 1, 3, and 4) and natives (reference group in step 2) represent the untreated control groups.

In general, the propensity score is a balancing score, which gives information about the probability of being assigned to the treatment or control group. In this study, the propensity score is used to guarantee that the distribution of all observed covariates is similar between treated and untreated subjects. In other words, rather than determining the propensity of belonging to the treatment or one of the control groups (natives in the destination country never had a propensity to migrate), PSM is used to compare respondents with a certain set of characteristics in the treatment group with similar counterparts in the control groups. For instance, migrant A with characteristics X is compared to stayer B with characteristics similar to X and native C with characteristics similar to X .

PSM is based on two assumptions. First, the outcomes are independent of treatment assignment, which means that people's SWB levels are not associated with belonging to the treatment or control group (conditional independence assumption). Second, for each individual in the treatment group, there should be at least one individual with the same characteristics in the control group (overlap assumption). Given this, we obtain the average treatment effect on the treated (ATT):

$$ATT = E[Y(1)|D = 1] - E[Y(0)|D = 1]$$

We use nearest neighbor matching (three neighbors) as matching estimator to calculate the ATT. Stratification matching is applied to test whether the results are robust regarding the matching algorithm.

3.5 Results

Descriptive statistics separated by migrants and both reference groups are presented in Table 3.1. The numbers listed exclude forced migrants during or after WWII and observations of those who have resided three years or less in the destination country. Out of the remaining 173 migrants, 39 are from the Czech Republic (23 percent) and 134 from Poland (77 percent). The largest number of them reside in Germany ($n = 97$), followed by Austria ($n = 43$), and Sweden ($n = 33$). Regarding our dependent variables, the PPP-adjusted income of

migrants significantly increases by more than 100 percent compared to stayers. Their CASP scores are significantly higher than the CASP of stayers. This holds for both the total migrant sample and for migrants in all three destination countries. Compared to natives in the destination countries, the relative income of migrants is lower in Germany and Sweden, whereas it is significantly higher in Austria.

Concerning sociodemographic characteristics, we observe the following significant differences between the three groups: Migrants in the sample are younger than stayers and natives. The share of persons having children is lowest among migrants. Furthermore, migrants account for a higher number of education years and retired people than both reference groups. With respect to physical health, stayers are worse off than migrants and natives. Both groups may profit from the better health care systems in the destination countries. Laaksonen et al. (2001) find that the East-West difference in health status can partly also be explained by different health life-styles.

To sum up, Eastern migrants in the sample at hand are relatively young and well-educated. They fare better than stayers both in terms of income and well-being; but except for migrants' income in Austria, they tend to be worse off on these indicators than natives in the destination countries.

As the first step of the analyses, we examine the ATT differences in income (adjusted for household size and PPP) by running PSM models controlling for age, sex, marital status, having children, years of education, employment status, chronic diseases, and place of birth. The predictions in Figure 3.1 (dark-grey bars) show that Eastern migrants clearly increase their income after migration, no matter at which destination ($p < 0.05$), supporting H1. The largest income gains can be observed in Austria, followed by Sweden, and Germany.

As the second step, we analyse the income of migrants in relation to natives, both overall and in each destination country (medium-grey bars in Figure 3.1). The results show the following (insignificant) trend: While in Austria, the difference in income between migrants and natives is positive, Eastern migrants to Germany and Sweden witness a negative relative income gap.

Table 3.1: Sample description

	Migrants				Stayers			Natives		
	AT	DE	SE	Total	CZ	PL	Total	AT	DE	SE
CASP	38.86 (6.40)	37.95 (5.36)	37.45 (4.60)	38.08 (5.48)	34.95 (5.80)	35.00 (6.73)	34.97 (6.06)	39.62 (5.98)	38.98 (5.77)	39.61 (4.85)
Income	23,305 (20,491)	15,751 (9,861)	18,102 (11,439)	18,077 (13,822)	8,464 (6,069)	4,612 (4,033)	7,445 (5,855)	16,571 (13,679)	17,288 (35,036)	18,920 (10,509)
Age	62.94 (7.16)	58.54 (7.96)	63.67 (9.30)	60.62 (8.34)	63.88 (8.53)	61.89 (8.88)	63.35 (8.67)	64.16 (8.71)	63.08 (9.01)	64.67 (8.67)
Female	60.5%	60.8%	66.7%	61.8%	56.9%	55.3%	56.4%	56.8%	52.4%	52.9%
Married, living tog.	51.2%	80.4%	69.7%	71.1%	66.9%	76.6%	69.5%	63.8%	76.0%	71.9%
Having children	69.8%	82.5%	84.8%	79.8%	94.7%	93.6%	94.4%	63.9%	87.6%	93.2%
Years of education	13.47 (4.32)	12.61 (4.19)	13.58 (3.86)	13.01 (4.16)	12.13 (3.04)	9.77 (3.28)	11.51 (3.28)	9.54 (4.48)	12.86 (3.47)	11.07 (3.64)
Empl. status: Retired	62.8%	23.7%	48.5%	38.2%	65.8%	51.9%	62.1%	61.4%	5.7%	52.9%
Empl. status: (Self-)Empl.	27.9%	59.8%	48.5%	49.7%	28.5%	24.5%	27.4%	23.5%	36.8%	41.4%
Empl. status: Unemployed	4.7%	4.1%	n.a.	3.5%	2.6%	5.0%	3.2%	2.7%	4.8%	2.1%
Empl. status: Other	4.7%	12.4%	3.0%	8.7%	3.1%	18.6%	7.2%	12.5%	12.7%	3.6%
Chronic dis.: None	37.2%	37.1%	60.6%	41.6%	32.7%	37.9%	34.1%	40.1%	38.0%	41.7%
Chronic dis.: One	41.9%	34.0%	24.2%	34.1%	31.8%	29.3%	31.1%	30.8%	31.1%	30.9%
Chronic dis.: Two+	20.9%	28.9%	15.2%	24.3%	35.5%	32.8%	34.8%	29.1%	30.9%	27.5%
Total	43	97	33	173	7,081	2,546	9,627	5,679	7,810	5,982

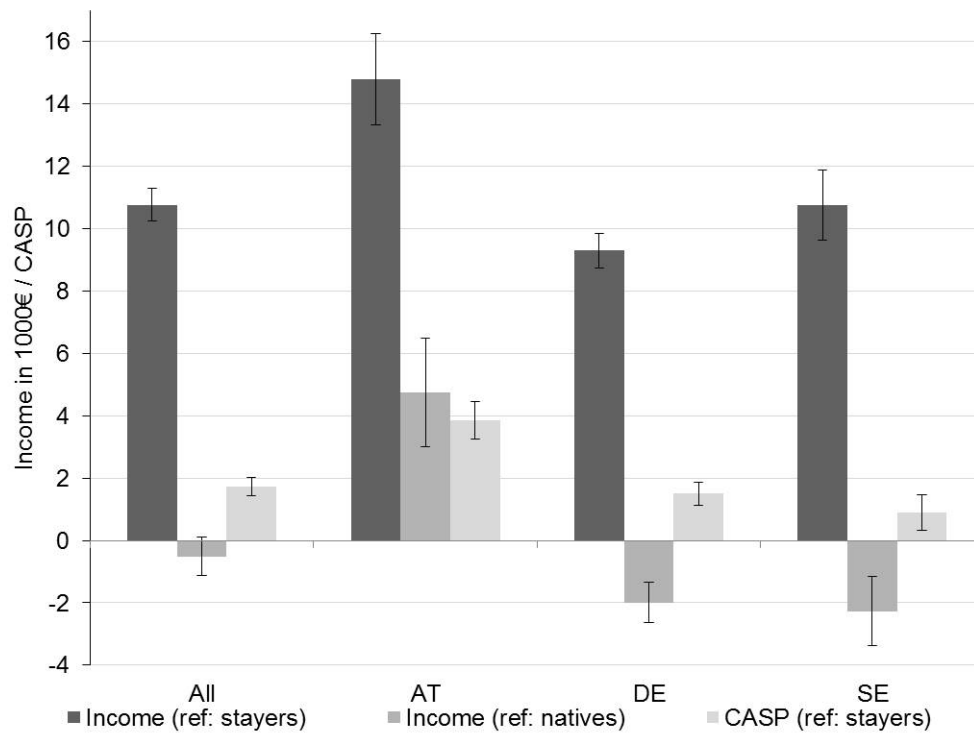
Note: Percentages displayed for categorical, means for metric variables; standard deviation in parentheses.

Source: Own calculations based on SHARE release 6.0.0.

In the third step (light-grey bars in Figure 3.1), we explore the differences in SWB between Eastern European migrants and stayers, overall and at all three destinations. If the gain in income translated equally into SWB, which is against our expectations (H2), we would observe a CASP gain for migrants in all destination countries. It should be largest in Austria, the country with the highest income advantage, followed by Sweden and Germany. The model based on the total migrant sample indicates that in the long-run, migration from Eastern to Western Europe leads to a significant SWB increase (ATT = 1.7, $p < 0.05$). Migrants to Austria have the highest SWB gain (ATT = 3.9, $p < 0.05$), followed by Germany (ATT = 1.5, $p < 0.05$). In Sweden, the increase is lowest and not significant (ATT = 0.9). These results show that income gains through migration do not equally translate into SWB gains.

In the last analytical step, we have a closer look at the relationship between relative income and well-being. The migrant sample is divided into three groups: (1) migrants who have a lower income than the average income in their origin country (14 percent), (2) migrants whose income is higher than the one of stayers but lower than the average income of natives in the destination country (49 percent) and (3) migrants who are above the average income of natives (37 percent). As shown in Figure 3.2, the SWB increase of migrants compared to stayers is positive across all income groups. However, the ATT is only significant in group 2 (ATT = 2.1, $p < 0.05$) and group 3 (ATT = 2.2, $p < 0.05$). This means that migrants significantly increase their SWB through migration if their income is higher than the average income of stayers in the origin country. It can even be lower than the average income of natives in the destination country. In order to test how low, group 2 is divided into income terciles. We find significant SWB gains for migrants whose income is in the third tercile, that is, only slightly lower than the income of natives (see Figure 3.3). We conclude that achieving a similar or better income position relative to natives might play a decisive role in determining good well-being of migrants in the long run. This implies a shift or extension of their frame of reference to the native population (H3a). However, this finding only partly supports H3b because we would not have expected significant SWB gains for those migrants who are below the average income of natives.

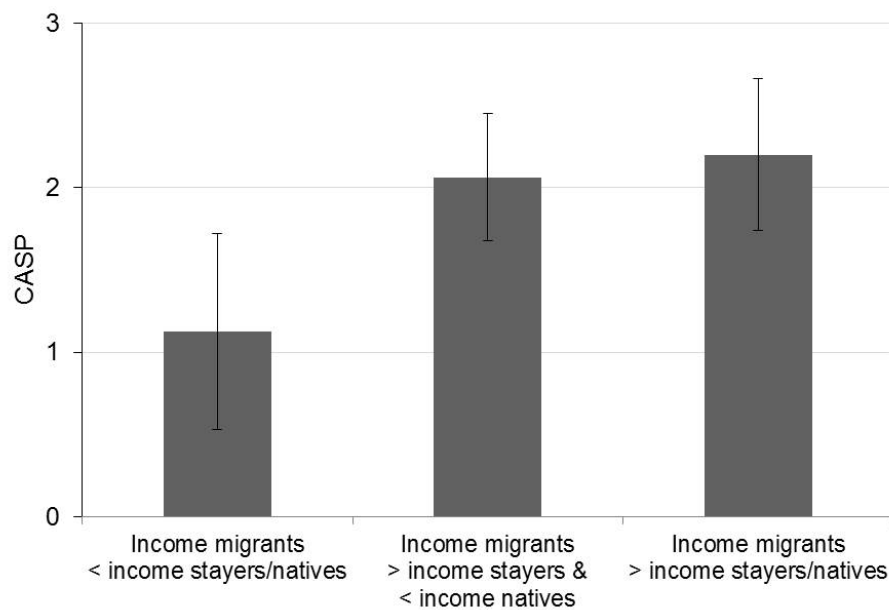
Figure 3.1: Income and SWB differences between migrants, stayers, and natives



Note: ATT differences and standard errors estimated from PSM.

Source: Own calculations based on SHARE release 6.0.0.

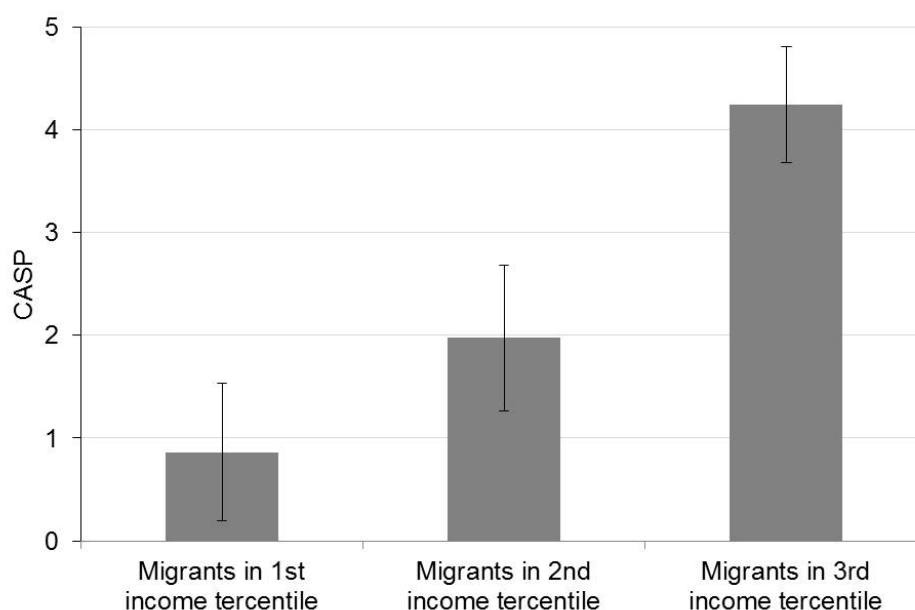
Figure 3.2: Well-being gains of migrants over similar stayers; separate models according to the relative income position



Note: ATT differences and standard errors estimated from PSM.

Source: Own calculations based on SHARE release 6.0.0.

Figure 3.3: Well-being gains of migrants over similar stayers; income terciles of migrants with income above stayers but below natives



Note: ATT differences and standard errors estimated from PSM.

Source: Own calculations based on SHARE release 6.0.0.

Robustness checks and limitations

In the first robustness check, we test whether the results of the PSM models also hold when applying linear regression. The models presented in Table 3.2 (overall and per country) show the same trend. The dependent variable in each of the models is the CASP score; the explanatory variable is migration (i.e. migrants = 1, stayers = 0). The covariates are the same ones we used to calculate the propensity score. In contrast to model I, model II also controls for income to see to what extent the coefficient of migration is affected.

In the total sample, the coefficient of migration is significantly positive in model I and model II, although it decreases considerably when controlling for income. The country models show that Austria is the only destination country with a significantly positive migration coefficient after controlling for income. In contrast, the coefficient in Sweden becomes negative after including income (insignificant).

Table 3.2: Results of linear regression models; DV: CASP; model I without income and model II controlling for income

	Total		Austria		Germany		Sweden	
	I	II	I	II	I	II	I	II
Migration (ref.:stayers)	1.91*** (0.52)	0.94* (0.53)	3.45*** (0.95)	2.07** (0.96)	1.41** (0.66)	0.61 (0.67)	0.55 (1.32)	-0.79 (1.32)
Age	-0.06*** (0.01)	-0.06*** (0.01)	-0.05*** (0.01)	-0.06*** (0.01)	-0.05*** (0.01)	-0.06*** (0.01)	-0.05*** (0.01)	-0.06*** (0.01)
Female (ref.: male)	-0.47*** (0.12)	-0.46*** (0.12)	-0.46*** (0.12)	-0.46*** (0.12)	-0.46*** (0.12)	-0.45*** (0.12)	-0.45*** (0.12)	-0.44*** (0.12)
Married, living together (ref.: other mar. stat.)	0.82*** (0.13)	0.80*** (0.13)	0.83*** (0.13)	0.81*** (0.13)	0.82*** (0.13)	0.80*** (0.13)	0.83*** (0.13)	0.82*** (0.13)
Having children (ref.: no children)	0.64** (0.25)	0.72** (0.25)	0.68** (0.26)	0.74** (0.25)	0.68** (0.25)	0.76** (0.25)	0.71** (0.26)	0.78** (0.26)
Years of education	0.31*** (0.02)	0.29*** (0.02)	0.32*** (0.02)	0.30*** (0.02)	0.32*** (0.02)	0.29*** (0.02)	0.32*** (0.02)	0.29*** (0.02)
Employed or self-employed (ref.: retired)	-0.05 (0.18)	-0.17 (0.18)	-0.02 (0.18)	-0.14 (0.18)	-0.04 (0.18)	-0.17 (0.18)	-0.02 (0.18)	-0.15 (0.18)
Unemployed	-3.24*** (0.24)	-3.09*** (0.24)	-3.20*** (0.35)	-3.04*** (0.35)	-3.22*** (0.35)	-3.05*** (0.35)	-3.18*** (0.36)	-3.00*** (0.35)

Continued on next page

	Total		Austria		Germany		Sweden	
	I	II	I	II	I	II	I	II
Other employment status	-2.31*** (0.25)	-2.23*** (0.25)	-2.35*** (0.25)	-2.27*** (0.25)	-2.33*** (0.25)	-2.25*** (0.25)	-2.39*** (0.25)	-2.31*** (0.25)
Chronic diseases: None (ref.: no chronic disease)	-1.15*** (0.15)	-1.14*** (0.15)	-1.15*** (0.15)	-1.15*** (0.15)	-1.17*** (0.15)	-1.16*** (0.15)	-1.16*** (0.15)	-1.15*** (0.15)
Chronic diseases: Two or more	-2.74*** (0.15)	-2.72*** (0.15)	-2.73*** (0.15)	-2.72*** (0.15)	-2.74*** (0.15)	-2.73*** (0.15)	-2.74*** (0.15)	-2.73*** (0.15)
Country of birth Poland (ref.: Czech Republic)	0.80*** (0.17)	0.93*** (0.17)	0.88*** (0.17)	1.02*** (0.17)	0.86*** (0.17)	1.01*** (0.17)	0.91*** (0.17)	1.06*** (0.17)
Wave fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Income	-	0.08***	-	0.08***	-	0.09***	-	0.09***
Constant	35.79***	35.62***	35.56***	35.40***	35.63***	35.45***	35.47***	35.47***
Adj. R-squared	0.1198	0.1255	0.1193	0.1250	0.1194	0.1259	0.1191	0.1253
N	9,800	9,800	9,670	9,670	9,724	9,724	9,660	9,660

Note: standard errors in parentheses; * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Own calculations based on SHARE release 6.0.0.

In a further robustness check, we test whether our results are robust regarding the matching algorithm applying stratification matching (`atts` command in Stata 14) instead of nearest neighbor matching. The stratification option assigns similar propensity scores of treated and untreated individuals to different intervals (strata). Within each propensity score stratum, treated and untreated individuals obtain roughly similar values of the propensity score. Although the size of the ATT differs slightly between nearest neighbor and stratification matching (1.8 instead of 1.7 in the total sample), the tendency and interpretation of the results remain the same for both algorithms.

In the following paragraphs, we discuss methodological difficulties and limitations of the study. The most relevant one is endogeneity. The results of the PSM models cannot be interpreted causally, which is one of the main limitations of this study. It is possible that the observed difference in SWB between migrants and stayers is a consequence of positive or negative selection into migration. The small number of empirical research on this topic mostly finds negative selection into migration. In their study of Latin American migrants, Graham and Markowitz (2011) detect that intended migrants are less happy than those who do not intend to migrate to the United States and Spain. The results of Otrachshenko and Popova (2011) lead to a similar conclusion in the European context: Dissatisfied European migrants show a higher intention to migrate than satisfied individuals. Using an endogenous treatment regression model, Bartram (2013a) finds that endogeneity does not play a significant role for most Eastern European migrants who relocate to a Western European country, except for Polish migrants. His findings indicate that migrants from Poland are negatively selected into migration.

To test whether endogeneity leads to a bias in our results, we follow the strategy of Bartram (2013a) with one difference: Bartram uses the educational level of parents, whereas we use books in the household at age 10 as a proxy for the educational background. Formally, a linear model is used for the outcome (SWB) and a normal distribution to model the potentially endogenous treatment (migration).¹² The results are presented in Table A3.1 in the appendix. They are

¹² Stata's *etregress* command allows estimating the parameters of a linear regression model augmented with an endogenous binary-treatment variable. The first stage is equivalent to a probit model of the migration decision. The model is a linear potential-outcome model that allows for a specific correlation structure between the unobservables that affect the treatment and the unobservables that affect the potential outcome.

based on a reduced sample because the question on books is only asked in SHARE waves 3 and 5. With a chi square value above 0.05, the null hypothesis of no correlation between treatment and outcome error terms is accepted meaning that endogeneity does not lead to a severe bias in our sample. However, we do not consider the results as reliable. A necessary requirement for an endogenous treatment regression model is a variable that affects the treatment but not the outcome. No evidence can be found that the educational background fulfills this requirement, neither from a theoretical nor empirical point of view. In order to deal with endogeneity, further research should apply different methods (e.g. an instrumental variable approach) to identify the causal relationship between migration and well-being.

Apart from endogeneity, the cultural embeddedness of answer behavior to questions on well-being can play a role when analyzing SWB differences and therefore bias our results. An interesting paper by Senik (2014) analyzes differences in happiness statements between natives and immigrants in a set of European countries. With the aim to disentangle the influence of objective circumstances versus psychological and cultural factors, the author finds that the latter turn out to be of non-negligible importance. Using data from the European Value Survey, Voicu and Vasile (2014) examine whether life satisfaction is a stable, culturally induced feature. Their findings indicate that the measured well-being of migrants is a mixture of influences both from the origin and destination country's culture. The more time a person spends in the destination country, the stronger is the impact of the destination country's norms. As the migrant population in SHARE has migrated a long time ago, a potentially high influence of the destination country's culture could lead to an upward bias of the results. However, the host country's norms never fully overcome those learned in the origin society. Therefore, Voicu and Vasile (2014, 94) conclude that cultures of life satisfaction 'not only exist but also travel'.

Unobserved re-migration is another potential source of bias. Assuming that especially individuals who are dissatisfied with their life in the destination country have a tendency to go back to their country of origin, our results might be biased upwards. The literature on return migration is very scarce and inconclusive. One of the few studies focuses on Turkish migrants and return migrants. Using the 2,000 Families study, a large survey of Turkish migrants from the peak labor migration period, Baykara-Krumme and Platt (2016) find that not only migrants but also return migrants experience higher life satisfaction in

old age than stayers. Regarding return migrants in Romania, Bartram (2013b) finds that they report lower happiness levels than migrants who have not returned. These inconclusive findings suggest that unobserved re-migration might indeed be a potential source of bias in our results.

Finally, recent studies have shown that macrolevel conditions can play an important role in determining SWB (e.g. Akay et al. 2017; Bonini 2008; Sand and Gruber 2016). Future research should place special focus on the political and economic context in both the destination and origin countries. Apart from that, further studies with other migrant populations are needed to see whether the results for Eastern European migrants who migrated to a wealthier Western European country also hold for different migration contexts.

3.6 Conclusion

In this study, we address the question whether migration from Eastern Europe to a wealthier Western European country pays off in the long run. From a financial point of view the answer to this question is: Yes, it does. In all of the three destination countries the PPP-adjusted household income of Eastern European migrants is significantly higher than the one of stayers with similar characteristics. In contrast, the income of migrants does not significantly differ from the income of similar natives. Apart from income, we drew on a second dependent variable to gain a more comprehensive understanding of the long-term consequences of migration: SWB is a non-pecuniary measure that could reflect the real economic and perceived welfare gains of migration. Overall, our results suggest that migrants fare better than similar stayers in the long-run. However, on average, they do not reach the well-being levels of natives, which is in line with previous research. The country comparison showed that migrants' gain in income does not translate into an equivalent gain in SWB across all destination countries. The well-being of Eastern migrants to Sweden is not significantly different from the one of similar stayers in Poland and the Czech Republic. This could be related to processes of adaptation and growing aspirations. Additionally, migrants who have resided in the destination country for a long time might experience a change or extension in their frame of reference: from stayers to natives or maintaining stayers and adding natives. A comparison between the three destination countries suggested that the relative income position within the country of destination plays a decisive role in determining good well-being. Migrants gain SWB compared to

similar stayers once they achieve income levels that are higher than the average income of stayers and close to or higher than the average income of natives.

Bartram (2013b, 408–409) notes: ‘Many migrants believe that gaining entry to a wealthier country will improve their lives, but insofar as “improvement” would include greater happiness this belief might simply be misguided (...)’. The results of our study support this hypothesis. In one of the three Western European destination countries, the SWB levels of Eastern European migrants are not significantly higher than the SWB levels of similar stayers several years after migration. Further research is needed to identify a possible causal relationship between migration and well-being and to shed light on other relevant micro and macro level factors that determine the long-term impact on migrants’ well-being.

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Appendix

Table A3.1: Results of the endogenous treatment regression; DV: CASP;
potentially endogenous treatment: migration

Linear regression		
<i>DV: CASP</i>		
Age	-0.042***	(0.01)
Female (ref.: male)	-0.508***	(0.14)
Years of education	0.320***	(0.03)
Married, living together (ref.: other marital status)	0.747***	(0.15)
Having children (ref.: no children)	0.489	(0.31)
Employment status: (ref.: retired)		
Employment status: Employed or self-employed	-0.195	(0.21)
Employment status: Unemployed	-2.902***	(0.43)
Employment status: Other	-2.698***	(0.30)
Number of chronic diseases (ref.: no chronic disease)		
Having one chronic disease	-1.010***	(0.17)
Having two or more chronic disease	-2.631***	(0.17)
Country of birth Poland (ref.: Czech Republic)	1.076***	(0.27)
Immigrants in AT/DE/SE (ref.: stayers)	-0.604	(2.23)
Wave fixed effects		yes
<i>Migration Equation</i>		
Age	-0.002	(0.01)
Female (ref.: male)	0.079	(0.08)
Years of education	0.082***	(0.01)
Number of books at the age of 10	0.110**	(0.04)
Country of birth Poland (ref.: Czech Republic)	1.382***	(0.10)
Constant	-3.879***	(0.41)
<i>N</i>		7,009
Wald test of indep. Eqns. ($\rho = 0$): $\chi^2(1) = 1.53$		Prob > $\chi^2 = 0.22$

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; Standard errors in parentheses.

Source: Own calculations based on SHARE release 6.0.0.

Chapter 4

The long-term effect of intra-European migration on cognitive functioning

4.1 Background

Until now, very little is known about the long-term consequences of migration on cognitive abilities. The classical comparison between immigrants and natives in the destination country allows for observing the relative position of migrants within the host society. However, it does not allow for measuring the effect of migration itself. By using stayers in the European origin countries as reference group for migrants who moved to another European country and by applying an instrumental variable approach as well as fixed effects growth curve models, the empirical strategy of this study allows for measuring the effect of migration on cognitive functioning in later life. The results of the analyses show that intra-European migration turns out to have a negative effect on the level of cognitive abilities but that it has no impact on the process of cognitive ageing. The study addresses two developments, both with growing importance for Europe.

The first one is intra-European migration. Intra-European migration and the freedom of movement within Europe have a long tradition (Migration Policy Institute 2017). When Europe was beginning to recover from WWII and experiencing a period of intense economic growth, labor mobility was extensively encouraged. In 1957, the freedom of movement of qualified industrial workers was included in the treaties founding the European Economic Community. After a short interruption of the liberal migration policy caused by the oil crisis in 1973, the free intra-European movement of workers was gradually replaced by the free movement for citizens of EU member states. The signing of the Maastricht Treaty in 1992 finalized this process. In 2016, 19.3 million people of the

more than 500 million inhabitants of the EU member states had been born in a different EU member state than the one in which they were residing (Eurostat 2017). This makes the European Union “(...) *the world’s best research laboratory on legal, transnational migration*” (Migration Policy Institute 2017).

The second important development addressed by this paper is cognitive ageing as one fundamental aspect of the ageing process. Cognitive ability levels are of growing importance especially in ageing societies as they predict individual productivity better than any other observable individual characteristics (Skirbekk et al. 2012). Schaie (1989) has shown that cognitive functioning is relatively stable until the fifth decade of life and that after this period, the decline in cognitive abilities becomes apparent. However, at all ages there is large variation across individuals in the level of cognitive performance. This study raises the question whether intra-European migration and the circumstances associated with it influence the cognitive performance of migrants in later life.

The paper is structured as follows: After giving a brief overview on previous research findings and pointing out existing research gaps, theoretical considerations on the influence of migration on cognitive abilities are outlined. The subsequent section contains information on the database and the analytical sample followed by a description of the methods. After presenting the results, the limitations of the study are briefly discussed. The paper finishes with concluding remarks and an outlook for future research.

4.2 Previous findings and research gap

The existing research on the consequences of migration for cognitive functioning is mainly focused on Latin American immigration to the US. The leading research question in this strand of literature is whether the ‘healthy immigrant effect’ (HME) extends to indicators of cognitive functioning. To answer this question the cognitive performance of immigrants is compared to mainly US-born natives. The results of the different studies are inconclusive. Some studies suggest that the HME extends to cognitive abilities for specific migrant groups. One of the few studies not being focused on immigration to the US is the one by Kopec et al. (2001). Analyzing immigration to Canada, the authors find lower rates of cognitive dysfunction for specific immigrant groups. Their results indicate that language plays an important role: an advantage over Canadian born natives is only detected for non-English speaking Hispanic and African immigrants. Hill

et al. (2012a) discover cognitive advantages for those immigrants to the US who migrated in middle-life (between the age of 20 and 49) concluding that this reflects the unique cognitive demands of migration during this life phase. In another study, Hill et al. (2012b) test whether the cognition trajectories of older Mexican Americans vary according to nativity status, age at migration, and gender. Their results show that the HME extends to cognition indicators especially among older Mexican American men and confirm that gender is an important conditioning factor in the association between immigrant status and cognitive functioning. Analyzing the rate of cognitive decline, Nguyen et al. (2002) find no apparent difference between Mexican immigrants to the US and US-born natives of Mexican descent. Using the same dataset (the Hispanic Established Populations for the Epidemiologic Study of the Elderly) a variety of subsequent studies do not find cognition differences between immigrants and US-born natives neither (Collins et al. 2009; Miranda et al. 2011; Sachs-Ericsson et al. 2009). In contrast to those findings, the results of Haan et al. (2011) suggest that Mexican immigrants to the US may actually have poorer cognitive functioning than their US-born counterparts.

Although the results are pointing to different directions, these previous studies have made significant contributions to the understanding of the cognitive performance of immigrants in relation to natural born citizens. The literature identifies the following factors as important for the association between migration and cognitive functioning: gender, language proximity between origin and destination country, and age at migration. However, existing studies have in common that they compare immigrants to the native reference group in the destination country. Such a research design does not allow for measuring the effect of migration itself. Thus, the first research gap I address with this study is using stayers in the origin country instead of natives in the new destination country as reference group.

To identify the effect of migration on cognitive abilities one has to resolve issues caused by endogeneity. Although endogeneity leads to a bias of results in the usual regression framework, Bollen (2012) points to the concern that many socio-scientific studies usually ignore the problems connected with it. Using individual administrative panel data covering the whole Norwegian male population born in 1932 and 1933, a recent study by Bütikofer and Peri (2016) finds evidence that high levels of cognitive ability are associated with a higher propensity to migrate. Their results indicate that endogeneity is a serious concern that

needs to be addressed methodologically when analyzing the effect of migration on cognition. “*The pervasive endogeneity in decisions surrounding migration requires more advanced techniques, e.g. instrumental variables, which deal with this issue explicitly*” (McKenzie and Sasin 2007: 2).

Existing studies use different variables to instrument for migration depending on available data and the outcome of interest: Natural shocks like the rainfall in Mexican villages (Munshi 2003), economic shocks like the Asian financial crisis in 1997 (Yang 2008), historical factors like state-level migration rates in the 1920s in Mexico (Hildebrandt and McKenzie 2005), community factors like village and household networks in El Salvador (Acosta 2006) and geographical factors like the distance from the New Zealand consulate in Tonga (McKenzie et al. 2010). For the intra-European migration context there is so far no study applying an instrumental variable approach (IV). Therefore, the second main research gap addressed by this paper is a methodological one. To deal with endogeneity I use the exogenous variation in the share of emigrants between European countries and across time as instrument for intra-European migration in the first analytical step.

Additionally, there is so far no study investigating the consequences of intra-European migration for the process of cognitive ageing. Therefore, individual fixed effects models (FE) are applied in the second analytical step to analyze whether the process of cognitive ageing differs between migrants and stayers.

4.3 Theoretical framework

As Glymour and Manly (2008) point out, migrants may differ from non-migrants for three reasons: the people who choose to move may differ from the non-movers (self-selection into migration), the experience of migration itself might have an effect, or the effects of exposure to the receiving community may differ from the effects of exposure to the origin community. Applying a life course perspective for understanding ethnic patterns of cognitive ageing in the US context, the authors stress that early life exposures and environmental conditions throughout life strongly influence cognitive skills in later life. Three different mediators are distinguished for the pathways linking migration and cognition: i) socially patterned mediators like socioeconomic position, group resources and group identity, ii) individual mediators like material conditions, psychosocial stressors, and cognitive engagement and iii) proximal mediators like physical health, health behaviors, and access to medical services (Glymour and Manly 2008).

The implication from the life course perspective is that individual cognitive abilities measured in later life are the result of different aspects of the life course and a combination of both pre- and post-migration life circumstances.

A priori it remains unclear whether migration has a positive or negative effect on cognitive abilities in later life. On the one side, migration could have beneficial consequences due to the need to adapt to a new environment. There is evidence that the human brain changes structurally in response to environmental demands (Mechelli et al. 2004). Functioning in another language is one example for such a change in the environment. The cognitive demands connected to it might have a positive effect on the cognitive functioning of migrants. Previous research has shown that bilingualism improves cognitive outcomes in later life (Bialystok et al. 2004; Kave et al. 2008). In this context, the age of acquisition is a crucial factor as shown by Mechelli et al. (2004). The authors investigate whether there is a relation between brain structure, proficiency in the second language and age at acquisition. Their results indicate that the grey-matter density correlates negatively with the age at acquisition of the second language. An additional factor in this context might be the level of integration. As Glymour and Manly (2008) point out for the US context, due to segregation there are many neighborhoods where the language of the destination country is not needed to communicate and to participate in social life. Both aspects (age of acquisition approximated by the age at migration and level of integration approximated by having the destination country's citizenship) will be addressed by the analyses.

On the other side, acculturative stress associated with migration could lead to reduced cognitive abilities in the long run. Acculturation refers to the changes that groups and individuals undergo when they come into contact with another culture (Williams and Berry 1991). Acculturative stress refers to the stressors that directly result from and have its source in the acculturation process (Berry 1990). It can be a result of minority status, experiences of discrimination and may also follow from 'cultural dissonance' between one's native culture and the destination country's culture (Suarez-Orozco and Qin 2006; Vega and Rumbaut 1991). Over time, the stress associated with difficult immigration and acculturation experiences could undermine cognitive functioning through physiological mechanisms. In this context, primate studies have shown that social hierarchies influence stress hormones and induce hippocampal damage among low status animals (Sapolsky et al. 1990). Chronic psychosocial stress predicts reduced hippocampal cell proliferation – an effect that was greatest in older animals (Simon et al. 2005). Also for humans

overexposure to stress hormones has shown to be sufficient to disrupt or even damage the hippocampus, the region of the brain that regulates memory, orientation, and the rate of cognitive decline (McEwen and Sapolsky, 1995; McEwen, 2002).

A possible effect of migration on cognitive abilities in later life is most probably caused by a combination of different factors. Within the framework of this paper it is not possible to clearly disentangle those factors and mechanisms that cause the effect. The primary purpose of this study is to shed light on which of the two sides is predominant.

4.4 Data and methods

Analytical samples

This study uses all regular panel waves of SHARE release 6.0.0 (waves 1, 2, 4, 5, and 6). The third wave contains data on retrospective life histories and is excluded from the analyses. Apart from excluding wave 3 from both analytical steps, Israel is excluded both as origin and destination country because the study focuses on intra-European migration. Additionally, the origin countries Luxembourg, Estonia and Ireland are not part of the analytical sample because the number of emigrants from these three origin countries is too low as shown in Table A4.2 in the appendix. All in all, the dataset for the first analytical step is composed of 78,037 individuals of whom 74,876 are stayers and 3,161 are migrants (4.1 percent). The sample covers 17 European origin countries: Denmark, Sweden, Germany, Austria, France, Switzerland, the Netherlands, Belgium, the Czech Republic, Poland, Hungary, Slovenia, Croatia, Greece, Italy, Spain, and Portugal. The number of stayers and migrants for each origin country is displayed in Table A4.3 of the appendix. The share of emigrants differs largely between origin countries. It ranges from 0.6 percent in the Greek sample to 18.0 percent in the Portuguese sample.

The sample for the panel model in the second analytical step is restricted to repeated observations. All respondents for whom only one observation is available are excluded from the analysis. Those respondents cannot contribute to the model as changes over time are analyzed. Additionally, Croatian and Hungarian migrants are dropped even if they have repeated observations. The reason behind is that Croatia and Hungary participated only in one wave of SHARE

meaning that the reference group of Croatian and Hungarian stayers cannot have repeated observations. Table A4.4 in the appendix displays the number of excluded stayers and migrants for each origin country. In addition, the sample is reduced by 2,222 observations due to missing values in one of the cognition variables. This leads to a total sample size for the fixed effects model of 49,231 respondents with 139,211 observations. The share of observations from migrants is slightly lower than in the first analytical sample (3.6 percent). This is not necessarily a consequence of higher attrition among migrants as destination and origin countries possibly participated in different waves leading to deviating participation opportunities depending on the origin-destination country combination. Table A4.5 in the appendix lists the number of observations of the second analytical sample separately for stayers and migrants for each of the origin countries.

Measuring cognition

Cognitive functioning in SHARE is measured via four different tasks (Mehrbrod et al. 2017): (i) Numeracy is assessed by nine items. Five items measure subtraction calculation skills and four items measure percentage calculation skills. The result score contains the number of correct answers and ranges from 0 to 5: the higher the score, the better the respondent's mathematical performance. Episodic memory is tested via verbal registration and recall of a list of ten common words. The respondents listen to that list once and get tested twice, the first time immediately after the encoding phase (ii) and the second time after a delay (iii). The total scores of the two tests range from 0 to 10 and correspond to the number of words the respondent is able to recall. For testing (iv) verbal fluency, respondents have to name as many words as possible from a semantic category (e.g. animals) within 60 seconds. The score measures performance via the total number of correct words with a minimum of 0 and a maximum of 100.

The operationalization of cognition follows the strategy of Bonsang and Dohem (2015) who use SHARE data to analyze the effect of retirement on cognitive functioning. After standardizing the different cognitive measures, principal component analysis is used to generate a normally distributed cognition index that ranges from a minimum of -5 to a maximum of +5. Figure A4.1 in the appendix illustrates the distribution of the cognition index used as dependent variable (DV).

Instrumental variable approach

The empirical strategy of this study is divided into two analytical steps. The first step investigates whether there is an effect of migration on the level of cognition in later life restricting the sample to the first interview of each respondent. The method applied is an IV approach using the *ivreg2* command (Baum et al. 2007). The analyses are performed with the statistical software Stata 14.

A common assumption of the regression framework is that the error term is uncorrelated with the explanatory variable or that $COV(x_i, \varepsilon_i) = 0$. An OLS estimator is unbiased and consistent when this assumption holds. Endogeneity leads to the violation of this assumption (Bollen 2012). The causes of endogeneity are omitted variables, selection and reverse causality. Bütikofer and Peri (2016) show that high cognitive ability levels are associated with a higher propensity to migrate. Migrants seem to be positively selected along with cognition leading to a violation of the assumption so that $COV(x_i, \varepsilon_i) \neq 0$.

The IV approach provides a way to nonetheless obtain consistent parameter estimates (Cameron and Trivedi 2005). Two primary conditions have to be fulfilled for applying IV. The first one is the *conditional independence* or *exogeneity assumption*. A variable Z is called an instrument for the regressor x in $y = \beta x + \varepsilon$ if (1) Z is correlated with x and (2) uncorrelated with the error ε . Implicit in (2) is that Z has no direct effect on the outcome y (Bollen 2012). For the analysis at hand this means that the instrument has to be correlated with migration (having migrated or not), and may not be correlated with individual cognitive abilities in later life. The second assumption is the *relevance assumption* or *IV validity*. It requires that there is some association between the instrumental variable and the regressor being instrumented (Cameron and Trivedi 2005). While the second assumption can be tested empirically, the first one has to be justified argumentatively.

The proposed instrument for intra-European migration is the country-specific share of emigrants at a certain time. I argue that the share of emigrants influences the individual probability to migrate – the higher the share of emigrants at a certain time the higher should be the individual probability to migrate – but that it is uncorrelated with individual cognitive abilities in later life (conditional independence assumption). To test whether the instrument is associated sufficiently with migration (relevance assumption), the first stage of the IV model regresses the instrumental variable on the binary variable M_i flagging migrants

and stayers. The equation of the first stage regression testing the relevance of the instrument can be written as:

$$M_i = \alpha_1 I(\text{migshare}_{cy}) + \alpha_2 X_i + \mu_c + \tau_t + \gamma \quad (4.1)$$

If the instrument turns out to be relevant in the first stage, the second stage of the IV model uses the instrumented migration variable \hat{M}_i to test whether migration has an effect on cognitive functioning in later life. The second stage can be written as:

$$COG_i = \beta_1 + \beta_2 \hat{M}_i + \beta_3 X_i + \mu_c + \tau_t + \gamma \quad (4.2)$$

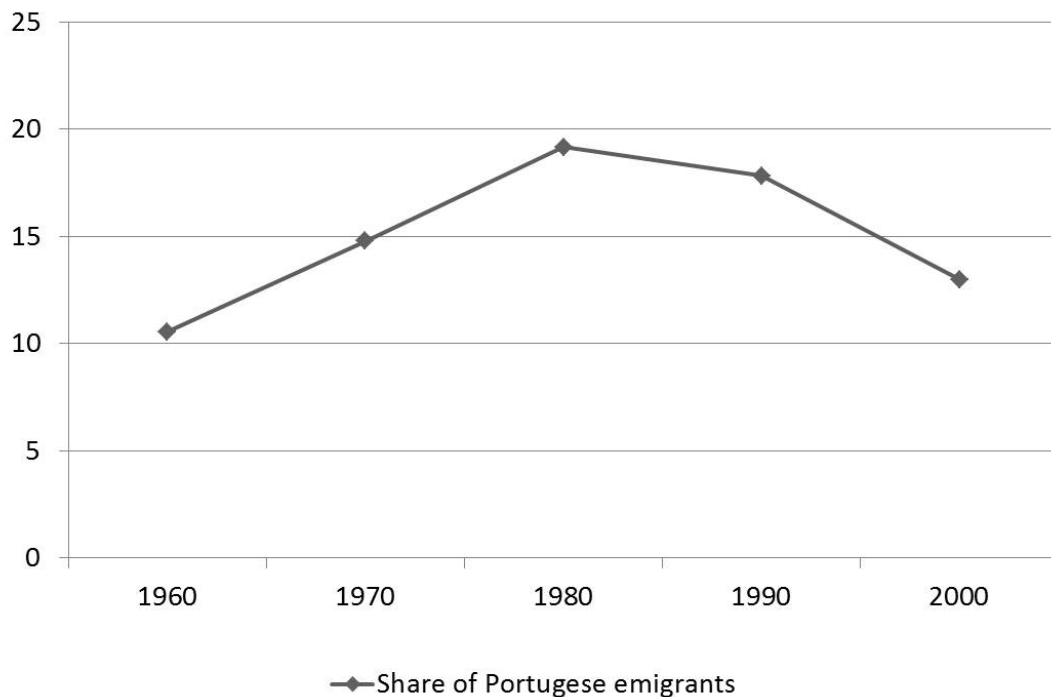
The control variables X_i included in the model are gender, age and years of education. μ_c in the equations (4.1) and (4.2) represents origin country fixed effects and τ_t wave fixed effects as the first interview can be conducted in any of the five SHARE panel waves between 2004 and 2015.

As Deuchert and Huber (2017) point out in their recent paper on control variables in IV estimation, many studies applying IV do not pay enough attention to the time period in which the control variables are measured. *“In particular, there seems to exist a wide spread consensus that it is reasonable to use IV methods in cross sectional data, where outcomes and controls are measured in the same period. This stands in stark contrast with the programme evaluation literature relying on conditional independence of the treatment given observed controls, where it is well acknowledged that credible controls need to be measured prior to treatment assignment”* (Deuchert and Huber 2017: 412). The authors identify three main conditions for the covariates used in IV models: (i) pre-instrument covariates have no direct effect on the outcome and are not associated with unobserved characteristics affecting the outcome, (ii) post-instrument covariates are not confounded by unobservables, and (iii) the instrument does not directly affect any post-instrument variables. Additionally, the full causal effect of interest is only recovered if the treatment does not affect the covariates being controlled for. These conditions restrict possible covariates to a minimum.

Dataset used for generating the instrument

The dataset used for generating the instrument is the *Global Bilateral Migration Database* provided by the World Bank (Özden et al. 2011). It contains global matrices of bilateral migrant in- and outflows for 226 countries spanning from 1960 to 2000 (decennial data). The primary source of the raw data is the *United Nations Populations Division’s Global Migration Database*, a data repository that

Figure 4.1: Share of Portuguese emigrants 1960 - 2000



Source: Own calculations based on World Bank data (2017).

comprises around 3,500 census and population register records (United Nations 2008).

Based on the Global Bilateral Migration Database and the World Population Prospects containing country- and time-specific population numbers (World Bank 2017), the share of emigrants is calculated for each of the 17 SHARE origin countries for the five years corresponding to the five Bilateral Migration Database census rounds between 1960 and 2000. Linear interpolation is applied to fill up the unobserved years between the census rounds and to increase the variation across time. Figure 4.1 illustrates this for the example of Portugal, the European country with the highest share of emigrants.

The country-specific mean age at migration (see Table A4.1 in the appendix) is used for the assignment of values. The mean age at migration is interpreted as the time for ‘being at risk’ for migrating. In the example of Portugal, the mean age at migration in the sample is 25 years. Thus, to each Portuguese respondent the share of Portuguese emigrants of the year in which the respondent was 25 years old is assigned.

Fixed effects model

Apart from selection and reverse causality, unobserved components that might simultaneously affect cognition and the tendency to migrate are another source of endogeneity. Typical examples of such characteristics are genetics or individual preferences that remain unobserved in many surveys. To resolve unobserved heterogeneity, I take advantage of the available panel data structure in SHARE in the second analytical step and apply a fixed effects model (FE).¹³ FE models rule out time-constant unobserved heterogeneity between individuals by measuring the changes within individuals (Brüderl and Ludwig 2014). The model can be written as:

$$\gamma_{it} - \bar{\gamma}_i = (x_{it} - \bar{x}_i) + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad (4.3)$$

γ_{it} represents the value of the cognition index observed for individual i at time t , x_{it} the time-variant independent variables observed for individual i at time t , and ε the error term. As migration is observed before the survey period and is therefore a time-invariant characteristic, an interaction of migration and age is used. Additionally, x_{it} includes the wave of observation. The results are displayed as separate growth curves over age for migrants and stayers.

As migration is observed before the survey period and is therefore a time-invariant characteristic, an interaction of migration and age is used to calculate growth curves separately for migrants and stayers.

4.5 Results

Results of the IV model

On the descriptive level, migrants and stayers in the sample are very similar regarding the control variables. As displayed in Table 4.1, the share of females, the age structure and years of education are almost identical in the two groups. The mean values of the different components of the cognition index are similar between migrants and stayers, too. The two groups are performing equally in the first recall test as well as in the numeracy test. The small difference in the

¹³ In contrast to FE models, random effect models (RE) allow for estimating the effect of time-constant regressors. RE models are more efficient than FE but biased by time-constant unobserved heterogeneity. Testing both types against each other, the Hausman test indicates that FE should be preferred over RE.

Table 4.1: Summary statistics for the IV sample

	Stayers (n = 74,876)		Migrants (n = 3,161)	
	Mean	SD	Mean	SD
Female	0.54	0.50	0.55	0.50
Age	61.6	7.7	62.0	7.8
Years of education	11.0	4.1	11.0	4.9
First recall test [0; 10]	5.4	1.7	5.4	1.7
Delayed recall test [0; 10]	3.9	2.0	4.0	2.1
Numeracy [0; 5]	3.5	1.0	3.5	1.1
Verbal fluency [0; 100]	20.5	7.5	19.5	7.0

Source: Own calculations based on SHARE release 6.0.0.

delayed recall test of 0.1 is statistically insignificant. The only remarkable and statistically significant difference between migrants and stayers is observed in the verbal fluency test. Here, the performance of migrants is significantly lower than the performance of stayers (19.5 compared to 20.5). The lower performance in the verbal fluency test might be influenced by language barriers because for most migrants the interview language is not their mother tongue. For this reason, models excluding the verbal fluency test from the cognition index (henceforth referred to as ‘reduced cognition index’) are calculated, too.

The result of the first stage regression presented in Table 4.2 indicates that the country- and time-specific share of emigrants is a relevant instrument for intra-European migration. It has a highly significant positive effect on having migrated. The tests for weak identification and underidentification also indicate that having migrated is influenced sufficiently by the country- and time-specific share of emigrants.

The second stage of the IV model tests whether migration has an effect on the level of cognition. Model I in Table 4.3 is based on the overall sample. It shows that migration turns out to have a large and highly significant negative effect of -2.4 on cognitive abilities in later life. The direction of the coefficients of the control variables is in accordance with expectations based on previous findings. Women are performing significantly better than men, cognitive abilities decrease with age and increase with additional years of education. Interestingly, the result of the OLS regression shows a positive coefficient for (non-instrumented) migration. Based on the results of Bütikofer and Peri (2016) and on the theoretical concepts on migration outlined in chapter 1, this finding is in accordance with expectations.

Table 4.2: First stage regression of the IV model; DV: having migrated

	DV: Having migrated	
Share of emigrants	0.0073***	(0.0007)
Female	0.0027*	(0.0014)
Age	-0.0002*	(0.0001)
Years of education	0.0009***	(0.0002)
N	78,037	
R-squared (centered)	0.0409	
Anderson underidentification test Chi-sq(1)	98.03***	
Weak identification test (Wald F-statistic)	98.12***	
Weak-instrument-robust inference	14.24**	

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

It indicates that accounting for endogeneity is essential for analyzing the effect of migration on cognition.

The results of Hill et al. (2012b) point to gender differences in the consequences of migration for cognition. Therefore, Table 4.3 additionally contains separate models for men (II) and women (III). The results show effect heterogeneity: With -3.0 the negative effect of migration on cognition is considerably larger for women than it is for men with -2.0. Following the reasoning of Hill et al. (2012b) this gender difference might be related to gender-specific stress associated with migration. The process of migration and acculturation might be especially stressful for women inter alia as result of a lack of control over the migration decision.

To test whether the negative effect of migration is potentially caused by migrants having to perform the verbal fluency test in another language than their mother tongue, the subsequent models exclude the verbal fluency test from the cognition index. Again, a model for the total sample (IV) and two separate models for men (V) and women (VI) are computed as displayed in Table 4.4. The results of model IV suggest that the effect of migration might indeed be connected to migrants not being native speakers in the interview language. When excluding verbal fluency, the effect of migration on cognition decreases from -2.4 to -1.2. A comparison of the R-squared values of model I and model IV indicates that more variance is explained model IV.

Table 4.3: Effect of migration on cognition; total (I), male (II) and female (III)

	I	II	III
Migration	-2.3895*** (0.6802)	-1.9502** (0.6865)	-3.0103** (1.4635)
Female	0.0849*** (0.0096)		
Age	-0.0442*** (0.0007)	-0.0412*** (0.0009)	-0.0466*** (0.0009)
Years of education	0.1133*** (0.0014)	0.1071*** (0.0018)	0.1185*** (0.0022)
N	78,037	35,966	42,071
R-squared (centered)	0.1718	0.1741	0.1419

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

Table 4.4: Effect of migration on cognition (reduced index); total (IV), men (V), and women (VI)

	IV	V	VI
Migration	-1.1614* (0.6066)	-1.1614* (0.6201)	-1.2866 (1.2685)
Female	0.0918*** (0.0085)		
Age	-0.0379*** (0.0006)	-0.0354*** (0.0008)	-0.0399*** (0.0008)
Years of education	0.1133*** (0.0012)	0.0948*** (0.0017)	0.1029*** (0.0019)
N	78,037	35,966	42,071
R-squared (centered)	0.2345	0.1871	0.2178

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

Furthermore, the difference in the effect size between men and women decreases considerably in the models based on the reduced cognition index. The effect of migration for women is no longer significant in model VI. This suggests that the effect heterogeneity found in models II and III might rather be a consequence of different language barriers for male and female migrants than the consequence of gender-specific stress associated with migration.

Table 4.5: Effect of migration on cognition (reduced index); low-skilled job sector (VII) and medium-/ high-skilled job sector (VIII)

	VII	VIII
Migration	-1.2097* (0.6599)	-1.2859 (1.3971)
Female	0.0682*** (0.0125)	0.1343*** (0.0127)
Age	-0.0399*** (0.0008)	-0.0375*** (0.0011)
Years of education	0.0840*** (0.0021)	0.0651*** (0.0017)
N	37,674	33,483
R-squared (centered)	0.1692	0.1137

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

The effect of migration on cognition may also vary according to socioeconomic status as pointed out by Glymour and Manly (2008). In addition to different material conditions and work-related cognitive requirements, the level of acculturative stress may deviate between migrants in a favorable socioeconomic position as opposed to migrants in an unfavorable socioeconomic position. Therefore, the next step runs different models for migrants working in the medium-/high-skilled job sector and migrants working in the low-skilled job sector. The job sector is used as a proxy for the socioeconomic status. The classification of medium-/high-skilled jobs and low-skilled jobs is based on the job title of the current or the preceding job, the latter for retired respondents. Legislators, clerks, managers, technicians, and associate professionals are classified as medium/high-skilled jobs whereas service workers, agricultural and fishery workers, trades workers, and machine operators are classified as jobs in the low skilled sector. On descriptive level, migrants are slightly less employed in the medium/high skilled job sector (52 percent) than stayers (54 percent).

The results in Table 4.5 are based on the reduced cognition index. Migration turns out to have a slightly significant negative effect for migrants (currently or formerly) working in a low-skilled job (model VII) while the effect is negative but insignificant for migrants (formerly) employed in medium-/ high-skilled jobs (model VIII). Nevertheless, the effect size is similar so that the results do not indicate a clear pattern.

Apart from gender and socioeconomic position, the literature names integration and age at migration as important factors being associated with the consequences of migration for cognitive abilities. Of course, integration and age at migration are themselves interrelated. The earlier in life a person moves to another country, the higher should be the probability that someone adapts easier to the new cultural environment. Again, the models presented in Table 4.6 use the reduced cognition index without verbal fluency as dependent variable to exclude a possible effect of language barriers.

Maxwell (2010) emphasizes that the geographic variation of integration outcomes depends on the legal situation of immigrants in the place of destination. According to the author, the possibilities for accessing citizenship play a major role here. Model IX uses citizenship as proxy for integration by measuring in how far the results are affected by excluding migrants who have the citizenship of the new destination country. In total, 55.6 percent of the migrants in the sample have the host country's citizenship. Excluding them reduces the sample size by 1,758 respondents. In accordance with expectations, the negative effect of migration for those not having the citizenship is larger than the effect in model IV based on the total sample (-1.6 instead of -1.2). Assuming that migrants having the citizenship of the destination country are better integrated in the host society leads to the conclusion that the level of integration indeed seems to play a role for the effect size.

Glymour and Manly (2008) point to the importance of age at migration. Age at migration might not only matter due to the age of acquisition of the foreign language (Mechelli et al. 2004). Also the pre- and post-migration experiences, the connectedness to and the identification with cultural habits and norms might differ between persons who migrated in early childhood as opposed to persons who migrated later in life. One additional aspect is that the performance in cognitive tasks is likely to be influenced by educational standards. According to Anstey and Christensen (2000) education is the social exposure mostly linked to cognitive abilities in later life. The effect of migration might differ between people who migrated after finishing school in the origin country as opposed to migrants who at least partly visited school in the new destination country. Therefore, models X and XI test whether age at migration plays a role for the effect size. First, all migrants who migrated before the age of 10 are excluded from the analysis (model X) which leads to a reduction of the sample size by 743 migrants.

Table 4.6: Effect of migration on cognition (reduced index); excluding migrants with citizenship (IX), excluding migrants who migrated before age 10 (X) and before age 16 (XI)

	IX	X	XI
Migration	-1.5875** (0.7642)	-1.6017** (0.7749)	-2.8671** (1.4194)
Female	0.0826*** (0.0087)	0.0942*** (0.0087)	0.0980*** (0.0100)
Age	-0.0388*** (0.0006)	-0.0381*** (0.0006)	-0.0382*** (0.0006)
Years of education	0.0994*** (0.0012)	0.0994*** (0.0012)	0.1003*** (0.0015)
N	76,279	77,294	77,039
R-squared (centered)	0.2134	0.1889	0.1015

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

Model XI excludes all respondents who migrated before the age of 16 reducing the sample additionally by 255 respondents.

Compared to the effect in model IV based on the overall sample, the negative effect of migration is stronger in model X (-1.6) and even larger in model XI (-2.9). These results suggest that age at migration, especially migrating in childhood/youth, matters for the effect of migration on cognition in later life.

In the last step, I test in how far language proximity between origin and destination country plays a role. This is done by excluding those migrants who move to a destination country where potentially the same language is spoken as in the origin country. Therefore, I exclude movers between Austria and Germany, Austria and Switzerland, Germany and Switzerland, France and Switzerland, Italy and Switzerland, Belgium and the Netherlands and Belgium and France. This leads to a reduction of the sample size by 615 migrants.

As bilingualism is supposed to have a positive effect on cognition according to Mechelli et al (2004), it is expected that the negative effect of migration decreases as a consequence of the sample reduction. The results presented in Table 4.7 do not support this hypothesis. The effect in model XII using the overall cognition index is only slightly larger than the effect size in model I. Model XIII based on the reduced cognition index also shows a similar effect size as model IV. This finding is likely to be connected to the fact that the majority of the migrants in SHARE

Table 4.7: Effect of migration on cognition excluding migrants between countries with the same language; DV: whole cognition index (XII) and reduced cognition index (XIII)

	XII	XIII
Migration	-2.4989*** (0.6983)	-1.2372** (0.6265)
Female	0.0792*** (0.0094)	0.0887*** (0.0084)
Age	-0.0445*** (0.0006)	-0.0381*** (0.0006)
Years of education	0.1134*** (0.0013)	0.0995*** (0.0012)
N	77,422	77,422
R-squared (centered)	0.1843	0.2056

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

are observed several years after migration. The influence of language might be different when people are observed shortly after migration.

Results of the FE model

The second analytical step uses the panel data structure of SHARE and tests whether the process of cognitive decline over time differs between migrants and stayers. Again, the summary statistics presented in Table 4.8 show that stayers and migrants are similar regarding the covariates. The share of female respondents, the age structure and years of education are almost equal in the two groups. Like in the cross-sectional sample for the IV model, migrants are performing slightly worse regarding the verbal fluency test. This difference is statistically significant. As outlined previously, this might be connected to the interview language being potentially different from the migrants' mother tongue. However, in contrast to the cross-sectional sample, there is a small but statistically significant difference in the delayed recall test with migrants performing slightly better than stayers. The performance of both groups is identical in the numeracy and the first recall test.

The fixed effects growth curves are presented in Figure 4.2. The difference between migrants and stayers regarding the process of cognitive ageing is modeled via an interaction between migrant status (0 = stayer; 1 = migrant) and age splines.

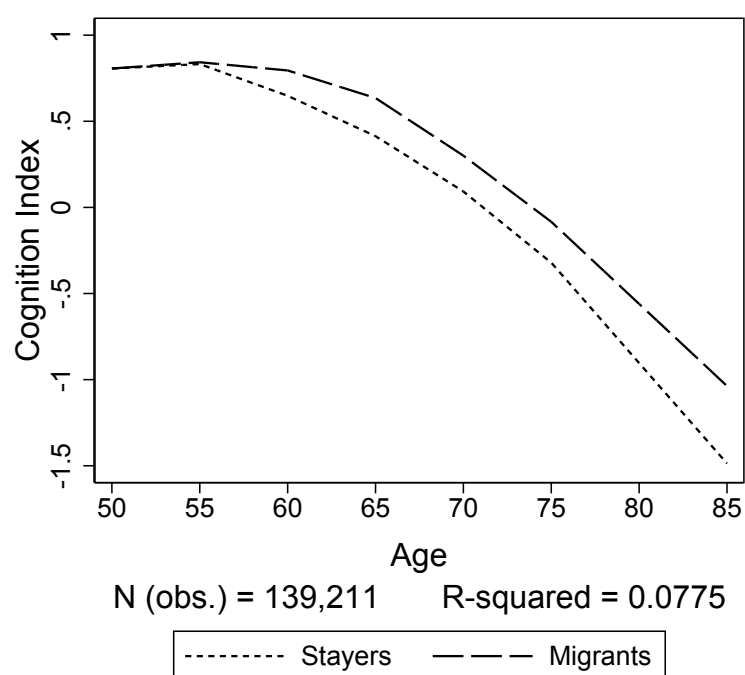
Table 4.8: Summary statistics for the FE sample

	Stayers (n = 134,250)		Migrants (n = 4,961)	
	Mean	SD	Mean	SD
Female	0.55	0.50	0.56	0.50
Age	64.2	7.8	64.4	8.0
Years of education	11.1	4.2	11.0	4.9
First recall test [0; 10]	5.5	1.7	5.5	1.7
Delayed recall test [0; 10]	4.1	2.1	4.3	2.1
Numeracy [0; 5]	4.0	1.2	4.0	1.2
Verbal fluency [0; 100]	21.1	7.5	20.3	7.1

Source: Own calculations based on SHARE release 6.0.0.

The advantage of using age splines is that no assumptions about the functional form are necessary. As the differences in cognition are leveled out at age 50, not the position of the two curves but only the slopes can be interpreted.

Figure 4.2: Cognitive decline over age; FE growth curves for migrants and stayers



Source: Own calculations based on SHARE release 6.0.0.

The slope of the curves for stayers and migrants is slightly but insignificantly different between the age of 55 and 65. From 65 onwards the slopes of the two growth curves are almost identical. A test of statistical significance for the overall curve shows that the difference between migrants and stayers is insignificant ($\text{Prob} > F = 0.2528$). Using the reduced cognition index without verbal fluency leads to a slightly different slope of the growth curve of migrants (see Figure A4.2 in the appendix). However, the deduction remains unchanged: neither the overall model nor in a specific age group the process of cognitive ageing differs statistically significant between migrants and stayers. Running separate models for men and women does not show significant differences neither, nor does the reduction of the sample to migrants with citizenship, migrants who migrated after the age of 10, and those who migrated after the age of 16 (graphs not shown). The finding that cognitive abilities of migrants and stayers decrease in a similar manner is stable across various model specifications.

Robustness checks

In this section I test whether the results are robust against different model specifications. First, the country-specific median age at migration instead of the mean age at migration is used for the assignment of values of the time- and country-specific share of emigrants. The median age at migration for each country of origin is displayed in Table A4.1 of the appendix. The composition of respondents being 'at risk for migration' changes slightly through this modification leading to a smaller number of respondents ($N = 76,023$). The result of the first stage regression stored in Table 4.9 indicates that using the median age at migration leads to a slightly weaker instrument than using the mean age at migration. However, the instrument is still sufficiently relevant.

The result of the second stage is presented in Table 4.10. Model XIV is based on the whole cognition index and model XV on the reduced cognition index. A comparison of the results of models I and IV (which are based on the mean age at migration) with the results of models XIV and XV shows that the effect sizes are similar in both model specifications. The results are robust in this respect.

In a further robustness check I test whether the finding of no significant differences regarding the process of cognitive ageing also holds for group specific growth curves based on a random effects model (RE). Figure 4.3 illustrates that the slope of the growth curves is similar for stayers and migrants,

Table 4.9: First stage regression of the IV model; median age at migration used for generating the instrument

	DV: Having migrated	
Share of emigrants	0.0070***	(0.0007)
Female	0.0028**	(0.0014)
Age	-0.0001	(0.0001)
Years of education	0.0009***	(0.0002)
N	76,023	
R-squared (centered)	0.0408	
Anderson underidentification test Chi-sq(1)	88.27***	
Weak identification test (Wald F-statistic)	88.35***	
Weak-instrument-robust inference	14.94**	

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

too. Neither in one of the age splines nor in the overall model the difference between migrants and stayers is statistically significant.

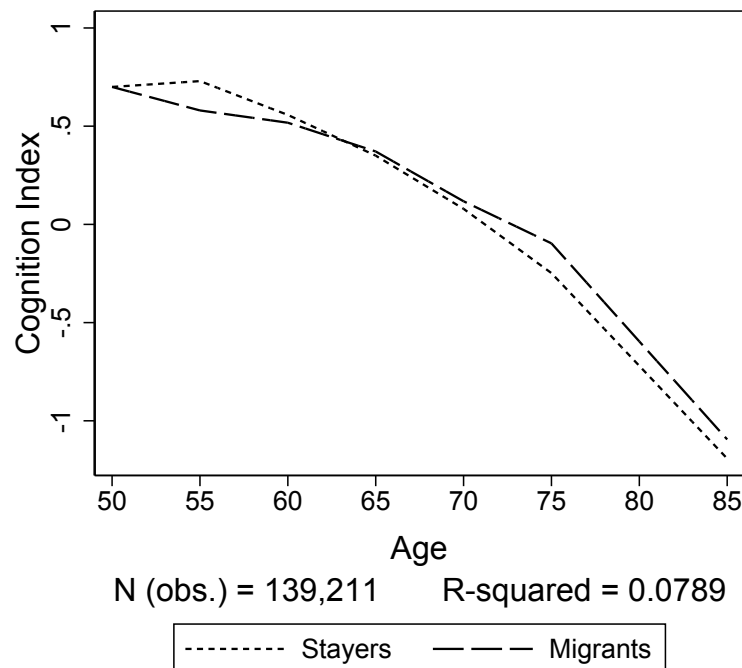
Table 4.10: Second stage regression of the IV model; DV: whole cognition index (XIV) and reduced cognition index (XV); median age at migration used the generating the instrument

	XIV	XV
Migration	-2.5672*** (0.7211)	-1.2051* (0.6374)
Female	0.0890*** (0.0014)	0.0951*** (0.0087)
Age	-0.0368*** (0.0007)	-0.0368*** (0.0006)
Years of education	0.1137*** (0.0002)	0.0996*** (0.0012)
N	76,023	76,023
R-squared (centered)	0.1499	0.1961

Note: Standard errors in parentheses; birth country FE and wave FE included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own calculations based on SHARE release 6.0.0.

Figure 4.3: Cognitive decline over age; RE growth curves for migrants and stayers



Source: Own calculations based on SHARE release 6.0.0.

Limitations

The most frequently used measurement for cognition is the Mini-Mental State Examination (MMSE) as introduced by Folstein et al. (1975). Most of the currently existing literature analyzing the relationship between migration and cognition uses the MMSE index. It can be considered as one limitation of this study that not all areas tested by the MMSE are part of the cognition measurement as available in SHARE. Although the indicators for cognitive functioning in SHARE are not as elaborated and tested as the MMSE, the combination of mathematical, memory and verbal fluency tests can be considered as reliable measurement of cognitive abilities that has been used by different studies, e.g. for investigating the effect of retirement on cognition (Bonsang and Dohem 2015; Mazzonna and Peracchi 2017).

An additional limitation is that re-migration remains unobserved. The role of re-migration should be further investigated by future research as migrants might re-migrate selectively not only with regard to physical health (as outlined by the literature on the healthy migrant effect) but also with regard to cognition. This is a potential source of bias for the results of this study.

Furthermore, the research design applied in this paper does not allow for clearly identifying the mechanisms behind the effect of migration on cognition. A possible positive language effect is likely to be connected to the closeness between the languages spoken in the origin and the destination country. Excluding migration between countries with potentially same languages can be considered as approximation. Nevertheless, the effect of language is not really captured as some languages like Italian and Spanish are very close to each other so that the necessary adjustment is relatively low for migrants between Italy and Spain whereas migration from Eastern Europe to a Central or Northern European country (or vice versa) requires high linguistic adaptations. This argument also holds for cultural proximity between origin and destination country.

Additionally, more research is needed to investigate whether the hypothesis of acculturative stress being the cause of the negative effect can be confirmed or – if not – what other possible mechanisms cause the effect. A first step towards this direction can be made by analyzing the dried blood spot (DBS) data conducted by SHARE during the sixth wave of data collection in twelve different countries. The DBS data will contain various blood markers, among them markers for stress and cognition.¹⁴

4.6 Conclusion

Comparing intra-European migrants to stayers in the respective origin country and using the variation in the share of emigrants between countries and across time as instrument for migration, this study is the first one analyzing the effect of intra-European migration on cognition in later life. The results of the first analytical step indicate that migration turns out to have a negative long-term effect on the level of cognitive abilities. The negative effect is weaker but remains at significant level when excluding the language sensitive verbal fluency test from the analysis. Separate models for men and women show that effect heterogeneity vanishes after excluding verbal fluency from the cognition index pointing to deviating language barriers for male and female migrants. The hypothesis that the negative effect of migration may be stronger for women due to gender specific stress associated with it is not supported by the results. Furthermore, the findings of this study point toward age at migration and having the citizen-

¹⁴ The DBS data are not yet released. Further information is available at: <http://www.share-project.org/special-data-sets/biomarker.html>.

ship of the destination country as factors influencing the effect size. Regarding the process of cognitive decline, fixed effects growth curve models applied in the second analytical step do not show significant differences between migrants and stayers. Cognitive decline seems to be determined by other factors. In this context, previous research has identified mental and physical health conditions as the main risk factors for cognitive decline including depression, diabetes and stroke (Nguyen et al. 2002; Hill et al 2012b).

Further research is needed to investigate possible mechanisms causing the negative level effect of migration. As outlined by Haan et al. (2011), the socioeconomic status might play a crucial role. Migration may modify the socioeconomic lifetime trajectory and lead to heterogeneity of cognitive functioning in later life. Although socioeconomic status is approximated by the job-sector in one of the models, the change in the socioeconomic lifetime trajectory caused by migration is not captured. Additional possible mediators mentioned in the literature are health and health behavior as well as cognitive engagement (Glymour and Manly 2008).

Cognitive ability levels are of growing relevance for the ageing societies of Europe. Learning more about the long-term consequences of central life decisions (such as migration) for cognitive functioning in later life should therefore be regarded as a central task for future research. The study at hand is intended to provide a first contribution.

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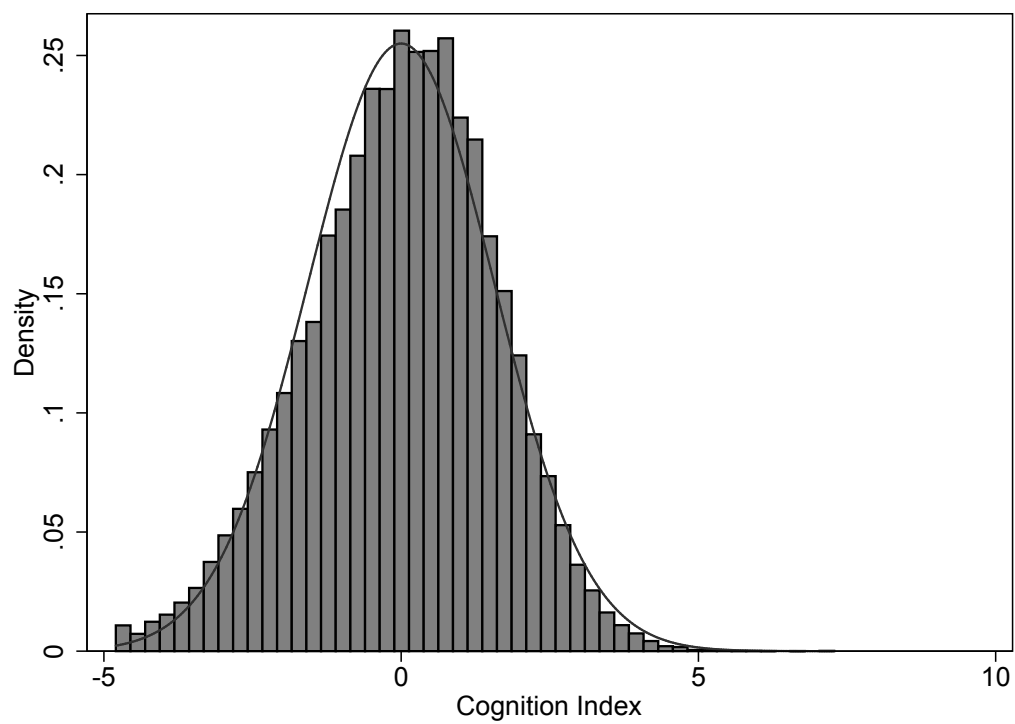
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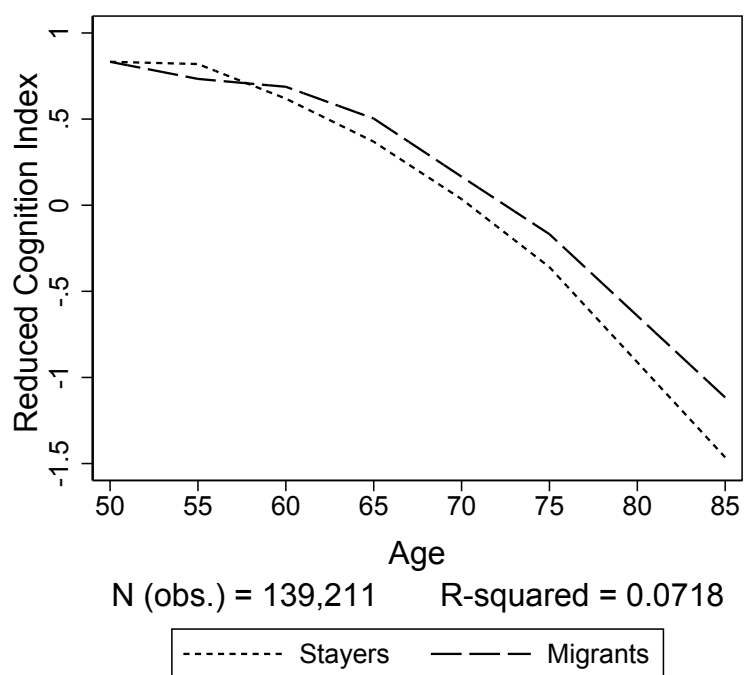
Appendix

Figure A4.1: Distribution of the dependent variable (cognition index)



Source: Own calculations based on SHARE release 6.0.0.

Figure A4.2: Result of the FE growth curve model; DV: reduced cognition index



Source: Own calculations based on SHARE release 6.0.0.

Table A4.1: Mean and median age at migration per origin country

Country of origin	Mean age at migration	Median age at migration
Austria	24.6	23.0
Belgium	29.5	27.0
Croatia	22.6	22.0
Czech Republic	30.1	29.5
Denmark	31.6	31.0
France	26.4	25.0
Germany	28.4	27.0
Greece	23.6	22.5
Hungary	25.3	24.0
Italy	20.4	20.0
Netherlands	30.0	28.5
Poland	31.2	30.0
Portugal	25.0	24.0
Slovenia	20.4	20.0
Spain	17.8	18.0
Sweden	26.8	24.0
Switzerland	36.0	30.0
Total	25.8	24.0

Source: Own calculations based on SHARE release 6.0.0.

Table A4.2: Excluded stayers and migrants in Luxembourg, Estonia, and Ireland

Country of origin	Stayers	Migrants	Share of migrants
Luxembourg	1,334	16	1.2%
Estonia	13,591	28	0.2%
Ireland	963	12	1.2%
Total	15,888	56	0.4%

Source: Own calculations based on SHARE release 6.0.0.

Table A4.3: Stayers and migrants per origin country included in the IV models

Country of origin	Stayers	Migrants	Share of migrants
Austria	4,409	112	2.5%
Belgium	7,325	134	1.8%
Croatia	1,773	198	11.2%
Czech Republic	7,134	155	2.2%
Denmark	4,797	41	0.9%
France	5,316	342	6.4%
Germany	6,247	637	10.2%
Greece	4,485	29	0.6%
Hungary	2,524	58	2.3%
Italy	5,615	415	7.4%
Netherlands	5,143	170	3.3%
Poland	2,498	325	13.0%
Portugal	1,713	308	18.0%
Slovenia	3,410	44	1.3%
Spain	4,306	104	2.4%
Sweden	4,798	38	0.8%
Switzerland	3,383	51	1.5%
Total	74,876	3,161	4.2%

Source: Own calculations based on SHARE release 6.0.0.

Table A4.4: Stayers and migrants per origin country excluded from the FE model

Country of origin	Stayers	Migrants
Austria	774	29
Belgium	2,262	50
Croatia	1,773	204
Czech Republic	2,149	47
Denmark	1,131	12
France	1,409	130
Germany	2,013	203
Greece	2,503	7
Hungary	2,524	58
Italy	2,259	176
Netherlands	2,454	59
Poland	1,034	113
Portugal	445	149
Slovenia	1,471	10
Spain	971	35
Sweden	1,048	7
Switzerland	688	14
Total	26,908	1,303

Source: Own calculations based on SHARE release 6.0.0.

Table A4.5: Stayers and migrants per origin country included in the FE model

Country of origin	Stayers	Migrants	Share of migrants
Austria	10,126	242	2.3%
Belgium	15,867	205	1.3%
Czech Republic	13,502	325	2.4%
Denmark	10,823	80	0.7%
France	11,778	544	4.4%
Germany	10,606	1,232	10.4%
Greece	4,977	60	1.2%
Italy	10,075	620	5.8%
Netherlands	7,553	304	3.9%
Poland	3,913	531	12.0%
Portugal	2,423	364	13.1%
Slovenia	4,856	78	1.6%
Spain	8,892	196	2.2%
Sweden	10,631	81	0.8%
Switzerland	8,228	99	1.2%
Total	134,250	4,961	3.6%

Source: Own calculations based on SHARE release 6.0.0.



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Migration and population ageing belong to the central challenges for the current and future Europe. Since 1985, the number of inhabitants in European countries who were born outside their country of residence has more than doubled. Besides, already by 2020, a quarter of Europeans will be over 60 years old. Both developments will have substantial impacts on numerous aspects of the European society. Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE), this volume investigates one of the intersections between migration and ageing by putting the focus on persons aged 50+ who migrated at some point in their life and now grow old abroad. Until now, little is known about the long-term consequences of migration. In the three studies of his thesis, Stefan Gruber investigates in how far migrants are affected by having migrated with regard to two different outcomes: subjective well-being and cognitive functioning.



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