

Chapter 4

Brain Drain or Brain Circulation?

Economic and Non-Economic Factors Driving the International Migration of German Citizens



Andreas Ette and Nils Witte

4.1 Introduction

Economic disparities between world regions are major drivers of international migration. Challenging this core assumption of migration scholars, every year substantial numbers of migrants emigrate from the economically most highly developed welfare states. How can we understand international migration where economic disparities are absent? The classic canon of migration theories is relatively silent on those forms of international movements that certainly do not constitute their typical field of application (e.g. de Haas et al. 2020; Massey et al. 1993). Whereas the basic mechanisms that initiate and sustain migration flows are well understood, the international movements of people from countries with decent economic opportunities remain puzzling. Demographic aging in highly developed countries and the universal demand for highly skilled workforces underline the political and academic relevance of this subject (cf. Bijak et al. 2008; Shachar 2006). The major aim of this chapter is to analyse the driving factors of international migration from economically highly developed countries. Does the increasing international mobility of the populations in these countries lead to a permanent loss of migrants who are better qualified than the non-mobile population? This would constitute ‘brain drain’—a concept better known from the description of migration flows between developing and developed countries. Originally, however, the term developed in the early 1960s to describe the emigration of British scientists to the USA (Godwin et al. 2009) and in recent years, this term became popular again to describe emigration from industrialised countries (e.g. Burkhauser et al. 2016; Duch et al. 2019; Gibson and McKenzie 2012; Siekierski et al. 2018; Tritah 2008).

Despite a substantial migration volume, the long-term net migration of German citizens is only marginally negative with a yearly net average loss of 27,000 people

A. Ette (✉) · N. Witte
Federal Institute for Population Research, Wiesbaden, Germany
e-mail: andreas.ette@bib.bund.de; nils.witte@bib.bund.de

throughout the past three decades (cf. Ette and Erlinghagen 2021 in this volume). However, if those who leave for good are the best and brightest, even slightly unbalanced net migration could cause substantial economic hazards. Permanent losses of people would tighten the situation on a labour market that is already running out of some wanted skills. According to the analysis of the Federal Employment Agency (BA 2019), there is a shortage of skilled employees in some technical occupations, in construction, health, and nursing professions and a 2019 survey by the German Chamber of Industry and Commerce (DIHK) reports that more than every second company considers skill shortages a serious business hazard (DIHK 2019). The consequences of international German mobility for the German labour market are poorly understood. Relevant studies are based on emigration intentions only (e.g. Samarsky 2020; Uebelmesser 2006), or focus on specific professions (e.g. Pantenburg et al. 2018; Verwiebe et al. 2010; but see Ette and Sauer 2010; OECD 2015b).

This chapter pursues two major aims. First, it comparatively analyses the economic and non-economic factors driving emigration and remigration. It contributes to the brain drain debate by providing individual-level data about the potential determinants of migration and goes beyond simple macro-level descriptions of disparate human capital flows between developing and developed countries (cf. Teney 2019; Williams and Baláz 2005). It does so by building a simple theoretical framework that starts linking otherwise disparate literatures on international and internal migration as well as the field of expatriates and global work experience (e.g. King and Skeldon 2010; Shaffer et al. 2012). Second, it contributes to recent debates by using data from general population surveys. Much of the existing literature on migration from economically highly developed welfare states is overwhelmingly qualitative in nature (e.g. Ryan and Mulholland 2014; Scheibelhofer 2018) or, if using quantitative data, is based on revealed preferences and intentions (e.g. Hadler 2006; Marrow and Klekowski von Koppenfels 2020; but see Kauppinen et al. 2019). Furthermore, the chapter avoids the inappropriate split between high-skilled and low-skilled migration as well as the selective focus on individual professions or specific countries of destination. Instead, it is interested in international migration from Germany in general. The resulting structure of the paper starts with a theoretical discussion of the drivers of emigration and remigration before presenting its analytical strategy and data. The empirical results provide evidence for highly selective international migration flows with respect to economic and non-economic factors but few indications of brain drain in Germany.

4.2 Drivers of Emigration and Remigration

The concept of ‘brain drain’ refers to the permanent or at least long-term international transfer of people and their incorporated human capital. Development economists use this term mainly to describe the negative repercussions of migration flows from less to more developed economies aggravating existing global inequalities. A

more positive scenario of the outcomes of international migration is described by the 'brain circulation' concept where stays abroad enhance migrants' human capital, which is effectively used after they return home. The scenario is one of temporary international migration, not permanent loss of human capital (cf. Docquier and Rapoport 2008; Gaillard and Gaillard 1997; Saxenian 2005). Applying these concepts to an empirical analysis of the international migration of German citizens results in a two-step analysis. First, we analyse the individual non-economic and in particular economic determinants of the decision for emigration to capture potential self-selection of the internationally mobile. Second, we analyse the determinants of the remigration decision along the same dimensions. Whereas insignificant or small effect sizes of the remigration decision are indications of brain circulation, more robust signs of less skilled migrants returning home are indications of brain drain. Testing these propositions, the theoretical framework starts linking existing theories about international and internal migration with studies about expatriates and focuses on five major drivers: expected financial returns, job satisfaction, social capital, mobility capital, and transnational professions. Existing theories about international migration form the blueprint for most theoretical approaches focusing on remigration. The following theoretical framework consequently treats both decisions largely analogously and considers the remigration decision a special case of the emigration decision (cf. Cassarino 2004; Massey and Espinosa 1997).

The basic neoclassical economic model explains emigration decisions as the outcome of cost-benefit calculations by rational actors. A person decides to emigrate if the financial returns in the destination country net of expected costs of migration are greater than returns to staying in the home country. Because migration is interpreted as an individual investment in human capital, individuals take into account that such gains may take some time to materialise and therefore calculate not only immediate but also expected future returns (cf. Sjaastad 1962; Todaro 1969).

A first expectation from this approach is related to the age of individuals. The longer potential migrants are expected to work in the future, the higher potential benefits of migration are. Consequently, younger individuals are more likely to emigrate. Furthermore, the better educated are more likely to emigrate because they are expected to have, on average, higher financial returns from spatial mobility. This positive self-selection with respect to education is supported by better international transferability of academic compared to non-academic degrees. Finally, individuals with higher levels of education are expected to have lower non-economic migration costs, due to, for example, broader friendship networks and a smoother adaptation process in the destination country (e.g. Chiswick 1999; van Dalen and Henkens 2013).

From the perspective of the neoclassical model, remigration decisions are the consequence of failed migration either arising from erroneous cost-benefit calculations from the outset or unexpected circumstances causing migration to not bear fruit (cf. Borjas and Bratsberg 1996; Jasso and Rosenzweig 1988). In the context of international migration from economically highly developed countries, however, previous studies showed that most migrants move on a temporary basis only. They want to acquire new skills—such as language or intercultural skills as well as all sorts of tacit knowledge—or use their stay abroad as a signalling device for employers in

order to gain a competitive edge on the labour market in the country of origin (Baláz et al. 2019; Crossman and Clarke 2010). From this perspective, “return migration is the outcome of an optimal human capital investment plan over the individual’s life-cycle” (Dustmann and Glitz 2011, p. 351). Consequently, the propensity for remigration will also decrease with greater age because the potential benefits of migration, particularly acquiring new skills, can already be reaped after a few years without any need for more permanent stays abroad. Similarly, the better educated are also more likely to return because, on average, they are expected to benefit more from their newly acquired skills on the labour market of their origin country (cf. Stark 2019; van Ham et al. 2001). Overall, we expect a positive relationship between economic returns and international mobility.

H1 Higher levels of expected financial returns increase the propensity for emigration and remigration.

In addition to the expected financial returns, other economic returns might also lead persons to move internationally. Overall employment satisfaction—including job security and work-related well-being—is usually regarded an important trigger of migration. Worries about losing one’s job as well as the actual loss of employment are important drivers of migration. Similarly, previous unemployment and new employment are the most important motivations for changing residence (e.g. Kley 2013; Todaro 1969). There are indications that these findings are less relevant for international migration from economically highly developed countries (Liebau and Schupp 2011). They nevertheless constitute potential drivers for emigration and—in case of difficulties becoming established in the country of destination—for remigration.

A second important element of job satisfaction is the appropriate exploitation of one’s skills. If people are unable to put their full professional potential to use, they likely perceive their job as poorly suited, negatively affecting job satisfaction. Furthermore, the underutilisation of skills reduces the potential financial returns of one’s education (e.g. Hartog 2000; Wu et al. 2015). We define overeducation as a mismatch between actual and required education levels in a given occupation. Most authors analyse overeducation as an integration issue (e.g. Schmidtke 2013; Slack and Jensen 2007). In addition, it drives migration because mobility might help to avoid unfavourable job matches (cf. Melzer and Hinz 2019). Although spatial mobility can be a means of reducing overeducation, the empirical findings on internal as well as international migration are mixed (e.g. Iammarino and Marinelli 2015; Quinn and Rubb 2005). Overeducation is likely to reduce job satisfaction, which, in turn, we expect is a reason for emigration as well as for remigration. Overall, the resulting hypothesis anticipates a negative relationship between job satisfaction and migration propensities.

H2 Lower job satisfaction increases the propensity for emigration and remigration.

The neoclassical economic model basically hints at several non-monetary costs, such as social ties or psychological attributes, which are less likely to cause

emigration decisions. The new economics of migration theory in particular stressed that migration decisions are taken not by individuals but within the household context and highlighted social capital considerations as important non-economic drivers of emigration (cf. Mincer 1978; Stark and Bloom 1985). Empirically, the existence of a spouse or children in the country of origin reduces the propensity for emigration because it basically raises the migration costs. Strong familial ties and responsibilities are also highlighted by theories about global work experience, arguing that they reduce the propensity for an expatriate assignment (e.g. Shaffer et al. 2012; Tharenou 2008). With respect to remigration decisions, families who moved abroad and now cohabit in the destination country might reverse this logic. The existence of spouse and children increase social integration in the destination country and thus reduce the propensity to remigrate. On the other hand, parents might want their children to grow up in the country of origin or at least to receive substantial parts of their education at home, which would increase the likelihood for remigration (cf. Bivand Erdal and Ezzati 2015; Dustmann 2003). Outside the household and family context, the existence of more social capital in the origin country, such as stronger embeddedness in social networks, reduces the likelihood for emigration but increases the propensity for remigration. Physical relocation would deprive migrants of their usual networks and induce social costs of migration (cf. Haug 2008; Huinink and Kley 2008).

H3 Higher levels of social capital in the origin country decrease the propensity of emigration but increase the propensity for remigration.

Whereas social capital might hinder international migration, mobility capital increases the propensity for emigration. Based on the literature, we refer to mobility capital as the sum of experiences and skills that facilitate international mobility, such as foreign language skills, the willingness to take risks, or the ability to establish new social contacts (e.g. Kaufmann et al. 2004; Schäfer 2020). In addition, mobility capital can include social support from relatives and friends at possible destinations providing information and facilitating the movement (e.g. Epstein 2008; Haug 2008). Empirical research regularly demonstrates that former mobility is of particular relevance for later migration in the context of graduate mobility as well as for expatriates (e.g. Andresen et al. 2015; Haussen and Übelmesser 2018). A different form of mobility experience is provided by “family migration capital” (Ivlevs and King 2012). It refers to the intergenerational transmission of all sorts of biographical migration experienced by the parents and passed on to their children also increasing emigration propensities. Also with respect to the remigration decision, prior stays abroad increase the likelihood of leaving the destination country again because they indicate a more mobile lifestyle. In contrast, previous migration experiences as an immigrant or as a child of immigrant parents might fundamentally change this reasoning. In the case of emigration to the country of birth, or that of the parents, remigration is less likely (e.g. Kilinç and King 2017; Massey and Redstone Akresh 2006).

H4 Higher mobility capital increases the propensity of emigration and remigration.

The hypotheses so far all highlight drivers of migration at the micro-level of the individual calculating the pros and cons of moving and returning. A macro-theoretical approach differentiates between different segments of the labour market and the requirements of the economy to explain migration decisions (Doeringer and Piore 1971). Its basic idea is that the contemporary highly developed global economy structurally needs a specific mobile workforce in the secondary, low-paid sector, which explains the international migration of low-skilled migrants. The global economy's demand for highly skilled labour and the flourishing research on transnational or global professions also underlines this phenomenon (e.g. Fourcade 2006; Harrington and Seabrooke 2020). Although there is no generally accepted typology of such transnational professions, the literature has come up with specific case studies and typologies highlighting some professions as more likely cases than others. Within the highly skilled category of migrants, Mahroum (2000), for example, highlights managers and executives, engineers and technicians, academics and scientists, as well as entrepreneurs as most likely cases for transnational professions. Being employed in one of these transnational professions increases the propensity for emigration and remigration (for an overview of all hypotheses see Table 4.1).

H5 Being employed in a transnational profession increases the propensity for emigration and remigration.

4.3 Analytical Strategy and Operationalisation of Theoretical Constructs

The analysis of actual emigration and remigration processes poses high demands on empirical data. Ideally, emigration would be analysed on the basis of a probability sample of the German resident population that includes information about a sufficient number of German emigrants. In the real world, the information about emigration is either absent of most data or the number of emigrants within existing studies does not allow sufficiently detailed analyses (cf. Schupp et al. 2005). The absence of such data was a major motivation for the establishment of the German Emigration

Table 4.1 Hypotheses on emigration and remigration decisions of international migrants from economically highly developed welfare states

	Emigration	Remigration
H1 Financial returns	+	+
H2 Job satisfaction	-	-
H3 Social capital	-	+
H4 Mobility capital	+	+/-
H5 Transnational profession	+	+

Source: Authors' presentation

and Remigration Panel Study (GERPS). From a methodological perspective, GERPS oversamples the internationally mobile population and provides data representative of German citizens who moved abroad in the years 2017 and 2018. In combination with the Socio-Economic Panel (SOEP), which provides information about the German resident population, this is an almost ideal basis for empirically modelling emigration decisions.

Consequently, our analysis of emigration decisions is based on pooled GERPS and SOEP data. The available information refers to the current living situation of non-migrants in the year 2017 based on SOEP as well as retrospective information about the living situation of the internationally mobile population 3 months before emigration based on GERPS. Furthermore, the analytical sample is restricted to German citizens between 19 and 70 years of age who emigrated no more than 3 years before the time of the interview (cf. Ette et al. 2021 in this volume). For the estimation of emigration probability, the dependent variable is defined as “1” if the person lived abroad at the time of the GERPS survey (‘emigrants’). The dependent variable takes the value “0” if the person is part of the SOEP sample (‘non-migrants’) (see Fig. 4.1 for an overview of the analytical strategy).

The analysis of the remigration decision would, ideally, refer to the German population currently living abroad—irrespective of the duration of stay in their countries of destination—combined with information about a sufficient number of remigrants who recently returned to Germany. Although some statistical information about diaspora populations are available (e.g. OECD 2015a), they provide at best rough estimates of basic socio-demographic information and a probability-based sample of this scattered population is rather unlikely. In absence of such data, GERPS provides a representative sample of German remigrants who returned during the years 2017 and 2018. The analyses of the remigration decisions are based on pooled data from the first wave of GERPS including the sample of German emigrants and remigrants. The available information refers to the current living

Emigration	Remigration
<p>Probability sample of the German resident population</p> <p>“0” Non-migrants in Germany Information about current living situation in Germany of non-migrated respondents in SOEP</p> <p>“1” Recent German Emigrants Retrospective information of emigrated respondents in GERPS about their living situation in Germany three months before emigration</p>	<p>Probability sample of the German population abroad</p> <p>“0” German Emigrants living abroad Information about current living situation abroad of emigrated respondents in GERPS</p> <p>“1” Recent German Remigrants Retrospective information of remigrated respondents in GERPS about their living situation abroad three months before remigration</p>

Fig. 4.1 Analytical strategy modelling emigration and remigration of internationally mobile German citizens. (Source: Authors’ presentation)

situation of emigrants at the time of the first survey wave as well as retrospective information about the living situation of remigrants 3 months before returning to Germany, when they still lived abroad. Although recent emigrants surveyed in GERPS are not representative of the complete German population living abroad—particularly because they have only been in their destination countries for a relatively short time—the data is applied as an approximation of this population for the following analyses. In line with the procedure on the emigration decision, the analytical sample is restricted again to German citizens in the same age range. For the estimation of remigration probability, the dependent variable is defined as “1” if the person lived in Germany at the time of the GERPS survey (‘remigrants’) and “0” if the person was living abroad at the time of the first wave GERPS survey (‘emigrants’).

The two remaining samples include 16,470 individuals for the analysis of the emigration decision (non-migrants: 13,053; emigrants: 3417) and 8754 individuals for the analysis of the remigration decision (emigrants: 3377; remigrants: 5377). Applying the theoretical approach to analyse the economic and non-economic drivers of international movements of German citizens, a first step focuses on all respondents, irrespective of their current labour force status (‘complete sample’). In a second step, a more elaborate theoretical model (‘employed sample’) focuses only on those respondents who are active in the labour market (see Table 4.2). Since the dependent variable is binary (“0” non-migration, “1” migration), separate binary logistic regressions are estimated for the emigration and remigration decision. To ease interpretation and comparability of different models (cf. Best and Wolf 2015), average marginal effects (AME) are provided in addition to logits. The AME expresses the average influence of a model variable over all observations—given their characteristics—on the probability of the outcome $P(y = 1 | x)$.

The theoretical framework is operationalised by several covariates including gender, age, marital status, presence of minor children in the household, migration background, number of close friends, education, (previous) stays abroad, unemployment status, labour income, occupational sector, and overeducation. The first hypothesis on financial returns is operationalised by age as a continuous and centred variable. The information is variable over time and derived from year of birth, year of migration, and year of the interview. The educational level is measured in years following the procedure by Zielonka and Pelz (2015) and considered time constant. Because human capital also includes skills and tacit knowledge unmeasured by educational credentials (e.g. Lulle et al. 2019), the monthly net labour income is included as a measure to account for unobserved heterogeneity. It is a categorical variable (tertiles) available for the employed sample only. For an overview of the distribution of all variables for all four groups used to model the emigration and remigration decision see Table 4.2.

Job satisfaction is operationalised by two dummy variables with the first accounting for unemployment status and the second for overeducation. The second indicates the match between formal education and occupational skill requirements. Its construction follows the “realised matches approach” (cf. Boll et al. 2016) with individuals being categorised as overeducated if their educational level measured in

Table 4.2 Means of independent variables by sample

	Emigration decision		Remigration decision	
	Non-migrants	Emigrants (before migration)	Emigrants (after migration)	Remigrants (before migration)
Women	56%	51%	51%	50%
Age (mean)	48.3	34.7	35.4	36.3
Years of education (mean) ^a	13.9	16.5	16.5	16.2
Married	62%	30%	36%	34%
Children in household	43%	15%	18%	21%
Close friends in Germany ^a	16%	31%	31%	32%
(Previous) stays abroad ^a	12%	65%	65%	64%
Migration background ^a	11%	26%	26%	30%
Unemployed	4%	4%	2%	2%
<i>N</i> (complete sample)	13,053	3417	3377	5377
Monthly net labour income				
First tertile	32%	13%	30%	36%
Second tertile	35%	30%	34%	33%
Third tertile	32%	57%	36%	32%
Overeducated	21%	13%	57%	53%
Occupational sector				
Production of goods	30%	29%	13%	14%
Personal services	32%	42%	29%	28%
Business admin.	5%	11%	42%	45%
IT sector and nat. Sciences	12%	4%	13%	8%
Commercial services	16%	51%	4%	5%
<i>N</i> (employed sample)	8955	2069	2175	2765

Descriptive statistics in the first part of the table are based on the model including all participants ('complete sample'). The second part of the table refers only to the 'employed sample' and presents only the variables used in the more detailed analyses. Sources: GERPSw1, SOEP2017; authors' calculation

^aTime constant variables

years of education is more than one standard deviation above the average education for a particular occupational segment (see also Verdugo and Verdugo 1989, p. 632).

Three variables account for social capital. The existence of a partner is measured by a dummy variable indicating whether the individual is married (including registered same sex partnerships but excluding separated partners) or not. An additional

variable provides information about the presence of children below the age of 18 in the household. Finally, the number of close friends relies on the following question: “What would you say: How many friends do you have?” A dummy variable indicates whether individuals have more or less than six close friends in Germany. We include information about the current living situation—on average 12 months after the migration event—because retrospective measures of the number of friends are unavailable.

Mobility capital is operationalised by two different variables with the first providing binary coded information about international migration experiences. Non-migrants from the SOEP sample were asked during the 2014 survey, “Have you ever lived abroad for more than 3 months for professional or personal reasons?” An adjusted question was also included in the GERPS questionnaires to inquire about previous stays abroad. We include a dummy variable that indicates (previous) stays abroad. Furthermore, family migration capital is measured by the concept of migration background. It is based on the information about the respondents’ country of birth as well as their parents’ countries of birth and covers first and second-generation migrants.

Finally, we measure employment in a transnational profession in terms of the occupational sector. Our measure is based on the classification of occupations (KldB2010) and differentiates between occupations in the production of goods, occupations in personal services, occupations in business administration and other business related services, service occupations in the IT sector and the natural sciences, and other occupations in commercial services.

4.4 Disparities Between Drivers of Emigration and Remigration

We estimate two separate sets of models to test the applicability of brain drain and brain circulation concepts to international migration from Germany. The first set of models estimates the propensity of emigration vs. non-migration (‘emigration decision’) whereas the second set estimates the propensity of remigration vs. emigration (‘remigration decision’). Focusing on the emigration decision first, there are obvious differences between the living situation of emigrants (before they left Germany) and non-migrants. Accordingly, test statistics of the models shown in Table 4.3 indicate a good model fit documented by a high McFadden’s Pseudo R^2 .

The results of the logistic regression document that women have an overall lower probability for emigration than men. With respect to the first hypothesis, the findings are in line with the theoretical expectations on financial returns (H1). The assumption of positive self-selection of emigrants along human capital characteristics is affirmed for the population in general but also if we focus only on the economically active population. The probability of emigration decreases with age—an effect that becomes even stronger for people of higher ages. Similarly, individuals with higher educational credentials are more likely to emigrate than those with

lower ones. The average marginal effect shows that persons with an academic degree have a significantly higher probability of emigration than those with basic educational qualifications. The effect of labour income supports this finding and

Table 4.3 Coefficients and average marginal effects of logistic regressions on emigration

	Complete sample		Employed sample	
	Logits	AME	Logits	AME
Women (ref. men)	-0.264*** (-4.83)	-0.022*** (-4.83)	-0.285*** (-3.80)	-0.023*** (-3.80)
Age	-0.091*** (-28.16)	-0.006*** (-27.59)	-0.101*** (-20.71)	-0.006*** (-21.81)
Age ²	-0.001*** (-6.40)		-0.002*** (-6.10)	
Education	0.308*** (25.57)	0.025*** (27.56)	0.185*** (8.44)	0.015*** (8.52)
Partner (ref. none)	-0.177** (-2.60)	-0.015** (-2.58)	-0.330*** (-4.05)	-0.027*** (-4.00)
Minor children (ref. none)	-1.787*** (-24.09)	-0.153*** (-25.19)	-1.769*** (-19.44)	-0.147*** (-20.25)
Many close friends (ref. few)	0.601*** (9.47)	0.052*** (9.03)	0.665*** (8.58)	0.057*** (8.10)
Stays abroad (ref. none)	1.981*** (33.36)	0.216*** (28.78)	2.004*** (26.88)	0.213*** (23.27)
Migration background (ref. none)	0.544*** (7.80)	0.047*** (7.40)	0.486*** (5.49)	0.041*** (5.21)
Unemployed	0.366** (2.65)	0.031* (2.54)		
Net labour income (ref. second tertile)				
First tertile			-0.208* (-2.02)	-0.015* (-2.04)
Third tertile			0.633*** (7.54)	0.053*** (7.53)
Overeducation			0.236* (2.36)	0.019* (2.29)
Occupational sector (ref. business administration)				
Production of goods			-0.580*** (-5.60)	-0.047*** (-5.76)
Personal services			-0.284** (-3.14)	-0.024** (-3.16)
IT/natural sciences			-0.013 (-0.10)	-0.001 (-0.10)
Commercial services			-0.707*** (-4.66)	-0.056*** (-4.99)
Constant	-6.491*** (-32.37)		-4.714*** (-14.52)	
Observations	16,470		11,024	
Pseudo R ² Adj. Pseudo R ²	0.467 0.465		0.449 0.444	

z statistics in parentheses. Sources: GERPSw1, SOEP2017

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

documents that the highly skilled are those who are emigrating. The descriptive findings showed that 57% of emigrants belong to the top tertile of the income distribution compared to a third among non-migrants.

Multivariate findings also support our theoretical assumptions about job satisfaction (H2). In contrast to previous analyses, being unemployed increases the probability of emigration by about 3 percentage points. Focusing on the economically active sample only, overeducation-although statistically significant at the 95% level only-is also a driver of emigration. Those with a better match between their educational level and their occupation are correspondingly less likely to move.

The findings on social capital as a driver of emigration are mixed (H3). In line with our expectations, having a partner reduces the probability of emigration but only by 1.5 percentage points. The effects of minor children in the household are more pronounced. The existence of children reduces the likelihood of emigration on average by 15 percentage points. Other forms of social capital are measured by the number of close friends. The descriptive findings show that the percentage of emigrants with a higher number of close friends in Germany is twice as large as among non-migrants. Multivariate findings corroborate these descriptive distributions, contradicting our expectation that social ties in the residence country decrease international mobility.

Mobility capital-either acquired through intergenerational transmission from parental immigration experiences or through previous temporary stays abroad-is a highly relevant predictor of emigration (H4). German citizens with migration backgrounds are on average 4.7 percentage points more likely to emigrate than those without biographical migration experiences. Furthermore, persons with previous temporary stays abroad are even 22 percentage points more likely to emigrate.

Finally, employment in occupational sectors that are closely related to transnational professions is associated with a higher likelihood of emigration (H5). Business administration, information technologies, and natural sciences are potential drivers of emigration, whereas employment in the other occupational sectors reduces the probability of international mobility.

The descriptive statistics presented in Table 4.2 indicate that there are few socioeconomic differences between the German population living abroad and recent remigrants. The multivariate models presented in Table 4.4 lend further support to this finding and resulting fit statistics are comparatively poor. This provides initial evidence that self-selection is of reduced relevance for the remigration decision. The emigrating population matches the remigrating population in many respects, contradicting the brain drain assumption.

The models estimating the remigration decision reveal hardly any gender differences. Multivariate results partly support our theoretical expectations on financial returns. In line with the first hypothesis (H1), age is not a significant driver of the remigration decision of the internationally mobile population. Remigrants mirror the age structure of the population living abroad, supporting the brain circulation assumption. However, the descriptive findings as well as the results of the logistic regression contradict our hypothesis on education and income. Although the German population living abroad as well as recent remigrants show a high educational level on average, higher formal skills as well as higher income are negatively associated

Table 4.4 Coefficients and average marginal effects of logistic regressions on remigration

	Complete sample		Employed sample	
	Logits	AME	Logits	AME
Women (ref. men)	-0.040 (-0.89)	-0.009 (-0.89)	-0.100 (-1.58)	-0.023 (-1.58)
Age	0.002 (0.67)	0.000 (0.44)	0.043*** (9.24)	0.010*** (9.58)
Age ²	0.000* (2.32)		-0.001** (-2.98)	
Education	-0.056*** (-5.11)	-0.013*** (-5.14)	-0.065** (-3.00)	-0.015** (-3.01)
Partner (ref. none)	-0.275*** (-4.87)	-0.065*** (-4.86)	-0.004 (-0.06)	-0.001 (-0.06)
Minor children (ref. none)	0.403*** (6.06)	0.091*** (6.34)	0.349*** (4.08)	0.081*** (4.14)
Many close friends (ref. few)	0.131** (2.72)	0.030** (2.74)	0.130* (2.01)	0.030* (2.02)
Stays abroad (ref. none)	-0.018 (-0.37)	-0.004 (-0.37)	0.007 (0.11)	0.002 (0.11)
Migration background (ref. none)	0.202*** (3.99)	0.047*** (4.04)	0.137* (1.97)	0.032* (1.98)
Unemployed	0.000 (0.00)	0.000 (0.00)		
Net labour income (ref. second tertile)				
First tertile			0.281*** (3.74)	0.065*** (3.76)
Third tertile			-0.255*** (-3.44)	-0.060*** (-3.46)
Overeducation			0.080 (0.92)	0.019 (0.92)
Occupational sector (ref. business administration)				
Production of goods			-0.130 (-1.39)	-0.030 (-1.39)
Personal services			-0.068 (-0.84)	-0.016 (-0.84)
IT/natural sciences			-0.547*** (-5.23)	-0.130*** (-5.26)
Commercial services			0.094 (0.61)	0.022 (0.61)
Constant	1.287*** (6.85)		1.314*** (3.86)	
Observations	8754		4940	
Pseudo R ² Adj. Pseudo R ²	0.009 0.006		0.038 0.030	

z statistics in parentheses; Sources: GERPSw1, SOEP2017

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

with remigration decisions. Similarly, higher net monthly income decreases the likelihood of return by 6 percentage points and increases it by roughly the same size for individuals in the lower income tertile. Both findings support the brain drain

assumption and question the hypothesis that anticipates higher financial returns for temporary stays abroad.

Other economic returns are of little relevance for the remigration decision. Neither descriptively nor on the basis of the multivariate analyses does being unemployed increase the propensity of remigration (although results have to be interpreted carefully because of small case numbers). Similarly, overeducation has no significant impact on remigration. Whereas the emigration decision is driven by job dissatisfaction, the remigration decision is rather unrelated to the employment conditions abroad (H2).

The empirical results about the impact of social capital and family ties provide a mixed picture. Whereas having a partner reduces the propensity for remigration, minor children in the household increase the likelihood of return. This is potentially explained by parents' interest in the German educational and childcare system. The empirical results on other forms of social capital outside the family are in line with expectations: More close friends in Germany make remigration more likely—although the effect is small at only 3 percentage points (H3).

With respect to mobility capital, again, few differences exist between the German population living abroad and recent remigrants. Approximately two-thirds of all internationally mobile people had migration experiences before their present stay abroad. These results lend support to the brain circulation concept, presenting international migrants as an overall highly mobile population with a predominant interest in temporary migration. Against theoretical expectations, this also includes family migration capital because having a migration background increases rather than decreases the propensity for remigration (H4).

Finally, employment in transnational professions shows marginal effects on the remigration decision. With one exception—persons working in the IT and natural science sectors—all other occupations have no significant impact on returning home. Descriptive analyses demonstrate a rather balanced distribution of emigrants and remigrants along many professions, affirming the brain circulation assumption. Negative migration balances exist, however, for occupations in computer science and information technologies. Along our assumptions of the brain drain concept, employment in this sector significantly decreases the probability of return (H5).

4.5 Conclusions

The aim of this chapter was to analyse the driving economic and non-economic factors of international migration from economically highly developed welfare states. Based on a simple theoretical framework linking largely disparate literatures on international and internal migration as well as the field of expatriates, it analysed the international mobility of German citizens. The empirical results demonstrate that emigration from economically highly developed welfare states is a highly selective process. The framework focusing on expected financial returns, job satisfaction, social capital, mobility capital, and the employment in specific occupational sectors

explains much of the variance and sheds light on the underlying decision-making process. It presents emigration as a path-dependent process with previous mobility experiences entailing additional episodes across the life course as well as the importance of individual educational and employment conditions causing people to move. Future analyses should continue to disentangle this decision-making process. Our results suggest more fine-grained analyses attaching greater emphasis to different transition processes along the life course, the individual evaluation of employment conditions, and gender-specific analyses to differentiate intra-familial dynamics.

The theoretical equation of remigration and emigration that we proposed is only partly supported by our empirical results. Basically, remigration is a far less selective process than emigration and the economic and non-economic drivers analysed in this chapter hardly account for the great individual variability of international migration processes. Consequently, it is of even greater importance to deepen the theoretical and empirical understanding of remigration decision-making processes. Substantially, the chapter adds new details to the discussion about potential brain drain in Germany. The results show that the international migration of German citizens is best understood along the brain circulation concept. Emigration of Germans is mostly temporary and emigrants are similar to remigrants along many theoretical dimensions. Nevertheless, some indications for a potential loss of human capital through international migration do exist, adding to existing evidence (e.g. OECD 2015b). These include return migrants' lower educational levels, lower net income, and employment in specific occupational sectors. In particular the longitudinal design of the German Emigration and Remigration Panel Study (GERPS) will help to substantiate these findings and to better understand the sources of potential imbalances.

Setting the results on the human capital balances of German international migrants into the context of Germany's overall international migration volume—including the mobility of German as well as non-German citizens—makes concerns of brain drain seem exaggerated. The volume of immigration and the proportion of highly qualified immigrants during recent decades (cf. Seibert and Wapler 2020) presents international migration as a highly positive experience, at least from a human capital and labour market perspective. The political and public debate about emigration from Germany is well advised to focus less on a potential loss of human capital. Instead, the individual consequences of international mobility—for German as well as non-German citizens—should take up more space in these debates. The chapters in this volume hopefully contribute to these debates by offering new information about the economic and non-economic returns of international migration across individual life courses.

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