Economic Impact and Determinants of Migration and Trade in Germany

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Contents

1 Introduction

1.1 Motivation and structure of the thesis

Trade and factor mobility has always been an important issue in economics. Many of the main findings first emerged in this field. David Hume's essay "Of Money, Of Interest & Of the Balance of Trade" (1752) is often named as the first economic approach. On the one hand, international economy usually deals with the trade of goods. On the other hand, factor mobility (migration, the movement of capital or other factors of production) is also an important but different issue. A country with a comparatively higher amount of capital may import labor-intensive goods or employ migrant workers. The general result may be the same. However, major differences can be expected in the institutional and political contexts and in the resulting effects (Krugman and Obstfeld 2009).

In the economic doctrine there is broad consensus that the regional exchange of factors or commodities improves the welfare or economic situation of the trading partners. Theoretical approaches such as the Ricardian model have been established to show how gains can be realized. Other models such as the Heckscher-Ohlin model (Heckscher 1919; Ohlin 1933, 1924) and its extensions by Samuelson (1948, 1949) and Mundell (1957) display positive effects due to reducing disparities in prices of goods and factors. In addition, Mundell (1961) and others point out that domestic migration within a country can function as an adjustment mechanism, also influencing regional labor market disparities (see Puhani 2001).

Since the emergence of the modern nation states, countries have been trying to protect their economy from international competition. The most consistent mission of international economics has been to criticize protectionism and to advocate liberalization. Besides general agreements such as the GATT and later the WTO, numerous bilateral agreements have been made between nations all over the world to remove trade barriers. Furthermore, negotiations are still taking place, e.g. between Europe and the U.S. on a 'Transatlantic Trade and Investment Partnership'. Barriers for immigration between countries are usually much

higher than restrictions to the trade of goods. However, liberalization has been realized here as well. The European Union agreed on the free movement of EU workers between member states. There are also bilateral agreements e.g. between the EU and Switzerland. This particular agreement is limited at this point of time due to the results of a Swiss referendum (with an approval of 50.3%) against large-scale immigration in February 2014.

Besides the positive attitude towards factor mobility and trade, there has also been a lot of critique. The effect of migration is an often-discussed issue. On the one hand, modern approaches emphasize that regional labor market disparities may not decrease due to interregional migration but may even increase. On the other hand, following traditional approaches, it is often argued that migration worsens the employment and earning circumstances of the destination region. As early as 1964, Samuelson showed in his textbook model of a competitive labor market that by increasing labor supply migration will result in lower wages. Whether the employment opportunities of native workers are harmed or improved by migration has been analyzed and discussed ever since. However, empirical evidence is mixed. Arguments therefore often seem to be politically motivated. Borjas (2003) points out the historical context of Samuelson's assertion: -"He was writing just before the enactment of the 1965 Amendments to the Immigration and Nationality Act, the major policy shift that initiated the resurgence of large-scale immigration" (Borjas 2003, p. 1335). There are also controversial debates on trade issues. Trade is often criticized for increasing income inequality. Furthermore, trade gains may be distributed unequally, discriminating the less developed trading partner.

The aim of this doctoral thesis is to carry out a differentiated analysis of current effects of migration and trade in Germany. Due to major differences, migration and trade in commodities (and services) are assessed separately. The thesis therefore comprises three studies. While two studies concentrate on migration, one study analyzes trade effects. Wong (1996) points out that although factor (or labor) mobility has gained high importance over the last several years, the economic literature paid far too little attention to it. This thesis considers different relevant welfare indicators. Results therefore contribute to the public debate on various migration and trade related policy issues. Furthermore, the analysis is carried out on different levels. The first study focuses on disparities between German regions, the second one takes individual aspects into consideration and the third study looks at trade relations between two state federations. With regard to contents the empirical studies use different econometric methods as well as relevant data sets.

The remaining parts of the thesis are structured as follows. After presenting the thesis motivation and structure, the introduction of the thesis also summarizes the research methods

and findings separately for each empirical study. The second chapter gives an overview of the most important theories on migration and trade and discusses the economic impacts of both phenomena. The third chapter examines the effect of migration on wage disparities among German regions. Chapter 4 analyzes the effects of unemployment on labor mobility. Chapter 5 presents a joint work with Konstantin A. Kholodilin, Ph.D. habil.. The study analyzes the potential effects of a free trade agreement between the European Union and the Association of Southeast Asian Nations (ASEAN) on the German economy. Chapter 6 presents a summary of the thesis as well as political implications and pathways for further research.

1.2 Contents and main results of the three empirical studies

The first study provides an analysis of the effect of regional migration and commuting rates on regional wage disparities in Germany. Significant wage differences do not only exist between the former East and West German parts but also within both regions. Furthermore, increasing disparities between certain regional wages and the national mean have been observed in recent years. Following traditional approaches, the study examines whether migration can function as an adjustment mechanism, whether it has the opposite effect of increasing disparities or whether it has no relevance for regional wage differences.

The empirical analysis is conducted using the "Indicators and Maps on Urban Development in Germany and Europe" (INKAR) and the "German Socio Economic Panel" (GSOEP) from the years 1998 to 2009. Dynamic GMM panel estimations are applied to consider simultaneity between migration and the regional labor market situation. It can be assumed that migration-rates do not only influence labor market outcomes but are also influenced by them.

A first estimation analyzes the influence of migration on relative wage levels. The results show a small positive wage effect due to the regional overall migration balance. However, only domestic migration is relevant for analyzing the influence of migration on regional wage disparities. The wage effect due to domestic migration turns out to be even smaller and negative. Regions seem to benefit primary from a combination of internal and foreign migration, however effects are small. Assuming that individuals usually move to high-wage regions, the negative wage effect of German migration would trigger an adjustment mechanism of wage disparities. Therefore, a second dynamic GMM panel estimation tests

whether an influence of the regional wage levels on migration exists. Results show no statistically significant effects. An adjustment of existing wage disparities due to migration is not likely to occur in Germany in the next few years.

The aim of the second study is to examine whether unemployed people in Germany have the same willingness to move for a new occupation as employed workers. This question is relevant for labor market policy since moving is a crucial option of escaping from a distressful unemployment situation. Although regional bindings are important for most people, every year persons or families choose to leave their familiar surroundings for a new occupation. On the one hand, economic incentives such as a higher income or lower opportunity costs may lead to a higher moving probability of the unemployed. On the other hand, individual characteristics or the financial situation may deter this group from migrating to a greater extent than employed people.

Using a bivariate probit model and the German Socio Economic Panel from the years 2001 to 2009, the study examines whether the unemployment status has a positive effect on labor mobility. The model also evaluates other main determinants of individual work-related moving and unemployment probabilities. The moving probability highly decreases as a result of dwelling ownership. The moving and unemployment probabilities increase when a person has an unemployed partner or a migration background. Furthermore, the unemployed are often single and in inferior health circumstances. The central result is a significant negative influence of the unemployment status on the work-related moving probability. In addition, the effects of central main moving determinants are much smaller for the unemployed group. Certain moving barriers only seem to exist or to have more weight for unemployed people.

The third study provides an examination of the impact of a free trade agreement (FTA) between the EU and the Association of the Southeast Asian Nations (ASEAN) on the German economy. For Germany it is a prevailing issue whether it is efficient to support trade negotiations between the EU and specific other countries or federations. Furthermore, the EU economies highly differ from the ASEAN economies, for some countries especially in terms of the development degree. Besides the middle-income-countries Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand (and to some degree Vietnam), ASEAN comprises of the less developed countries Myanmar, Cambodia and Laos. Results therefore also contribute to the current policy debate on how to realize trade liberalization between highly heterogeneous countries. The results presented in this thesis were identified at the end of 2007, considering an FTA between the two federations in general. In recent years, the EU chose to negotiate on bilateral level with the economically strongest

ASEAN members Singapore and Malaysia. However, agreements can also be expected to be reached with the other members and in some years possibly with ASEAN as a whole.

For the simulation a standard GTAP Model Version 6.2a and the associated GTAP 6 Data Base is used. In different scenarios reductions or a complete removal of tariff and non-tariff barriers are modeled. The results show that the most significant effects would occur for the ASEAN countries. In contrast, the impact especially of trade creating effects on the EU and the German economy would be small but positive. The observed changes at the sectoral level would have an overall positive impact upon the German economy. A decline in production should be limited to underrepresented sectors. Gains are observed in more important sectors such as manufacturing and services. Therefore, in general the free trade agreement is likely to have positive but small effects on the European and German economies. However, if the FTA cannot be reached, advantages could be taken by the other ASEAN trade partners, especially by China. Hence the agreement can be evaluated as being important concerning the international competitive position of Germany.

In sum, the overall positive attitude in theory towards migration and trade is confirmed by the results of this thesis. The first study gives evidence against the assumption that migration (from other countries) worsens the earning circumstances in the destination region. It is shown that the effect of the overall migration balance on wages is small but positive. Only when foreign migration is excluded, the effect turns out to be negative. Furthermore, the local earning situation does not seem to be a relevant determinant of domestic migration in Germany. Therefore, migration is not expected to influence German wage disparities in the coming years. The results of the second study emphasize the relevance of self-selection to the migration decision. The willingness of unemployed people to move is much lower than the willingness of employees. The third study demonstrates positive trade effects for both trading partners. It is also shown that the ASEAN countries would benefit much more from a free trade agreement than the EU and Germany.

2 Survey on migration approaches and trade theory

2.1 Introduction

Over the past years, countries have experienced a tremendous increase in the international movement of people, factors, goods and services. Today, different economies are more interconnected than ever before. In this open world, domestic and international migration has become an important socioeconomic phenomenon. At the same time, problems of population growth and fluctuating fertility levels make migration a highly important issue. In many nations, the population is aging and already faces a significant skills shortage. Furthermore, globalization is bringing the world closer together in terms of consumption of services, goods and knowledge. Between 1985 and 2000 world exports expanded more rapidly than GDPs (Faini 2004). Evidently, migration and trade are issues that have gained significant importance in economic and social sciences. Various studies have focused on the primary aim of explaining mechanisms of globalization and relations among nations (Zhang 2008).

This survey provides an overview of the most important pillars migration and trade literature is built on. For both issues, it is discussed why the phenomenon occurs and how basic migration and trade pattern can be explained. Furthermore, the most important assumed effects of migration and trade are summarized. Economists, demographers, sociologists, geographers and other scientists have made numerous contributions to the topic. Although the disciplinary boundaries are often blurred, this survey will focus on economic approaches. It is structured as follows.

Section 2.2 deals with determinants and consequences of migration. Section 2.2.1 presents different approaches to explain migration. It presents a macroeconomic approach (2.2.1.1), a microeconomic human capital approach (2.2.1.2) and a gravity type model (2.2.1.3). Migration as a phenomenon of self-selection is discussed in section 2.2.1.4. Section 2.2.2

deals with consequences of migration and compares traditional and modern approaches. Section 2.3 focuses on trade and comprises three parts. Section 2.3.1 introduces basic models to explain trade patterns. Section 2.3.2 summarizes observed trends of protectionism and trade liberalization, while section 2.3.3 provides prevalent explanations for gains and losses of trade. Section 2.4 concludes the survey.

2.2 Migration

For many years, there has been a strong focus in theoretical and empirical appraisals on determinants of migration (Sjaastad 1962, Greenwood 1985). The following section 2.2.1 discusses numerous migration factors. However, the question whether immigrants harm or improve the destination region's economy has become more and more important in recent years. This triggered an overwhelming share of empirical studies about migration effects (see e.g. Brücker et al. 2012) which will be discussed in the second part of this section (2.2.2).

2.2.1 Determinants of migration

There is no universal or general theory to explain migration. Many approaches have been developed independently, focusing on different determinants. However, there are often interdependences. In order to understand migratory processes Massey et al. (1993) suggest to consider a variety of perspectives, levels and assumptions rather than focusing on one single level of analysis. By classifying and discussing the most often applied approaches as well as drawing connections between them, this section aims to follow Massey's suggestion. In the end of the nineteenth century Ernst Ravenstein laid with his "laws of migration" the foundation for subsequent research on migration (Grigg 1977). In economics the neoclassical labor market model or gravity type models are most often used as theoretical foundations to explain migration (Rohr-Zänker 1998). Within neoclassical theory, Massey et al. (1993) distinguish macro- and micro-economic approaches. Both of them are based on the seminal assumption first made by John Hicks. For him local differences in net economic advantages, chiefly differences in wages are the main reason for migration (Hicks 1932).

2.2.1.1 Macro economic theory explaining migration

Within the macroeconomic context, migration is explained by geographic differences in the supply of and demand for labor. Postulating an ideal market model, supply and demand are assumed to move towards equilibrium. Labor supply adjusts in response to the relative real-wage rates between regions. Following John Hicks, migration takes place from regions with a large endowment of labor relative to capital and a resulting low equilibrium market wages to regions with a large endowment of capital relative to labor and a high market wage. The volume of migration increases as the wage differential between regions increases. Following classical theory, a negative relation between regional earnings and out-migration and a positive relation between regional earnings and in-migration should lead to a positive relation of the migration balance to the local earning level. Usually nominal measures of earning instead of deflated wage measures are used to consider regional cost-of-living differentials (Ritchey 1976). With regression analysis based on aggregate data, many studies find a positive relationship between the migration balance and the regional median (family) income or the per capita income (see Cebula and Alexander 2004; Sommers and Suits 1973).

Some study-results that are not consistent with classical theory are also discussed in migration literature. Some studies focus on an often observed positive correlation between in- and out-migration. Inconsistency is assumed due to counter streams parallel to the expected migration flow (Ritchey 1976). Sjaastad (1962) describes this phenomenon with an example from Mississippi. In 1950, the Census estimated that 62,500 people migrated from the state while 51,900 migrated into the state. Some people seem to evaluate Mississippi as a low earning area while others consider the state a good place to earn a living. Sjaastad assumes that paradoxical relations between gross in- and out-migration may be an aggregation problem of migrants. He suggests a disaggregation at least by age or occupation. Greenwood (1975) provides another microeconomic explanation: People who have moved at least once are expected to have a higher probability to move again. Therefore, areas with a high in-migration rate are likely to have a high out-migration rate as well.

Theories on international migration were originally developed to explain labor migration in the process of economic development (Massey et al. 1993). In this context, Todaro introduces the often cited “Behavioural Model of Rural-Urban Labor Migration” (1969) which focuses on regional income differences. According to this model, the percentage change in urban labor force as a result of migration is governed by the differential between the discounted streams of expected urban and rural real income. Here the net real income of the destination urban region is multiplied by the probability of finding a job

in the region in the respective period. Furthermore, costs of migration and relocation to the urban area are subtracted. The probability of finding a job is determined by the local employment perspectives. In empirical studies the regional unemployment rate is usually used as a proxy and as the second most important factor influencing migration. Using regression analysis there are various empirical studies about the theoretical expected negative relationship between the regional unemployment rate and the in-migration rate of a region. While Decressin (1994), Pissarides and McMaster (1990) and otheres confirm the relationship, Cebula (2005) finds no such significant effect.

Alternatively, some studies discuss prospective unemployment as the difference between the regional employment change rate and the growth rate of the working-age population as a better measure of unemployment in relation to migration (Blanco 1963, 1964, Greenwood 1975).

In sum, empirical studies give evidence that regional differentials in wages and employment conditions do not sufficiently explain migration patterns. Therefore, other explanatory approaches were developed. Todaro (1969) assumes identical planning horizons and fixed costs of migration for each worker. In contrast, micro-economic models consider the migration decision in relation to individual characteristics and individual moving costs.

2.2.1.2 The human capital approach on microeconomic level

Microeconomic migration models are formulated in the context of individual utility maximization. Following Sjaastad (1962), the migration decision is understood as an investment in human capital. People move to a region where they can be most productive in terms of earnings and applying their skills. As integrated in the Todaro model, movement is associated with costs. Massey et al. (1993) name several types of costs. The migrant should expect direct costs of travelling and transportation as well as costs of maintenance while looking for work[1]. But also indirect costs should be considered. In an international context the migrant usually has to learn a new language and needs to adapt to different cultural and labor market circumstances. Furthermore, psychological costs are expected when friends and families must be left behind and migrants are being forced to forge new ties. When deciding about moving, rational actors compare the costs and benefits of migration. Migration takes place when a person expects a positive (usually monetary) net

[1] Rohr-Zänker (1998) points out that occupational-based international migration studies often assume speculative migration. However, domestic migration usually does not take place before signing a labor agreement.

return from moving. If the comparison leads to a negative net return, the actor stays and if it is zero the actor is indifferent (Massey et al. 1993).

The former models only consider wage and employment differences as determinants of migration. The analysis of the individual migration decision as a utility maximization strategy leads to a broader perspective. The volume of a migration flow is assumed to be influenced also by human capital characteristics and by determinants influencing migration costs (Massey et al. 1993). These aspects will be considered in some of the following gravity models.

2.2.1.3 Gravity models

The gravity model was developed in the second half of the nineteenth century to explain traffic, migration or trade flows. In similarity to Newtonian physics, the notation 'gravity' is supposed to express that an entity such as a region pulls power on people or their products. In the simplest form of a gravity model, it is assumed that the volume of migration or trade between two regions is a decreasing function of the distance between them (Wall 1999). Various studies have evaluated the distance as a deterring factor influencing migration costs (Davies et al. 2001). The higher the distance, the higher the costs of travelling and the lower the availability of information. Furthermore, distance may serve as a proxy for psychic costs of migration. The likelihood of being forced to adapt to a new culture or to learn a new language increases with the distance (Greenwood 1975). In addition, the frequency of visiting family and friends decreases with the distance.

The gravity model approach assumes that migration is also influenced by the size of the relevant origin and destination population. The orthodox gravity model is regarded as an empirically justified law. However, it neither explains specific migration patterns nor does it differentiate between different migrations motives (Rohr-Zänker 1998). Therefore, modified gravity models include additional behavioral and/or regional variables that are expected to mainly influence the decision to migrate (Greenwood 1975).

Regional push and pull factors

Empirical studies have shown that migration flows are only marginally influenced by regional differences in income and employment. Therefore, to increase its explanatory power, the traditional 'pure theory' has continuously been enhanced by additional non-market conditions. Push factors, which give incentive to leave a region, might be negative

regional occurrences or the lack of positive ones. Pull factors are assumed to be regional occurrences that give reason to move to a region. The presence of relatives and friends, producing psychic benefits, may be an important pull factor (Greenwood 1975). Local amenities may be produced by leisure time facilities, by indicators of the housing market or due to regional differences in general costs of living (see Knapp and Graves 1989; Renas and Kumar 1987). Also the influence of other local amenities such as climate or geography has been analyzed. Cebula (2002) shows that the U.S. net population growth rate is higher in states with a higher percentage of sunshine and in western states - where the quality of life is assumed to be high. Furthermore, local public expenses or taxes may cause relocation. Here empirical studies often use the Tiebout hypotheses as a starting point. When households migrate due to local state activity, competition between municipalities may result. Following Tiebout (1956), this competition may lead to a more efficient supply of public goods. The studies suggest that people are so-called "voting with their feet". Otherwise no competition would result. Respective studies focus on countries with a decentralized tax structure such as the United States, Denmark, Belgium or Switzerland. Using micro-data, Liebig and Sousa-Poza (2004) find no tax-induced migration in Switzerland. In contrast or due to a more differentiated method also based on micro-data, Schmidtheiny (2006) shows that rich households are significantly more likely to move to low-tax municipalities than poor households. Based on aggregate data Cebula and Alexander (2004) and Cebula (2002) analyze the influence of fiscal variables on migration in the United States. Both studies find significant migration effects of fiscal variables such as local government spending on education or the local tax burden.

In sum, the additional factors are assumed to be proxies for various arguments of the individual utility function. It can be assumed that the influence of push and pull factors is selective. Therefore, surveys do not only consider regional differences in market and non-market conditions, migration flows are also differentiated by socio-demographic factors (Rohr-Zänker 1998).

Individual factors

For Greenwood (1975) the most important personal demographic factors which influence the decision to migrate are age, level of education and the ethnic group of a person. An inverse relationship between the moving probability and the age of a person is explained by the above presented human capital approach. Older people have less working years left to realize the advantages of migration. Juerges (1998) points out that the highest mobility rate is observed among people between 30 and 40 years of age. Adolescence and early

adulthood are often associated with numerous changes which may require a move. After the age of 40 the mobility probability decreases and slightly increases again after retiring (Juerges 1998). In migration literature, education is one of the main determinants of migration (see Long 1973; Karr and Koller 1987; Haas 2000; Dustmann and Glitz 2011). (Distant) employment information and job opportunities are both assumed to be higher with a higher educational level. Rohr-Zänker emphasizes that the moving distance also increases with a higher level of education. Furthermore, education may increase the individual's awareness of other locations (Greenwood 1975). Windzio (2004) shows that the migration probability is ceteris paribus higher for people with an academic education and for people between 28 and 35 years of age.

Concerning ethnic groups, it can be assumed that foreigners, who have previously relocated, are less bound to a certain region than people who were born there. Greenwood (1975) also describes survey-results about differences in migration behavior between whites and non-whites in the U.S.. However, he also points out that the conclusion of many studies may be misleading since they do not control for age, education or the employment status.

In addition, there are household characteristics which are likely to influence the migration probability. It can be assumed that the household size has a negative influence on the probability to move. The smaller the household, the easier a decision to move due to a new occupation is made. Juerges (1998) points out higher migration costs as well as higher physic costs for larger households. Windzio (2004) shows that singles have a higher mobility than people living in non-single households. Furthermore, the individual income as well as the household income influences a person's moving probability. On the one hand, a high household income can be assumed to increase opportunity costs of moving. On the other hand, a high income may be a proxy for a high education of household members and by this may increase the moving probability. Furthermore, a high income should make moving more convenient (DaVanzo 1978).

2.2.1.4 Self-selection

Considering the influence of personal characteristics, traditional migration literature emphasizes that migration is selective (see Rohr-Zähnker 1998; Borjas 1987; Chiswick 1978). The positive influence of the educational level on the probability to migrate is of particular relevance here. This relationship is assumed to be an endogenous outcome of an optimization decision rather than an exogenous causal relationship. Chiswick (1978) was one of

the first authors to emphasize that migrants may differ in certain characteristics from those who were born in a certain region. He shows for the U.S. that although after arrival immigrants earn less than native born, their earnings increase quicker and equal the earnings of natives after about 10 to 15 years after immigration. Chiswick assumes that within the migration decision, self-selection occurs due to economic incentives. Migration may be profitable in particular for people being more able and more highly motivated (Chiswick 1978).

However, it has been questioned whether the positive correlation between earnings and years since migration occurs due to the re-migration decision of unsuccessful migrants. Licht and Steiner (1993) investigate the earning adjustment of German migrants for the years 1984 to 1989. In a two-stage estimation procedure on individual panel data they distinguish between temporary (guest-workers) and permanent migrant workers and control for observed as well as unobserved heterogeneity. As a main result, there appears to be no correlation between individual earnings and the propensity to re-migrate after conditioning on various control variables. However, Chiswick's assimilation hypothesis concerning earning rises after arrival can also not be supported by the evidence of German migrants in the years from 1984 to 1989. Results further show that years of schooling in Germany have a strong positive effect on earnings and that labor market experience in Germany pays off better for natives than for most foreigners. (Licht and Steiner 1993)

Self-selection is often modeled within a Roy model. The model compares payoffs of two different opportunities. Roy's paper "Some Thoughts on the Distribution of Earnings" (1951) discusses the effects of self-selection with regard to different occupations (fishing versus hunting). In addition to schooling and occupational choice, to a woman's choice to work, to a worker's choice between union or non-union sectors or even to the choice of marital status, the migration decision has been modeled within the Roy model framework (Heckman and Honoré 1990). Borjas (1987) formulizes a parametric two sector migration Roy model. Comparable to the human capital approach presented above, individuals compare the potential income in both the destination and home region and decide to move if the difference between the income differential and the migration costs is positive (I>0). Borjas shows that a positive I leading to migration, depends on the individual's position in the home and destination income distributions and on the dispersion of these distributions. I>0 appears in three different constellations. The first case is "positive selection". The migrant belongs to the upper tail of the income distribution in both the destination and home regions. In addition, the income in the destination region is more dispersed than in the source region. The second case is "negative selection". The migrant neither performs

well in the home labor market nor in the destination labor market. Here the income is more dispersed in the source region than in the destination region. Borjas calls a possible third case "refugee sorting". The migrant belongs to the lower tail of the source income distribution but outperforms the residents in the destination region (Borjas 1987).

In migration literature usually the case of "positive selection" is emphasized and proved by the on average higher educational level of moving individuals. Self-selection is also often pointed out when discussing positive effects of migration. However, in traditional approaches migration is rather expected to harm the employment opportunities of native workers (Borjas 2003).

2.2.2 Consequences of migration

Appraisals about consequences of migration usually focus on aggregated effects. Individual consequences, such as income increases are only marginally discussed. Greenwood (1975) gives a possible explanation for the low interest on this topic in literature. The migrant would not have moved unless he or she expected an improvement of his or her well-being. If expectations turn out as incorrect the migrant would probably return or move elsewhere. Rohr-Zänker (1998) mentions empirical studies for Germany that prove income increases due to migration but finds no significant positive effects on the social standing.

Concerning aggregated effects, two contradicting perceptions exist which are presented in the following. Usually the focus is on effects on labor market conditions for native workers and on effects on wage or unemployment disparities between a country's regions.

2.2.2.1 Traditional theory on migration consequences

In traditional migration models the neoclassical labor market model is used to show that by decreasing labor supply, out-migration leads to higher wages and lower employment rates. By increasing labor supply, in-migration results in lower wages and higher employment rates (Greenwood 1975). This connection, first drawn by Samuelson (1973), is often used in political debates to prove theoretically that in-migration worsens the employment and earning perspectives of native employees. However, empirical evidence is mixed. As Borjas (2003) summarizes, the measured wage effects differ to a great extent even within studies but seem to lie around zero. Longhi et al. (2005) suggest a wage elasticity due to immigration of -0.119. This value is determined by aggregating results of 344 estimates.

They are collected from eighteen studies on effects of immigration on native wages for the U.S., Germany, the Netherlands, France, Norway, Austria, Israel and Australia. The negative effects in EU countries appear to be larger than in the U.S.. Furthermore, estimated effects do not differ between female and male workers and immigrants seem to be more in competition with other immigrants than with natives (Longhi et al. 2005).

When analyzing migration effects on regional labor market disparities, the most important question is whether people are what is known as "voting with their feet" (Borjas 2000). Only when wage or unemployment rate disparities lead to moving decisions, migration may trigger a process which significantly influences disparities. Traditional theory assumes that labor mobility is conductive to convergence of labor market conditions. Moeller (2001) sees migration as one possible aspect within an adjustment process after a regional adverse shock. High unemployment rates and low wage rates are assumed to give incentives to leave a region. This should reduce excess supply on the regional labor market and should support to regain pre-shock employment rates (Moeller 2001). Contradicting effects may result for regions which experience a cyclical boom. Many empirical studies take the traditional assumption of adjusting migration effects as given and measure whether migration due to disparities has been high enough for different times or countries to function as adjustment mechanisms. For the U.S. in the years 1955 to 1960 Mazek (1969) evaluates migration as satisfactory in terms of equilibrating unemployment and thereby reducing it as much as possible. Puhani (2001) shows that migration, as a reaction to regional wage disparities and varying unemployment rates, is very low in Europe. He concludes that its adjusting effect is only minor. Decressin and Fatas (1995) emphasize that migration is of much more importance within the U.S. than in Europe for equilibrating wage levels and employment rates.

2.2.2.2 Modern approaches

In recent years appraisals have appeared which discuss effects outside the traditional economic framework. The models consider externalities and selective migration and show that mobility may increase disparities (Niebuhr et al. 2012). Models are often set out in the New Economic Geography tradition. As one of its founders Paul Krugman (1991) analyzes circumstances which lead to dispersion or agglomeration. Increasing regional economic disparities within an agglomeration process occur when so-called centripetal forces are stronger than adjusting centrifugal forces. Also the initial exogenous given situation is assumed to be relevant for following processes. On the one hand, centripetal forces may occur due to localization effects given by a technological spillover, the infrastructure

or an existing specific endowment of labor force. Due to localization effects and urbanization economies it is efficient to settle close to other firms. On the other hand, centrifugal forces may be triggered by agglomeration disadvantages. For example a high demand for production factors followed by high prices for wages and land, may lead to immobility of these production factors (Sternberg 2001). Epifani and Gancia (2005) describe possible migration effects with a New Economic Geography type model. Starting from a symmetric equilibrium, high migration rates from the periphery to the core may appear. In the short run, effects should occur which are explainable with orthodox theory. In-migration is likely to raise unemployment rates since the pool of job seekers increases. However, migration is assumed to trigger agglomeration forces in the core which increase profits, induce the opening of new vacancies and lower local unemployment. The opposite is assumed to happen in the periphery. A so-called core-periphery equilibrium appears with high persistent disparities in per capita income and unemployment (Epifani and Gancia 2005). Hence in this framework in-migration is assumed to improve the economic situation of the destination region.

In traditional approaches, migration is assumed to worsen the wage and employment perspectives of native workers because of the impact of mobility on labor supply. In modern approaches an improvement may result due to the influence of migration on labor demand (Niebuhr et al. 2012).

In economic theory, the market's demand was firstly emphasized by Say at the beginning of the nineteenth century. The famous Say's law "products are paid for with products" is based on Say's considerations, although his statements were slightly different. In a letter to Malthus in 1814 he wrote "As no-one can purchase the produce of another except with his own produce, the more we can produce the more we can purchase" (Lambert 2000, p. 17). James Mill translated Say's consideration as "supply creates its own demand". In a competitive market with flexible wages and prices, the market mechanism will inevitably bring the economy to a situation in which all available resources are fully employed (Davidson 2007).

Keynes, however, believed that Say's law is not the "true law" but only a special case. An increase in supply would not automatically create an equivalent increase in demand. Keynes (1936) warned to teach the classical theory which considers only the long run. This would be misleading and socially disastrous (Davidson 2007). Keynes emphasized short run economic fluctuations and advocated policies in recessions to increase aggregate demand, including government (deficit) spending (Mankiw 2004). A nation's government would be able to influence output and employment through its fiscal policy. Government

expenditures may increase sales of industries and encourage firms to increase production and employment (Davidson 2007). A multiplier model can explain why government spending won't crowd out private sector investment but further encourage the private sector to invest (Samuelson and Nordhaus 2010).

An acceleration process may also occur due to migration. Workers tend to move to high-wage/ low-unemployment regions. Economic conditions in these attractive regions further improve relative to regions of origin because the inflow of labor strengthens economies of agglomeration. Positive wage and employment effects of in-migration can also be displayed within the neoclassical framework, in particular when considering selective migration. The inflow of migrants will shift the labor supply curve to the right. Highly qualified new employees may give rise to productivity growth and increase the consumption demand in the region (Niebuhr et al. 2012). The labor demand curve may shift to the right even to a larger extent than the labor supply curve and hence wages will increase. The higher wages could lead to increases in labor force participation and in employment (Greenwood 1975).

Studies with a focus on regions which migrants leave, usually discuss the phenomena of what is known as "brain drain" (for international migration). Grubel and Scott (1966) expect a reduction in military and economic power with per capita income decreases of countries when highly skilled native high income receivers move to attractive, usually higher-developed countries.

2.3 Trade

Although migration is a important and well researched mechanism as already mentioned in the introduction of the thesis, international economics usually deals with the trade of goods or services. Factors such as production or commodities are generally less mobile between countries than within a single country, primary due to the higher distance. In addition, countries as distinct political entities give rise to problems which do not occur in domestic trade, such as the levying of duties or the existence of different national currencies (Gandolfo 1994). However, today more than ever before, goods and factors are moved between different countries. Using common methods and tools of micro- and macroeconomics, international economics aim to provide basic explanations for trade and certain trade patterns. The following passages give an overview of main theories of international trade and discuss the two parallel processes of protectionisms and trade liberalization. In

addition the trends are justified by summarizing common explanations for trade gains and losses.

2.3.1 Pattern of trade

Similarly to migration, there is not one unique theory to explain trade pattern. A wide array of different theories and concepts has emerged in the last two centuries. There are diverse trade models which are not structurally comparable and are often incompatible. While traditional models are usually static, many dynamic models with different assumptions such as perfect or imperfect competion, product homogeneity and/or information have been developed in recent years (see Zhang 2008). However, most textbooks on international economics provide the same traditional trade theories which are described in the following overview.

To explain why and which countries trade, David Ricardo (1817) introduced his Ricardian model at the beginning of the nineteenth century. It emphasizes the concept of comparative advantages which are determined by differences in labor productivity. A country has a comparative advantage when the opportunity cost of producing a good in terms of other goods is lower than in other countries. When each trading partner concentrates on producing the goods for which it has a comparative advantage, both countries are assumed to benefit from trade due to an increasing production and hence welfare level.

Since labor is not the only factor of production, comparative advantages shouldn't be able to fully explain trade patterns. Traditional trade theory primary emphasizes the existence of goods in one and the unavailability in another country (Pomfret, 1991). Two Swedish economists, Eli Heckscher and Bertil Ohlin developed the famous Heckscher-Ohlin theory showing that international trade is largely driven by differences in countries' resources (Heckscher 1919; Ohlin 1933, 1924). The basic model consists of two countries, two produced goods and two different factor endowments. Here, each country will produce the good which uses the country's more abundant factor more intensively (Gandolfo 1994). Furthermore, the model's extensions by Lerner (1952) and Samuelson (1948, 1949) demonstrate how the process of trade eliminates factor price differences. Since the abundance and scarcity of factors determine its prices in the countries, free trade in commodities is supposed to equalize factor prices between countries. Additionally, the model draws a connection between factor prices and resulting commodity prices (Zang 2008).

The most cited empirical evidence against the Heckscher-Ohlin theory was given by Leontief in 1953, later called the Leontief paradox. In the 25 years after World War II, the United

States were much wealthier than other countries leading to a high endowment of capital relative to labor. However, Leontief showed that U.S. exports during this time were much less capital intensive than U.S. imports (Krugman and Obstfeld 2009).

Gandolfo (1994) classifies the Heckscher-Ohlin theory as a special case of the neoclassical trade theory assuming that production technology and preferences are identical throughout the world. The neoclassical trade theory considers not only the production but also the demand side. International trade and specialization are supposed to be influenced simultaneously by the differences between the technologies, the factor endowments as well as by the tastes of people in different countries. Preferences are assumed to influence international trade, even if technologies and factor endowments do not vary between countries. Formal neoclassical trade models have been developed by J. S. Mill and A. Marshall in the end of the nineteenth century and have been extended by numerous modern writers (Gandolfo 1994). Mill points out that demand should equate exports and imports by influencing the terms of trade. These are defined as relative prices of exports in terms of imports. In his view, exports and imports between each country and the world must be exchanged at a value which is compatible with the equation of international demand (Zhang 2008).

In sum, traditional trade theories see differences between countries as the main reason for trade. Modern approaches however question main assumptions of traditional models and give alternative explanations when market conditions are imperfect (Zhang 2008). Here, the focus is on imperfect competition which results from the existence of increasing returns. The variety of goods a country can produce and its scale are constrained by the size of the market. Trade may be efficient in this case since it increases the size of a market (Krugman and Obstfeld 2009).

Finally, gravity type models, as already mentioned in the section on migration, are also applied in trade theory. In its simplest form, the volume of exports between two trading partners is an increasing function of their national income and a decreasing function of the distance between them (Wall 1999). Sharing the same language or belonging to a certain trade union may positively influence the export flow (Park 2002).

2.3.2 Protectionism and trade liberalization

Since the emergence of modern nation-states in the sixteenth century, governments have feared international competition as a threat to their domestic industries. In order to support the economy in world competition, various countries have been granting subsidies. Furthermore, to limit imports they impose tariffs, import quotas or non-tariff barriers such

as import licensing requirements (Krugman and Obstfeld 2009). This was also the primary strategy many countries used to compat the economic breakdown during the Great Depression. In most industrial countries, the 1930s were marked by a significant increase of protectionist trade policies (Eichengreen and Irwin 2010). However, one country's imports are an other country's exports and their decline led to a vicious circle with even higher unemployment rates in all industrial countries. After World War II, the United States, who emerged as one of the victors, had strong influence on the development of the worldwide economy and created the institutional frame for a new liberal world order (Zweifel and Heller 1997). Besides the General Agreement on Tariffs and Trade (GATT[2]) as the basis for a global rule-based trading system, countries all over the world agreed (and still negotiate) on numerous bilateral agreements to remove trade barriers.

With the increasing importance of international trade in most industrial countries concern grew that foreign competition may damage domestic industries and reduces wages. Besides negotiating numerous free-trade agreements, the United States for example became highly aggressive in trade disputes with countries such as Japan, South Korea and China (Krugman and Obstfeld 2009). After dealing with the question "Why do nations trade?" the theory of international economics turned to the question "What should a nation's trade policy be?". One of the aims was to establish a cost-benefit analysis for certain trade policies. Economists such as Stolper and Samuleson (1941) or Metzler (1949) developed an analytic framework to determine the effects of tariffs, quotas or subsidies (Gandolfo 1994). In contrast to earlier analyses of general equilibrium market interactions, their models take a partial equilibrium approach. Costs and benefits of different trade policies are measured using the concept of consumer and producer surplus and differentiating between small and large countries (Krugman and Obstfeld 2009).

2.3.3 Gains and losses of trade

It is widely accepted that the existence of resources in one and the unavailability in other countries lead to trade benefits. However, many people criticize when the own country exports products which could also be produced by the domestic industry and hence may create new jobs. International economic theories argue that trade creates gains which - in this respect - may create even more jobs. Main approaches to explain positive effects of trade are discussed in section 2.3.1. Krugman and Obstfeld (2009) further emphasize the resulting trade gains by international exchanges of risky assets such as stocks and bonds,

[2] The GATT was signed in 1947 and was replaced by the World Trade Organization (WTO) in 1995.

since it allows countries to diversify their wealth and to reduce the variability of income.

However, the benefits of trade are often distributed unevenly and there may be strong effects on the income distribution for which Krugman and Obstfeld (2009) see two reasons: When a country's production pattern changes due to imports, resources cannot move costless from one industry to another. The changes will reduce the demand for some factors of production, while raising the demand for others. Workers in sectors in which goods are partly replaced by imports are likely to eventually lose their jobs. Wages will decline and the search for a new employment is usually costly and inconvenient. It is traceable that affected groups lobby for governmental restrictions of trade and protection of their incomes.

There is also a vivid discussion on whether trade mainly contributes to income inequality. In high-income countries, exports of manufactured goods from newly industrializing countries such as South Korea and China are often considered as one of the main reasons for the increasing income inequality. As predicted by the Heckscher-Ohlin-theorem, for a country with a relative high endowment of capital, trade is assumed to raise the wages of highly skilled workers and to lower the wages of less- skilled workers (Krugman and Obstfeld 2009). Empirical studies try to measure to what extent the increasing trade with low-wage countries has been the main cause for growing income inequality. In a survey on this debate, Lawrence (1996) concludes that trade between OECD countries and developing countries has played some role in reducing the relative wage of poorly educated workers in the United States and in raising unemployment in Europe. However, its impact has been insignificant. Alderson and Nielson (2002) show that various independent variables affect total variation in income inequality in 16 OECD nations. Inequality is positively affected by the percentage of the labor force in agriculture and negatively by the institutional factors such as the union density or de-commodification but only marginal by aspects of globalization.

Another major critique in debates on trade deals with the inequality of benefits between trading partners. When the trading partner's degree of development differs, many politicians accuse an uneven balance of power. Industrial countries are blamed for forcing developing countries to reduce trade barriers while maintaining advantages for their own economies such as agricultural subsidies. By this, poor countries would become even less competitive and trade would inhibit their development (Stieglitz 2002).

2.4 Conclusion

Migration and trade require little definition. Conceptually the movement of people or goods across regions or national boundaries is easy to identify and to measure. It appears in all nations and from the earliest historical times, governments have regulated trade and migration and have continued to do so ever since. Migration and trade policies frequently emerge as important election issues (Pomfret 1991). However, there are no unique explanations why and how the phenomena appear. As explained in this survey, in traditional migration literature migration is basically explained by geographic differences in economic advantages, in particular in wages and unemployment. Microeconomic models consider individual moving incentives; the migration decision is understood as an investment decision. The survey discusses regional push or pull factors as well as personal characteristics and individual factors which may influence the moving decision. As a conclusion, migration literature emphasizes that migration is selective. There is large empirical evidence that migrants are on average higher educated.

The survey also provides an overview of traditional and modern theories on migration effects. Traditional models assume that migration can function as adjustment mechanisms of regional labor market disparities. Furthermore, in-migration or a positive migration balance is assumed to harm the employment conditions of native workers due to an increasing labor supply. In contrast, modern approaches emphasize labor demand effects, especially in the case of selective migration. When highly qualified migrants move to more attractive high-wage/ low- unemployment regions, these regions may further prosper. By losing skilled workers, other regions would fall behind. Hence, migration may not reduce but increase regional labor market disparities.

Most of the relevant contributions to migration literature emerged after 1960. As reflected by the used literature in this survey, most appraisals on migration determinants emerged before 2000. The first renowned traditional theories of international trade were already developed in the nineteenth century. Here, trade is mainly explained by differences between countries. In the presented models, trade gains result from comparative advantages concerning labor productivity, due to varying endowments of capital and labor or because trade increases the market size and enable to generate economy of scales. The traditional neoclassical trade theory focuses on the countries' preferences to explain trade patterns.

While theory emphasizes positive effects of trade, governments usually try to protect their economy from international competition. Negative experiences with protectionism during the Great Depression led to a high degree of trade liberalization in all countries. However,

the use of tariffs, quotas and in particular non-tariff barriers is still common. Using microeconomic methods, new trade theory models have been developed to analyze the effects of different trade policies. The last part of the survey summarizes how expected trade gains and losses may be distributed and discusses negative effects.

There is a broad supply of theories to explain migration and trade. The survey names main economic, regional and personal factors which may give individual incentive to move. Trade patterns are usually explained by resulting benefits. In this sense, theory proposes incentives for countries to exchange goods or services. Furthermore, the survey controversially discusses migration and trade effects. The following empirical studies of this thesis aim to give new insights into the different aspects emphasized here.

3 Migration and regional labor market disparities in Germany

3.1 Introduction

The magnitude of labor market disparities among German regions is almost as large as the one between Germany and other countries.* There are significant differences between East and West Germany resulting from the economic reconstruction in the East after the fall of the Berlin Wall. Furthermore, labor market circumstances vary on a regional level. Between 1998 and 2009, the average wage level per hour ranged from about EUR 7 in regions of Mecklenburg-Western Pomerania to EUR 15 and up in some regions of Baden-Württemberg. During this time, the disparity between certain regional wages and the national mean rose for many regions. In some regions of Schleswig-Holstein, Thuringia, Bremen and North Rhine-Westphalia below-average wages declined significantly. In contrast, there are regions, predominantly in Hesse, Bavaria and Baden-Württemberg, in which above-average wages increased (GSOEP 2009). Average unemployment rates range from below 5% in regions of Bavaria or Baden-Württemberg to above 20% in some regions of Mecklenburg-Western Pomerania and Saxony. However, they remained relatively constant during this time (INKAR 2009).

There is no direct connection between regional labor market differences and the welfare level of the population in a particular region - especially since varying regional living costs reduce nominal wage differences. Many authors emphasize that economic disparities are inefficient. Taylor (1996) points out that they reduce national output and raise inflationary pressure. Elhorst (2003) adds that reducing disparities produces substantial social benefits. An important branch of research focuses on inter-regional migration as a mechanism for influencing labor market disparities; however, empirical evidence is mixed. It is questioned whether the influence is economically significant. Furthermore, the direction of the effect is unclear.

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Traditional migration approaches assume that labor mobility reduces regional labor market disparities and can function as an adjustment mechanism. Möller (2001) describes different aspects of a regional adjustment process. When a region is hit by a severe adverse shock production is depressed and unemployment rises. High unemployment rates undermine the bargaining power of unions and individual employees. The wage pressure decreases and wages fall. Firms are able to offer lower prices. Consumption and - in the long run - labor demand increases. Furthermore, high emigration rates to other, more attractive regions will reinforce this process. Relative labor supply and unemployment decline.

Niebuhr et al. (2012) challenge traditional theories with new economic approaches such as New Economic Geography (NEG) established by Krugman (1991) and others. Increasing disparities may occur due to selective migration. The role of self-selection within the migration decision is an often emphasized issue (see Borjas 1987). Chiswick (1978) explains positive self-selection with the migration benefit which is higher for more able and higher motivated individuals. Hence, it is usually assumed that migrants are on average more educated or better skilled than individuals who choose to remain in their place of origin (Long 1973; Greenwood 1975; Chiswick 2000; Dustmann and Glitz 2011). In addition economic migrants are expected to move to regions with above-average wage levels and low unemployment rates. Since additional high incomes are then spent in these regions, migration is assumed to lead to further prosperity. Furthermore, economically depressed regions with a net loss of the (highly skilled) population will suffer from a decreased demand for locally produced goods and services. Hence, disparities may increase due to migration.

This paper analyzes the relationship between migration and regional wage disparities in Germany for the period 1998 to 2009. It is examined whether migration and commuting contribute to increasing or decreasing disparities or have no significant economic influence. The analysis is based on the assumption of simultaneity between the regional labor market outcome and respective migration rates. It can be assumed that migration does not only influence the local labor market conditions but is also influenced by them. Attractive conditions may be an incentive for workers to move.

In the first step, a wage equation is estimated focusing on the influence of migration and commuting on the relative wage level of the "German Spatial Planning Regions" (Raumordnungsregionen, ROR). Dynamic GMM panel estimations are conducted to account for various simultaneities, for dynamic wage adjustments and for endogeneity due to regional fixed effects using data from the "Indicators and Maps on Urban Development in

Germany and Europe" (INKAR) and the "German Socio-Economic Panel" (GSOEP). An error correction model provides a reconciliation of short-run and long-term effects of mobility on relative wages. The results show a significant small positive effect of regional migration on relative wage levels for both time frames. When the migration balance increases by 10 percentage point, the relative wage level increases by 0.0107 percent in the long run. German regions seem to benefit from new citizens; however the effect is small. The migration balance considers both, internal German migration and migration between Germany and other countries. When differentiating between German and transnational migration and only considering domestic migration, the effect on wages turns out to be even smaller and negative. Hence, the above estimated positive effect only results from the combination of foreign and domestic migration.

The negative effect of internal migration would trigger an adjustment process when assuming that domestic migrants usually move to high-wage regions (although the impact would be low due to the small estimated effect). Disparities lead to migration which decreases disparities. It is conceivable that employment prospects are important determinants of migration in Germany. Previous migration studies have argued that differences in economic opportunities between the source and destination regions due to income and unemployment rates are the main forces of migration. However, individual, family- and housing-specific factors should highly influence the migration probability as well (Windzio 2004).

In the second step, a migration equation is estimated to analyze the influence of regional labor market circumstances on the domestic migration balance. Results indicate no effect of relative wage levels on migration. An adjustment process during which existing wage disparities decrease due to migration, is not likely to occur in Germany in the next few years. However, the estimated positive effect of overall migration (both transnational and domestic) gives information about wage developments due to migration on a regional basis. In the last part of this study, German regions are named in which an already existing high gap between regional wages and the national mean is expected to increase in the coming years.

The outline of the paper is as follows: The second section reviews the relevant literature. In section 3.3 the identification strategy is described. Section 3.4 presents the empirical analysis. It describes the econometric specification and presents the data set and the estimation results. Section 3.5 concludes.

3.2 Related literature

A lot of research has been carried out on labor mobility and inter-regional disparities. A classification can be reached by envisioning the issue's simultaneity. The existing literature is divided into studies focusing on migration as the dependent variable and approaches that focus on the labor market outcome as the dependent variable.

Many previous studies take the traditional assumption "migration reduces disparities" as given. Here, it is questioned whether the effect of relative labor market circumstances on migration is significant enough to function as an adjustment mechanism. Decressin (1994) estimates the influence of shocks and regional differences of unemployment rates and salaries on migration flows in West Germany during the 1980s. Using a Least Squares Dummy Variables (LSDV) model with dummies for each region, he estimates a migration elasticity of 1.3 resulting from local salary increases (relative to those paid in another region) and of 3 due to increases of the local unemployment rate. His results show that the increase of unemployment in all regions contributes to an economically significant decrease of gross migration. In times of recession, migration is less likely to work as an adjustment mechanism. In contrast, Pissarides and McMaster (1990) show in their study on Great Britain between the years of 1961 and 1982 that this adjustment process worked so slowly that usually "compensating differentials" pre-exist. Applying a LSDV model in a first step, estimated effects of the regional wage level (unemployment rate) in relation to the average wage level (unemployment rate) on migration flows turn out to be low. With an adjustment equation, a second step estimation finds significant positive effects of relative unemployment rates on relative wage levels.

In light of Mundell's "Theory of Optimum Currency Areas" Puhani (2001) assumes that a high degree of factor mobility will be conducive to the success of Europe's currency union. Using Ordinary Least Squares (OLS) estimation, he estimates a significant migration elasticity with respect to the number of unemployed people in West German regions of only 0.00809 for the years 1985 to 1996. With respect to the regional GDP at purchasing power parities (which is used instead of wages due to data availability), he estimates a migration elasticity of only 0.00136. However, this effect is not significant. He concludes that the degree of labor mobility in major European nation states appears to be too low to act as an adjustment mechanism at least in the short run. Focusing on West Germany, Windzio (2004) analyzes main moving determinants of migration flows between the superior more attractive south and the inferior north region. By using a three-level model, he considers individual and regional factors as well as the respective time frame. Following his results,

the moving probability is lower for individuals living in regions with high unemployment rates and higher for individuals with an academic degree. Arntz (2005) analyzes main work-related moving motives of Germans with regard to qualifications for the years 1975 to 2001. Using a two- level nested logit model, she considers individual as well as regional destination-specific factors. Her results indicate that the skill composition of job flows highly matters for the relevance of respective determinants. While highly skilled job movers are responsive to regional wage differences, unemployment differences only influence the migration decision of less skilled workers. Furthermore, migration costs appear to decrease with education: the proportion of highly skilled movers increases significantly with migration distance.

Due to the historical background, many examinations on German migration focus on mobility from the Eastern to the Western part after the reunification. Considering West-East migration, net migration from East to West Germany between 1989 and 2007 amounted to 1.7 million people (Wolff 2009). Since 1990 data on individuals from East Germany is included in the GSOEP. Considering the first two waves, Burda (1993) estimates binomial logit models with the dependent variable taking the value 1 when a person living in the East can imagine to move to West Germany or to West Berlin. While wages and wage increases appeared not to have any effect in these early years, a person's age has a negative influence on the migration desire. Using a switching regression model and data from the IAB-employment sample, Brücker and Trübswetter (2004) find that migrants are positively selected with respect to unobserved abilities. Due to the longer observation period compared to Burda (1993), their results indicate that wage differentials and differences in employment opportunities were main forces of East-West migration after the German reunification.

Using the GSOEP waves 1990, 1991, 1996 and 1997, Hunt (2000) analyzes the determinants of emigration or commuting from East to the West Germany with multinomial logit models. Her results indicate that migrants are on average younger and more skilled than non-migrants. Furthermore, using data on level of German Bundesländer from the years 1991 to 1996, she estimates the effect of regional labor market conditions on East to West migration with OLS regression. She explains a downward trend in East to West moving relative to within-west migration with the observed wage convergence during this time period. Hunt (2006) confirms these results. Again using data on level of German Bundesländer from the years 1991 to 2000, she estimates a fixed effects model and shows that rising wages reduce Eastern emigration. Furthermore, the SOEP indicates that young people are more sensitive to wage differences while older people are more sensitive to

unemployment rates. Her results also show self-selection within the migration decision.

Regarding simultaneity, some studies focus on explaining the labor market situation with migration. Molho (1995) points out the dynamics of an adjustment process. His results show that for the UK in 1981, higher unemployment rates in remote areas can be explained by low out-migration rates caused by distance deterrence (and cumulative inertia). This is, however, only characterized by the sum of the distance from region i to other regions. Molho (1995) assumes that people in inaccessible areas who have fewer out-migration opportunities, stay unemployed for longer periods. Østbye and Westerlund (2007) estimate a neo-classical growth model with a System GMM estimator to consider endogeneity of the migration variable. The effect of migration on changes in GDP per capita is examined for Norwegian and Swedish counties over the time period 1980-2000. They show that migration adds to convergence of local labor market outcomes in Sweden but reduces convergence in Norway. However, convergence is measured by comparing the coefficient of the lagged dependent variable when it is a) controlled for migration and b) not controlled for migration. Therefore, the study does not measure convergence between regions, but over time.

Comparable to this study, Niebuhr et al. (2012) analyze the effects of labor mobility on German labor market disparities. A dynamic panel GMM estimation is conducted to consider simultaneity between mobility and the regional labor market outcome. The authors suggest that mobility decreases disparities, but only in unemployment rates. Wage disparities appear to remain unaffected. Interpretations are based on very strong assumptions. For a wage equation instead of wages in relation to the national mean, absolute wage rates are used. Although there is no per se connection to the relative wage position, an estimated negative migration effect on the absolute wage level is interpreted as a negative migration effect on regional wage disparities. This implies that migration mainly takes place from low- to high- wage regions. For the unemployment equation the relative unemployment rate is used but conclusions are also based on strong assumptions. A negative influence of the migration rate on the relative unemployment rate is understood as a negative effect on unemployment disparities. Only when people significantly react on regional labor market disparities by moving, the provided interpretation should be true. Otherwise results only give information about migration effects on the regional labor market outcome. Therefore, after estimating a relative wage equation, in a second step this study estimates a migration equation. Comparable to the previous studies in this section, it is analyzed whether migration rates of German regions are significantly influenced by the respective labor market outcome. In this case, migration may contribute to a process which may influence regional

labor market disparities in the long run.

3.3 Identification strategy

In the first step of the empirical analysis the effect of migration on regional nominal wage levels is estimated. The regional value in relation to the national mean is used to consider the effect on the relative regional wage position. The relative regional wage level ($\frac{w_{it}}{w_t}$) equals the average wage level of region i w_{it} divided by the average national wage level w_t in time t. The same applies for the considered relative regional unemployment rate ($\frac{u_{it}}{u_t}$). In the following model, no distinction will be drawn between migration and commuting. The considerations are based on balance rates. The migration balance is the difference between a region's in- and out-mobility rates as the share of the regional population. Here, the estimation is carried out for the overall migration balance and the migration balance which only considers internal migration, ignoring migration between Germany and other countries. In the second step, a migration equation is estimated to analyze the influence of labor market disparities on domestic migration.

A simultaneous equation model (SEM) as given in equation (3.1) and (3.2) describes theoretically the simultaneity between the wage and migration equation. However, in the empirical analysis the two equations are estimated separately, considering simultaneity by instrumenting possible endogenous variables as described below.

$$\frac{w_{it}}{w_t} = f(migB_{it}; (\frac{u_{it}}{u_t}); R_{it}; X'_{it}; \alpha_i; \tau_t^w; \varepsilon_{it}) \tag{3.1}$$

$$migB_{it} = g((\frac{w_{it}}{w_t}); (\frac{u_{it}}{u_t}); R_{it}; \eta_i; \nu_t; e_{it}) \tag{3.2}$$

The wage equation (3.1) describes the relation between different regional factors and the relative regional wage level of region i in t ($\frac{w_{it}}{w_t}$). With regard to the research aim of this study, the effect of migration $migB_{it}$ is central here and the estimation aims at determining whether the effect is positive or negative or negligible. Furthermore, the relative regional unemployment rate ($\frac{u_{it}}{u_t}$) and the regional average rent per square meter R_{it} are assumed to be main determinants. While the relative unemployment rate is expected to have a negative influence, the average rent is assumed to have a positive influence on the local nominal

wage level. Influencing regional varying living costs, local rents are usually relevant for salary negotiations.

Displayed by the vector X'_{it}, four additional regional control variables are integrated in (3.1). First, the share of qualified employees is considered. The qualification structure of the local labor force is of main importance to the relative average wage level of a region. Second, a region's population density per square kilometers is assumed to influence the wage level. It is mainly a proxy for a region's degree of urbanization. The migration effect on wages probably varies between urban and rural areas and especially in regions with a high share of highly skilled workers. Therefore, it is important to control for these factors. Third, the share of women and fourth of self employed individuals is considered in X'_{it} due to an assumed strong influence on the local relative wage level. All remaining factors influencing the relative wage level of a region and for a certain time will be represented by regional effects α_i, time effects τ_t^w and by a structural error term ε_{it}.

The causal interpretation of the migration equation (3.2) is related to the decision to move to region i in time t. Pissarides and McMaster (1990) derive a migration function on the basis of the migration probability of a single household. A household or a person moves when the gross gain from moving exceeds its costs. Costs depend on observable and unobservable individual characteristics which are randomly distributed among the population. Therefore, the migration balance is a positive function of the gross gain from moving to a region. Following John Hicks (1932), local differences in net economic advantages are the main determinants of moving gains. In the model the relative wage level ($\frac{w_{it}}{w_t}$), the relative unemployment rate ($\frac{u_{it}}{u_t}$) and the regional average rent per square meter R_{it} are assumed to provide economic incentives to move to a region. A positive relation between wages and migration can be expected. A high unemployment rate is expected to reduce the employment opportunities of migrants and would therefore create a deterring effect. The same applies for the regional average rent per square meter. Various empirical studies estimate the effect of regional push and pull factors on migration. In traditional appraisals, the regional unemployment rate and the income or average nominal wage level are usually considered as main determinants (see Ritchey 1976 and Greenwood 1975 for an overview). However, Renas and Kumar (1978) argue that nominal money income variables lead to a misspecification of the migration equation when local cost of living variables are not included. They show that variables measuring costs of living and the rate of change of these costs significantly influence migration. Empirical studies exist that measure the relevance of housing costs as a main component of the regional living costs. Cebula (2002) estimates a significant negative influence of the housing price index on the population change rate of

U.S.-states. Furthermore, Pack (1973) shows that the lack of appropriate accommodation reduces the attraction of a city for migrants.

On the personal level, there are other main determinants of the moving gain such as year of birth, marital status and educational level. These determinants do not vary much over time and are treated as regional effects represented by η_i (Pissarides and McMaster 1990). In addition, time effects, displayed by ν_t, can be assumed due to varying migration patterns over time. All remaining factors influencing the migration rate will be represented by a structural error term e_{it}.

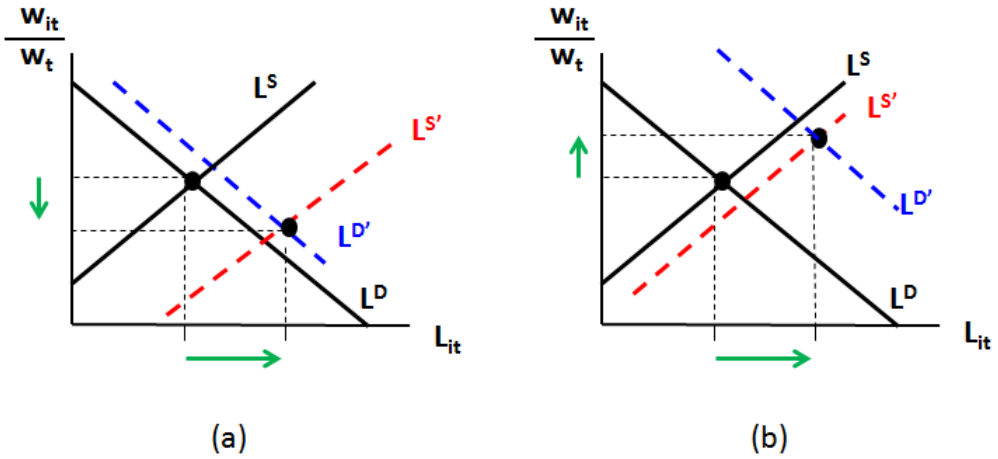
When assuming simultaneity between equation (3.1) and (3.2), the observed data does not represent the amount of migrant people exogenously influencing the endogenous wage variable. Neither does the data represent a given exogenous wage level influencing the endogenous migration rate exogenously. It is conceivable that regional migration rates do not only influence labor market outcomes but are also influenced by them. Individuals may move to regions with attractive labor market circumstances and influence the respective labor market circumstances. Furthermore, simultaneity can be assumed for the rent variable in both equations. Regarding (3.1) the local nominal wage may not only determine housing costs. Usually regional housing costs also influence wage negotiations. Regarding (3.2) rents do not only work as incentive or deterrent factor within the migration decision. Due to the influence on housing demand, migration rates also influence regional housing costs.

It can be shown that the migration variable in (3.1) is generally correlated with the structural error of (3.1) if $(\frac{w_{it}}{w_t})$ has a significant influence on $migB_{it}$ in (3.2) and that the wage variable in (3.2) is correlated with the structural error of (3.2) if $migB_{it}$ has a significant influence on $(\frac{w_{it}}{w_t})$ in (3.1). Therefore, if simultaneity exists, the migration variable is endogenous in (3.1) and the wage variable is endogenous in (3.2) and the rent and unemployment variable are endogenous in both equations. In this case, an OLS estimation suffers from simultaneity bias (Wooldridge 2003). To identify the equations and to solve the problem of endogenous explanatory variables, instrumental variables are needed for (3.1) as well as for (3.2). The estimation method is introduced in section 3.4.1.

Estimating the wage equation, either a positive or negative effect of migration on the relative wage level will result. The respective effect can be explained within the neoclassical labor market model. Here, a distinction has to be drawn between labor supply and labor demand effects. The labor supply in a region increases due to a positive migration balance. Yet, when considering selective migration, the in-flow of qualified workers may raise productivity and may increase labor demand as well (Niebuhr 2012). Unfortunately the given

data does not indicate the qualification composition of the migration flows. However, there is a broad agreement in literature that migration is selective. Hence, it can be assumed that both, the labor demand and supply curves will shift to the right. The extent of these shifts will determine the wage effect. As presented in Figure 3.1 (a) a negative effect of migration on wages will result due to a higher shift of the supply curve. A positive effect will result due to a distinct right shift of the labor demand curve (see Figure 3.1(b)).

Figure 3.1: Negative and positive wage effects of migration



In the long run, labor demand may increase due to more consumption of new high-income receivers. Consumption and resulting wage increases due to commuting should be lower than due to migration. It can be assumed that commuters spend more money at their places of residence rather than in their work region (Elhorst 2003).

The central research question of this study is whether migration increases regional wage disparities. Since only disparities between German regions and not between Germany and other countries are observed, the effect of internal migration on wages is central for the research question. How does a positive or negative wage effect of domestic migration relates to disparities? The second estimation analyzes whether or not a high relative wage level and/ or a low unemployment rate provide incentives to move to a certain region. In the literature it is often assumed that workers vote with their feet and move to high-wage/ low-unemployment regions (Borjas 2000). If internal migration is significantly triggered by the local wage level, a positive migration effect on wages will lead to increasing disparities resulting in a self-reinforcing process: High disparities lead to migration and further

increase disparities. A negative migration effect on wages will lead to a reduction of disparities. Disparities, which lead to migration are likely to result in a wage adjustment process. When people or households do not move due to regional wage differences, migration is not likely to have a significant impact on disparities.

3.4 Empirical analysis

3.4.1 Econometric specification

The same framework is used to estimate the influences of regional migration rates on relative wage levels and to estimate the effects of regional labor market factors on migration rates. In the next passage, there will be a detailed description of the model for estimating migration effects followed by a brief specification on the second issue.

To estimate percentage changes, the dependent variable in the wage equation is given in logarithm. Following Harvey (1981), a dynamic model is carried out which differentiates between a short-run and a long-term effect. An integrated error correction mechanism ensures that the variables follow a steady-state growth path.

In the third section, the wage equation with main determinants is introduced in equation (3.1). An implicit linear approximation of this function is given by :

$$ln(\frac{w_{it}}{w_t})* = \beta_0 + \beta_2 migB_{it} + \beta_3 \frac{u_{it}}{u_t} + \beta_4 R_{it} + \beta_5 X'_{it} + \alpha_i + \tau_t \tag{3.3}$$

where $ln(\frac{w_{it}}{w_t})*$ is the nominal relative wage level of the structural equation. Depending on the specification $migB_{it}$ represents the overall migration balance, the domestic migration balance (MigB, DomMigB) and/ or the commuting balance (ComB) in region i in time t. Main determinants of the local wage level are the relative regional unemployment rate ($\frac{u_{it}}{u_t}$) and the average rent per square meter R_{it}. The vector X'_{it} contains additional regional factors influencing the wage level. As justified in section 3.3 X'_{it} includes the region's population density per square kilometers and the share of highly qualified employees, of women and of self-employed employees in a specific region. Time invariant regional effects are represented by α_i. Time effects which do not vary between regions are represented by τ_t .

The structural equation (3.3) gives the long-run effect of migration on wages β_2. As Engle and Granger (1987) propose, economic series must be differenced before the assumption

of stationarity holds. After taking first differences, the variables become so called co-integrated as represented in the adjustment equation (3.4):

$$\triangle ln(\frac{w_{it}}{w_t}) = (1-\beta_1)[ln(\frac{w_{it}}{w_t}) * -ln(\frac{w_{i,t-1}}{w_{t-1}})] + \varepsilon_{it} \tag{3.4}$$

ε_{it} represents the structural disturbance term. Entering (3.3) in (3.4) with $\triangle ln(\frac{w_{it}}{w_t})$= $ln(\frac{w_{it}}{w_t})$- $ln(\frac{w_{i,t-1}}{w_{t-1}})$ and solving for $ln(\frac{w_{it}}{w_t})$ gives the equation to be estimated:

$$ln(\frac{w_{it}}{w_t}) = \beta_0(1-\beta_1) + \beta_1 ln(\frac{w_{i,t-1}}{w_{t-1}}) + \beta_2(1-\beta_1)migB_{it}$$

$$+\beta_3(1-\beta_1)\frac{u_{it}}{u_t} + \beta_4(1-\beta_1)R_{it} + \beta_5(1-\beta_1)X'_{it} + (1-\beta_1)\alpha_i + (1-\beta_1)\tau_t + \varepsilon_{it} \tag{3.5}$$

where $\beta_2(1-\beta_1)$ yields the short-run effect of a relative wage level change in response to a one percent change of the migration rate. A series of abnormally large random disturbances influencing the wage development, may lead to a difference of the short-run and long-term effect of migration. After estimating the coefficient of the lagged dependent variable β_1 in (3.5), equation (3.4) with the two terms multiplied by $(1-\beta_1)$ and ε_{it} drives the relative wage level back towards its long-run growth path. Therefore, resulting from the structural equation in (3.3) $\beta_2 = [\beta_2(1-\beta_1)]/(1-\beta_1)$ represents the respective long-run wage effect of migration on wages. When carrying out an instrumental variable estimation, it has to be considered whether a correlation exists between $ln(\frac{w_{i,t-1}}{w_{t-1}})$ and ε_{it} in first differences, leading to MA(1) errors.

This procedure is also used for estimating the long-run effect of labor market parameters on migration. The regional domestic migration balance as dependent variable is not given in logarithms because the variable takes on negative values. Hence effects can not be interpreted as elasticities. In section 3.3 the migration equation with main determinants are introduced in equation (3.2). An implicit linear approximation of this function is given by:

$$migB_{it} * = b_0 + b_2 ln(\frac{w_{it}}{w_t}) + b_3(\frac{u_{it}}{u_t}) + b_4 R_{it} + \eta_i + \nu_t \tag{3.6}$$

where $migB_{it}*$ is the domestic migration balance of the structural equation. η_{it} represents the regional effects and ν_{it} the time effects. A migration adjustment equation is given by:

$$\triangle migB_{it} = (1-b_1)[migB_{it}* - migB_{i,t-1}] + e_{it} \tag{3.7}$$

where e_{it} represents the disturbance term. Entering (3.6) in (3.7) and solving for $migB_{it}$ gives the equation to be estimated:

$$migB_{it} = b_0(1-b_1) + b_1 migB_{i,t-1} + b_2(1-b_1)\frac{w_{it}}{w_t} +$$

$$b_3(1-b_1)\frac{u_{it}}{u_t} + b_4(1-b_1)R_{it} + (1-b_1)\eta_i + (1-b_1)\nu_t + e_{it} \tag{3.8}$$

where $b_2(1-b_1)$ represents the short-run effect of a change of the regional domestic migration balance in response to a one percentage point change of the relative wage level. Resulting from the structural equation in (3.6), b_2 gives the long-run effect of the relative wage level. $b_3(1-b_1)$ gives the short-run effect of a change of the regional domestic migration balance in response to a one percentage point change of the relative unemployment rate. b_3 represents the respective long-run effect for the relative unemployment rate. Again for the estimation it has to be tested whether MA(1) errors exists.

The following passages discusses econometric issues considered in the estimation of equation (3.5) and (3.8). Heckman (1981) emphasizes that regression analysis may show a spurious effect, when heterogeneity is not properly taken into account. Results would appear to demonstrate true state dependence that does not exist. In addition to heterogeneity, Geyer and Steiner (2007) point out that there might exist unobserved serial correlation in time-varying error components and initial conditions or that relevant pre-sample history may not be taken properly into account in the estimation. With the given panel data it is possible to identify state dependence.

The estimation method takes into account the regional fixed effects which are represented in equation (3.5) by α_i and in (3.8) by η_i. Following Jochimsen and Nuscheler (2011) it is plausible to treat the expected regional effects as fixed. They argue that there is no room for random effects (RE) when all regions of a country are included in the estimation. The Hausman test (see Arellano and Bond 1991) rejects the random effects specification. It

can be assumed that regional effects and the considered explanatory variables are correlated. To identify true state dependence, the considered fixed effects and the disturbance term have to be conditionally uncorrelated. Since for neighbouring regions homoskedastic errors cannot be assumed, robust standard errors are computed. Year dummy variables are integrated into both equations (3.5) and (3.8) to eliminate the assumed unobserved time effects τ_t and ν_t. Finally, there must be no remaining autocorrelation in the disturbance term which is tested with the Arellano-Bond (1991) test.

To account for dynamics as described above, in both estimation equations the lagged depended variable is integrated as explanatory variable. Here a positive correlation with the regional fixed effects has to be considered. OLS estimation will lead to an inconsistent coefficient of the lagged dependent variable, especially since T=12 is relatively small. An upwards biased "dynamic panel bias" will occur (Nickell 1981). As Bond (2002) shows, the fixed effects (FE) estimator does not eliminate the dynamic panel bias and is likely to be downward biased. He summarizes that a consistent estimator of the lagged dependent variable should lie between the FE and OLS estimates, or should at least not be significantly lower than the former or significantly higher than the latter. Roodman (2009a) further emphazises that a credible estimate should be below 1.00 since otherwise an unstable dynamic would occure.

To remove the fixed effects, first differences are taken. The lagged dependent variable is still potentially endogenous. However, while within the FE transformation, instrumenting the lagged dependent variable with own lags is not possible, it is possible for the first difference transformation. In this study, the lagged dependent variable is not the only variable under consideration. When simultaneity exists between the local labor market outcome and migration as described in section 3.3, the migration and unemployment variables in equation (3.5) and the wage and unemployment variable in (3.8) will also be endogenous. Furthermore it is assumed that rents are endogenous in both equations. Due to an expected simultaneity bias, these variables should also be instrumented (see Wooldridge 2003). Since no exogenous instruments appear to exist (e.g. a source of exogenous variation in the migration variables that does not directly influence the relative wage level is very hard to find), the instruments used are again "internal", based on lags of the instrumented variables.

The Generalized Method of Moments (GMM) developed by Hansen (1982) leads to an asymptotically efficient estimator in this context. A one-step GMM estimator is not efficient when assuming heteroscedasticity. Hence, a two-step estimator with the Windmeijer bias correction is used (Windmeijer 2005).

This study uses a Difference (DIF) GMM estimator and a System (SYS) GMM estimator. Within the DIF GMM estimator proposed by Arrelano and Bond (1991), first differences are taken and potentially endogenous variables are instrumented with usable lags of their own levels. Blundell and Bond (1998) show that past levels may convey little information about future changes, resulting in poor performance if the dependent variable is close to a random walk. Their proposed SYS GMM estimator additionally estimates level (LEV) equations where endogenous variables are instrumented with own lagged differences. In this study, results of the SYS GMM estimator are generally preferred to results of the DIF estimator.

The System GMM estimator has superior finite sample properties in terms of bias and root mean squared error when series are persistent. However, Bun and Windmeijer (2009) show that instruments may still be weak. Using a concentration parameter proposed by Rothenberg (1984), they use a covariance stationary panel data AR(1) model to compare the information content of instruments in the difference and levels equation. When the variance of the idiosyncratic shocks (σ_v^2) is larger than the variance of the unobserved heterogeneity term (σ_η^2), the LEV model performs better in terms of a smaller concentration parameter, of a smaller LEV and SYS 2SLS bias and of a better Wald test performance. However, superiority of the SYS GMM estimator relative to the DIF one is usually shown for samples in which the variance of the regional effects is high relative to the variance of the transitory shock, such as $(\sigma_\eta^2) = (\sigma_v^2)$ or even $(\sigma_\eta^2) > (\sigma_v^2)$. In the former case $(\sigma_\eta^2) = (\sigma_v^2)$, concentration parameters and the distortion of the Wald test turn out to be equal for both the DIF and the LEV models. Therefore, as proposed by the authors, the weakness of the instruments used in this study is tested separately. An underidentification test is conducted to find out whether the used instruments are correlated with the endogenous regressors. The p-value of the Kleibergen-Paap (2006) rk LM statistic gives information on whether the excluded instruments are "relevant" and therefore whether the equation is identified. Furthermore, instruments are tested to see in how far they are only weakly correlated with the endogenous regressors by reporting the Kleibergen-Paap rk Wald F statistic. The Kleibergen-Paap Wald statistic is the robust counterpart of the Cragg-Donald Wald statistic. The critical values are the Stock-Yogo (2004) IV critical values for the Cragg-Donald i.i.d. case. In this separate estimation for weak instrument testing, an endogeneity test of endogenous regressors will be applied as well (Baum et al. 2010).

The instruments should not only be sufficiently correlated with the included endogenous variables; the second necessary criterion for an instrument to be valid is exogeneity. Instruments should not be correlated with the error term and hence the dependent variable.

The Hansen J statistic is reported to test whether the instruments used are jointly valid in this respect (Hansen 1982). The Hansen test also examines whether the idiosyncratic disturbances follow a moving average process of first or higher order (MA(.)). Additionally, two Difference-in-Hansen tests are used to check the validity of a subset of instruments. While the Difference-in-Hansen test (1) checks the validity of the subset of instruments based on the levels equation (which is only relevant for the System GMM estimation), the Difference-in-Hansen test (2) checks the validity based on the dependent variable.

Although the Difference and System GMM estimators gained high popularity in the last years, they are not without problems. In addition to the weak instrument problem, instrument proliferation is another but related severe issue when applying the GMM estimator within dynamic panel data models. The problems arising from instrument proliferation are well documented in the literature. However as Roodman (2009b) or Bontempi and Mammi (2012) point out, in connection with the Difference and System GMM estimator the issue needs to receive much more attention in research. Roodman (2009b) describes two main problems when the number of moment conditions is too large relative to the sample size. Firstly applying to instrumental variable estimators in general, instruments can overfit endogenous variables, resulting in a small sample bias in the direction of OLS. Secondly only applying to the two-step GMM estimator, estimates of the optimal weighting matrix tend to be very imprecise due to its high dimensions. As a result, the standard errors of the estimator tend to be severely downward biased and both Hansen tests can be greatly vitiated (Verbeek 2012). Results appear valid, creating J statistics with high p-values of 1.000 or close to 1.000. However, the implausible high p-values can be expected to result from instrument proliferation weakening the test's ability to detect a possible violation. Since there is no formal test or rule of thumb of how many instruments are too many, Roodman (2009b) proposes testing GMM results for robustness to reductions in the instrument set. As Windmeijer (2005) reports, Monte Carlo experiments showed that reducing the total number of instruments from 28 to 13 decreased the average bias of the two-step GMM estimator by 40%.

With T=12 and four or five potentially endogenous variables for each model of this study, there is a large number of instruments available. In this study, for the basic estimations the lag length of instruments is restricted to T-8. To detect a potential violation of the Hansen tests and to decrease the possible bias of instrument proliferation, the number of instruments is further reduced for the main results in two variants. The first variant restricts the instrument set to a one-lag period. The second one collapses the full instrument set into a smaller one by combining instruments through addition. An instrument matrix

is squeezed horizontally and combines formerly distinct columns. The estimator will not separate empirical moments $\sum_{t,l} y_{i,t-l} \triangle e_{it}$ for each l and t but will only minimize the magnitude of the moments $\sum_t y_{i,t-l} \triangle e_{it}$ for each l. While the instrument count in the full set for the Difference and System GMM estimation is typically quadratic in T, the collapsing makes it - as the first variant above - linear in T (Roodman 2009b).

3.4.2 Data and descriptive statistics

The examination about the effect of migration and commuting rates of German regions on regional wage disparities is based on data from the "Indicators and Maps on Urban Development in Germany" (INKAR, BBSR Bonn 2009[3]) and from the "German Socio Economic Panel" (GSOEP[4]) from the years 1998 to 2009. The examination is carried out on the regional level of the German Spatial Planning Regions (Raumordnungsregionen, RORs). RORs are classifications between German administrative districts and counties with a total of 96 regions. The INKAR data set is supplied by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR). It gives information on spatial development in several regional levels in the form of data, maps and charts. The data set provides a wide range of official regional figures about employment, population and age structures, mobility, education, living standards, environment, health, public budget, traffic and local economy in Germany. The GSOEP is supplied by the German Institute of Economic Research (DIW Berlin). It is a representative panel survey of private households in Germany. Among many other fields, it contains detailed information on household income and work hours.

SOEP data is used for differentiated wage information because the INKAR data set provides only information on gross earnings, not taking work hours into account. Average net hourly wages of SOEP respondents are merged to the INKAR data set on the regional level of RORs. For each ROR and year, the number of wage observations in the SOEP for the considered time varies from 9 to 424. On average, the calculated wages are based on 100 observations. However, for RORs with few wage observations, the wages may not be fully representative and results may be biased to a certain extent. For further research it would be worthwhile to test results using other representative Data such as the employment history statistic of the IAB. For the following descriptive statistic part, more representative average wages are calculated using SOEP expansion factors. To consider dependencies

[3] A description of the INKAR can be downloaded from `www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/INKAR/inkar_node.html`

[4] A description of the GSOEP can be downloaded from `www.diw.de/soep`

between regions and for wages of one person over the observed years, averages are calculated using OLS estimation with robust standard errors. When estimating causal effects within the main regression analysis of this study, the use of sample weighting does not improve the results. The various econometric issues considered in the estimation already correct for heteroscedasticity and endogenous sampling (see Solon et al. 2013).

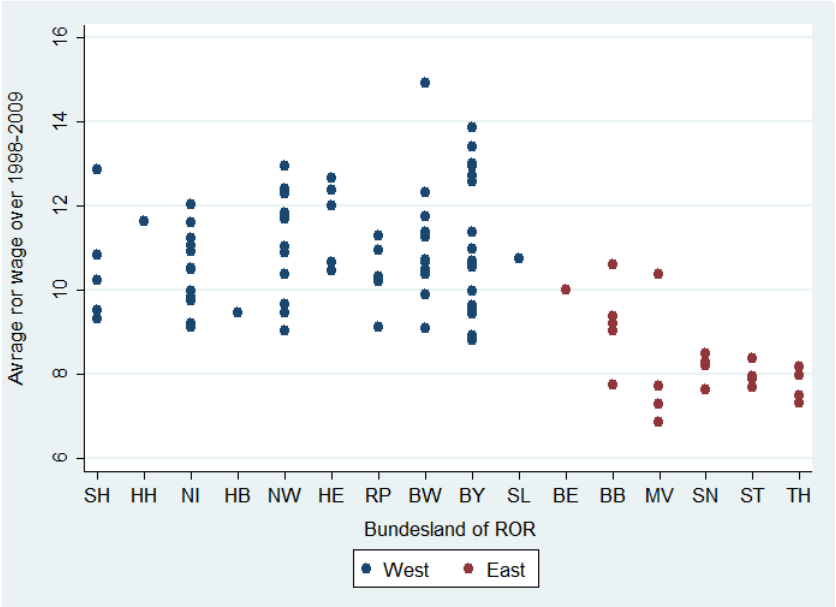
Wages are used in nominal form. Although the German statistical agency is working on it, currently there is no representative data on regional differentiated prices available in Germany. As described in section 3.3, in both estimated equations it will be controlled for local average rents. The BBSR supplies average rents, based on newspapers and internet advertisements[5]. Unfortunately, no data is available for years before 2004. However, for now and in contrast to SOEP information, it is the most representative available data base that includes all German regions. Therefore, average rents from 2004 to 2006 are used for the years before 2004.

Figure 3.2 and 3.3 below give information about labor market disparities in Germany. For each ROR averages for the years 1998 to 2009 are displayed over German "Bundesländer" (NUTS 1 level). Figure 3.2 depicts averages of net hourly wages. In West Germany, shown by the first 10 columns, average wages range from about EUR 9 (Landshut) to EUR 15 (Ostwürttemberg). In the Eastern Bundesländer, shown by the last 6 columns, wages range from about EUR 7 (Mecklenburgische Seenplatte) to EUR 11 (Havelland-Fläming). Figure 4 depicts disparities in local unemployment rates. Unemployment rates in the East range from 12% (Südthüringen) to 21% (Mecklenburgische Seenplatte). In the West they range from 5% (Oberland) to above 14% (Emscher-Lippe).

While unemployment disparities do not vary much during the observed time period, the distance of regional wage rates to the national mean increased in many regions. Figure 3.4 relates average relative wage rates from 1998-2001 with average relative wage rates from 2006-2009 for West and East Germany. Most Eastern wages (see the right chart)) remain below the average in the observed years, with a relative wage lower than 1. There are eight regions above the diagonal indicating further relative decreases. In the West (see the left chart)) there are many regions in the upper-right quadrant with a relative wage higher than 1 indicating that wages remained above average. Here, points under the diagonal indicate further relative increase. Ostwürttemberg is a high outlayer. Further decreases of under average wage rates are higher than in the East.

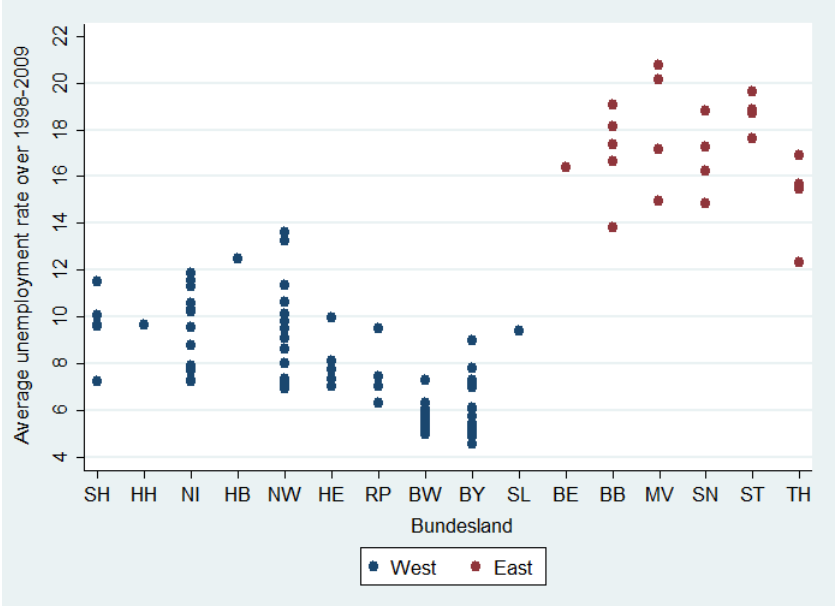
[5] More information on the BBSR-rents are available on `http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/BBSROnline/2010/ON012010.html`

Figure 3.2: ROR average net hourly wages for 1998-2009 over nuts1



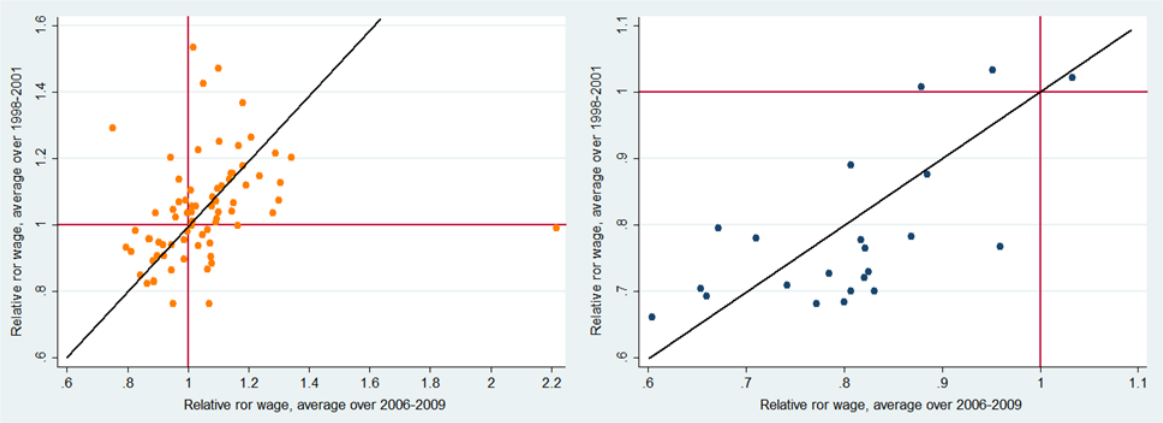
Source: SOEP

Figure 3.3: ROR average unemployment rates for 1998-2009 over nuts1



Source: INKAR

Figure 3.4: Change of relative wage levels from 1998-2001 to 2006-2009



Source: SOEP

The data set enables the observation of migration and commuting balances. With regard to migration, in addition to the overall migration balance, the rates for internal migration between different German regions are given. While migration flows are related to 100 residents of the respective ROR, commuting flows are related to 100 employees from the respective working population in the region. The mobility rates remain similar in the observed time period. Figure 3.6 in the Appendix depicts the yearly change of the migration balance. Overall migration balances range from -1.38 to 1.76%. Domestic migration balances range from -16.52 to 1.79%. Commuting balances range from -43.91 to 30.44%.

Additional regional control variables are used to estimate the influence of migration on wages and the effect of regional labor market circumstances on migration (see section 3.1). Table 3.1 depicts the means and standard errors of the variables used in the estimation based on 96 RORs.

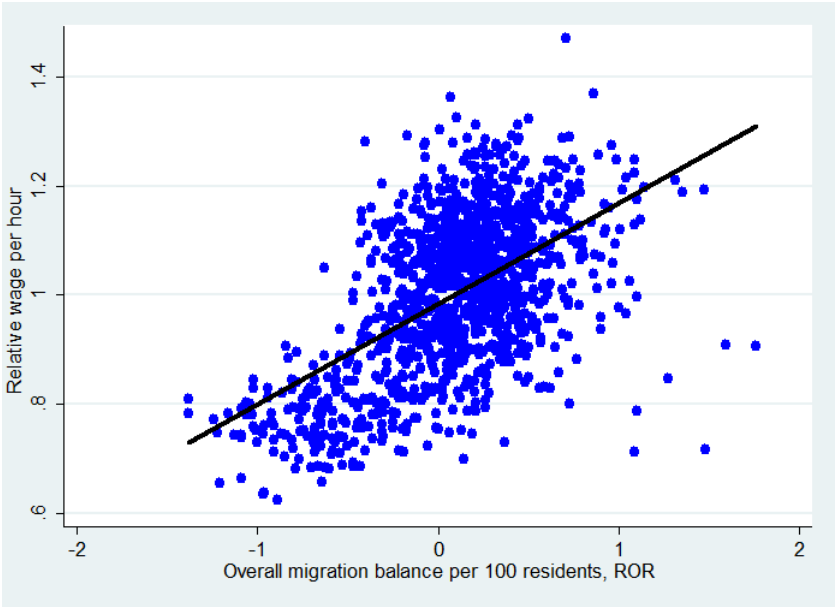
Table 3.1: Mean and standard deviation of regional explanatory variables

	Mean	Standard deviation
Wage per hour in EUR	10.43	0.37
Unemployment rate in %	10.04	4.66
Migration balance, related to residence	0.09	0.43
Within Migration balance, related to residence	-0.06	1.02
Commuting balance, related to employees	-5.03	11.67
Rent per square meter in EUR	5.59	0.97
Population density, residents per km²	330.57	494.15
Share of women in %, related to residents	50.99	0.42
Share of self-employed in %, related to employees	11.05	1.95
Share of highly qualified employees in %, related to employees	7.83	2.80

Source: INKAR, SOEP

Figure 3.5 displays a scatter diagram relating relative wage levels (without using expansion factors) to migration balances. Although distinct connection is not evident at first sight, the regression line illustrates a positive relation. Accordingly, wages in regions with high positive migration balance appear to be high.

Figure 3.5: Scatter diagram relating relative wage levels and regional migration balances



Source: INKAR, SOEP

3.4.3 Results

In the following, results for the wage and migration equations are presented. In the basic estimations 4 lags are used (see Table 3.6, 3.7 and 3.8 in the appendix). Due to a large number of instruments resulting from four or five potentially endogenous variables, the p-values of the Hansen tests approach 1 in most of these outcomes. To reduce a potential bias of instrument proliferation, in the main results presented below, the instrument count is reduced in two variants as described at the end of section 3.4.1. The instrument set is reduced to a one-lag period or into a smaller one by combining instruments through addition. For each model using four lags or one lag, a separate two-step feasible GMM estimation applies an underidentification and a weak instrument test as well as an endogeneity test of endogenous regressors.

The first part below presents results of the effect of migration on regional wage levels. Two specifications are used to estimate the effects of the migration and commuting balance. In the first specification, the migration rate considers both, migration between different German regions and between Germany and other countries. Analyzing the effect of migration on disparities, only internal migration should be taken into account. Therefore, in a second specification, the migration balance considers only migration between different German regions. The last part of this section presents results of the effect of regional wage levels and unemployment rates on the domestic migration balance.

Estimation of the wage equation considering over-all migration

Table 3.2 below summarizes the main results of the first specification. Results of the Difference GMM and System GMM equations are reported separately. The range of the FE and OLS point estimate of the lagged dependent variable is given by 0.3923-0.7377. While the coefficients of the Difference GMM estimation in Reg. 1a lies barely outside this interval, the remaining coefficients (Reg. 1b and 2a-c) lie in the interval. With 0.3306 the DIF GMM coefficient when using one lag is still very close to the given interval. However as discussed in section 4.1, results of the SYS GMM estimator are in general preferred to results of the DIF GMM estimator when there are no contradicting indicators. While in Reg. 1a and 1b none of the mobility rates show significant coefficients, the migration balance in Reg. 2 a and c show significant positive coefficients. Following results of the SYS GMM estimation of Reg. 2a, the effect of the overall migration balance on the relative wage level is small but positive and not only a short-term phenomenon. When the migration balance rate in a certain region increases by 10 percentage point (which equals

a change in the value of 0.1), the relative wage level increases by 0.0042 percent in the short run and by 0.0107 percent in the long run (dividing 0.042 by [1- the coefficient of the lagged dependent variable]*0.1). As shown in Figure 3.6 (see the appendix), yearly changes of the German migration balance in the observed years lie in an interval from -50 to +50 percentage points (which equals an interval of the value of -0.5 to +0.5). In these terms, the changes of the relative wage lie in an interval of -0.0535 to +0.0535 percent per year. The commuting rate variable shows no significant effect in any of the outputs of this study.

All estimations of the first specification pass the autocorrelation test. To verify zero autocorrelation in first-differenced errors, serial correlation must not occur at any order higher than one. Using four lags (see Table 3.6 in the appendix) the Hansen and Difference-in-Hansen tests give high p-values of 1.000 which Roodman (2009b) calls the classical sign of instrument proliferation weakening the tests ability to detect a problem and to possibly biasing results. When reducing the instrument count, relevant coefficients stay significant and the values change only marginally. While results of Table 3.6 give approximate values, possibly suffering from overfitting bias, presented results in Table 3.2 are more reliable. Reducing the instrument count increases the ability of the Hansen test to detect a possible violation. Using only one lag (see Reg. 1a and 2a in Table 2) or using all lags collapsed (Reg. 1b and 2b in Table 2) lowers most p-values of the Hansen test to more realistic values. The same phenomenon applies for the Difference-in-Hansen tests. In Reg. 2a the p-values are still very high. Since five variables are instrumented, there are still 141 instruments in the System GMM estimation using only one lag. In order to further reduce the instrument count, the commuting variable is excluded in an additional regression (Reg. 2c). In this case the Hansen tests are passed at lower p-values. The used instruments appear to be valid.

For the separate GMM estimation of the first specification using one and four lags, the p-values of the Kleibergen-Paap rk LM statistic equal 0.000. This indicates that both equations are identified. Using four lags, the Kleibergen-Paap Wald rk F statistic for weak indentification testing equals 22.02 and 96.04 when using one lag. The F values being high enough, indicates that the used instruments are not weak. The endogeneity tests of endogenous regressors report p-values of 0.000 in both cases. Therefore, the hypotheses that respective variables are exogenous can be rejected.

Table 3.2: Estimation results for wage equations – Specification 1

	Reg. 1a *DIF, 1 lag*	**Reg. 1b** *DIF,all lags collapsed*	**Reg. 2a** *SYS, 1 lag*	**Reg. 2b** *SYS, all lags collapsed*	**Reg. 2c** *SYS, 1 lag, ComB excluded*
Ln(Rel. wage (t-1))	0.3306***	0.3980***	0.6071***	0.4397***	0.6091***
	(0.0573)	(0.0592)	(0.0523)	(0.0527)	(0.0508)
Rel. Unemployment rate	0.0187	0.0069	-0.0293	-0.0066	-0.0403***
	(0.0638)	(0.0615)	(0.0278)	(0.0497)	(0.0177)
MigB	0.0257	0.0170	0.0421***	0.0229	0.0403**
	(0.0228)	(0.0269)	(0.0148)	(0.0217)	0.0177
ComB	-0.0033	-0.0021	0.0008	0.0029	
	(0.0046)	(0.0048)	(0.0009)	(0.0023)	
Additional Control variables[1)]	√	√	√	√	√
Year dummies	√	√	√	√	√
Obs.	950	950	1045	1045	1045
Regions	95	95	95	95	95
Instruments	95	55	141	70	112
AR 1	0.000	0.000	0.000	0.000	0.000
AR 2	0.662	0.435	0.254	0.434	0.268
Hansen	0.288	0.592	0.999	0.248	0.658
Difference- Hansen (1)			1.000	0.224	0.897
Difference- Hansen (2)	0.147	0.664	1.000	0.338	0.992

Notes: * significant at 10%, ** at 5%, *** at 1%. Robust standard errors are reported in parentheses. 1) Additional regional control variables: The average Rent, the population density, the share of women, of self-employed and of high-qualified employers. Yearly time dummies are included in all regressions. Reported estimates are based on the 2-step GMM estimator with the Windmeijer bias-correction. The Arrelano-Bond test AR(1,2) is a test for first and second order autocorrelation in the first-differenced residuals. The Hansen test is a test of the validity of overidentifying restrictions. The Difference-in-Hansen tests check the validity of the subset of instruments for the level equation (1) and of the subset based on the dependent variable (2). P-values are reported.

Estimation of the wage equation considering only domestic migration

Table 3.3 summarizes the results for the second specification which only considers internal migration within Germany. The FE-OLS interval for the point estimate of the lagged dependent variable is given by 0.3913-0.7612. Again all estimates of the lagged relative wage level variable lie in or close around this interval. Although the respective coefficients of the Difference GMM estimation (0.3688 in Reg 3a and 0.3276 in Reg. 3b) lie outside this range, they are not significantly lower than the Fixed Effects estimate. The coefficients of the System GMM estimation lie with 0.6465 (Reg. 4a) and 0.4023 (Reg. 4b) inside the respective range. While in Reg. 4a the migration rate shows no statistically significant effect on wages, the respective coefficient of Reg. 4b and the coefficients of the Difference GMM estimation (Reg. 3 a and b) are statistically significant but very low and negative. Hence in contrast to the first specification, the effect of internal migration on wages turns out to be zero, or very small and negative.

All regressions of the second specification pass the autocorrelation test. Using four lags in the output presented in Table 3.7 (see the appendix), the p-values of the Hansen and Difference-in-Hansen tests reach 1.000 signalling instrument proliferation. Table 3.3 presents the respective results of the second specification when the instrument count is reduced. Coefficients equal their respective DIF and SYS estimation counterparts in value and significance. This gives evidence that a possible bias from instrument proliferation could be reduced. When reducing the instrument count for the Difference GMM estimation (Reg.3a and 3b), p-values of the Hansen and Difference-in-Hansen (2) tests decrease to more realistic values. Furthermore, the coefficient of the lagged dependent variable in Reg 3a increases in direction of the FE-OLS interval. When reducing the lag length to one lag in the SYS GMM estimation in Reg. 4a, the instrument count of 141 instruments is still very high and the p-values of the Hansen tests still equal or are close to one. When collapsing all lags, the instrument count is reduced to 70 instruments. However, in this case the main Hansen test is not passed. Some of the instruments do not appear to be fully exogenous in the SYS GMM estimation. This indicates that the Difference GMM estimation, proposing a small negative wage effect, gives more accurate results for the second specification.

Results of the Difference GMM estimation using 1 lag (Reg. 3a) propose that when the domestic migration balance rate of a region increases by 10 percentage point (which equals a change in the value of 0.1), the relative wage level decreases by 0.00066 percent in the short run and by 0.001 percent in the long run. The positive effect of over-all migration on German regional wages seems to exist mostly due to mobility between Germany and other

countries or due to the combination of domestic migration and transnational migration.

For this second specification using one and four lags, the reported Kleibergen-Paap rk LM statistic indicates that both models are identified. Furthermore, using four lags, the Kleibergen-Paap Wald rk F statistic for weak identification testing equals 22.02 and 96.04 when using one lag. Displayed by the F-values, instruments appear to be sufficiently correlated with the endogenous regressors. Results of the endogeneity tests of endogenous regressors indicate that respective variables are endogenous.

Table 3.3: Estimation results for wage equations – Specification 2

	Reg. 3a *DIF, 1 lag*	**Reg. 3b** *DIF, all lags collapsed*	**Reg. 4a** *SYS, 1 lag*	**Reg. 4b** *SYS, all lags collapsed*
Ln(Rel. wage (t-1))	0.3688***	0.3276***	0.6465***	0.4023***
	(0.0526)	(0.0652)	(0.0453)	(0.0558)
Rel. Unempl. Rate	-0.0191	-0.0312	-0.0470**	-0.0359
	(0.0492)	(0.0594)	(0.0247)	(0.0533)
DomMigB	-0.0066***	-0.0052**	-0.0002	-0.0061***
	(0.0016)	(0.0024)	(0.0002)	(0.0021)
ComB	-0.0002	0.0003	-0.0006	0.0038
	(0.0036)	(0.0041)	(0.0009)	(0.0030)
Additional Control var.[1)]	√	√	√	√
Year dummies	√	√	√	√
Obs.	950	950	1045	1045
Regions	95	95	95	95
Instruments	95	55	141	70
AR 1	0.000	0.000	0.000	0.000
AR 2	0.495	0.624	0.190	0.465
Hansen	0.456	0.417	0.996	0.099
Difference- Hansen (1)			1.000	0.147
Difference- Hansen (2)	0.583	0.619	1.000	0.390

Notes: see Table 3.2

Estimation of the migration equation

A second-step estimation analyzes the influence of labor market disparities on migration within Germany. Here, the migration equation, given in (8) is estimated using the domestic migration balance. Using DIF and SYS GMM estimations, it is accounted for dynamics of the migration rate and for endogeneity due to regional fixed effects. Furthermore, justified by the results of the former wage estimation, the model considers simultaneity. Table 3.4 depicts main results. Table 3.8 (in the appendix) depicts the results for the basic versions using 4 lags. The credible FE-OLS range of the point estimate on the lagged dependent variable for this version is given by 0.8315-0.9092. The lagged dependent variable coefficients of the DIF GMM estimation (Table 4, Reg. 5a-b) and of the SYS GMM estimation (Reg. 6a-b) lie closely above the given FE-OLS interval; they are not significantly higher than the OLS coefficient. For the DIF GMM estimation, the unemployment and rent variables show significant negative effects. In both regressions the wage coefficient is not statistically significant. For the SYS GMM estimation, except for the coefficient of the lagged dependent variable, none of the remaining coefficients is statistically significant.

All regressions of the migration equation pass the autocorrelation test. Results of the basic estimations (see Table 3.8 in the appendix) show extremely high p-values for the Hansen and Hansen-in-Difference tests. Since the instrument count is high, instrument proliferation can be assumed to weaken the test's ability to evaluate instruments and to bias coefficients and standard errors. When reducing the instrument count in the regressions presented in Table 3.4, respective coefficients stay significant and their values change only marginally, possibly reducing an instrument proliferation bias. For the Difference GMM estimation (Reg. 5a-b) the Hansen test produces extremely low p-values indicating that some instruments may not be fully exogenous. Concerning the advantages of the SYS GMM estimator Verbeek (2012) emphasizes that if the true coefficient of the lagged dependent variable is close to unity which appears to be the case for the migration equation, lagged levels are poor instruments for first differences. When reducing the instrument count of the System GMM estimation (Reg. 6a and b), the Hansen and Difference-in-Hansen tests show lower p-values larger than 0.05 (except for the Hansen test in Reg. 6b). Again results of the SYS GMM estimator are preferred to results of the DIF GMM estimator, indicating that there is no effect of the relative wage level on the domestic migration balance.

Table 3.4: Estimation results for migration equations

	Reg. 5a *DIF, 1 lags*	**Reg. 5b** *DIF, all lags collapsed*	**Reg. 6a** *SYS, 1 lag*	**Reg. 6b** *SYS, all lags collapsed*
DomMigB(t-1)	0.9301***	0.9787***	0.9180***	0.9607***
	(0.0595)	(0.0642)	(0.0103)	(0.0523)
ln(rel. wage)	-0.3570	-0.5609	0.1972	0.6813
	(0.4170)	(0.6803)	(0.2747)	(0.6753)
rel. unempl.	-1.1470***	-1.1660***	-0.0312	-0.1424
	(0.4020)	(0.3322)	(0.0441)	(0.1347)
Rents	-0.4875*	-1.0037***	0.0154	-0.0761
	(0.2734)	(0.3484)	(0.0419)	(0.1001)
Year dummies	√	√	√	√
Obs.	950	950	1045	1045
Regions	95	95	95	95
Instruments	50	50	86	55
AR 1	0.007	0.002	0.001	0.007
AR 2	0.274	0.275	0.247	0.242
Hansen	0.016	0.023	0.117	0.026
Difference- Hansen (1)			0.912	0.634
Difference- Hansen (2)	0.332	0.495	0.752	0.951

Notes: see Table 3.2

For the separate GMM estimation using four lags, the underidentification test indicates problems. A p-value of the Kleibergen-Paap rk LM statistic larger than 0.05 (p-value= 0.0820) indicates that the model is underidentified. However, with regard to the Kleibergen-Paap Wald rk F statistic of 152.73, instruments appear to be sufficiently correlated with the endogenous regressors. The p-value of the Kleibergen-Paap rk LM statistic decreases to 0.012 when only using one lag. In this case the Kleibergen-Paap Wald rk F statistic equals 9.92; the value is still larger than the critical value of 5. Coefficients of the basic regressions using four lags may be biased due to a weak instrument problem. The problem is no longer apparent when the instrument count is reduced. Therefore, also in terms of weak instrument problems results of Reg. 5 a, b and 6 a, b appear to be more reliable. Results of the endogeneity tests of endogenous regressors indicate for both models with one or four lags that respective variables are endogenous.

Summarized as a main result of this section, the regional domestic migration balance does not appear to be influenced by the regional relative wage level. Households or individuals, who decide to relocate, seem to have other reasons for moving such as family or housing

related issues. As Pissarides and McMaster (1990) point out, the regional fixed effects include these other determinants. Individual or household characteristics such as age, educational level or household composition influence the migration probability and may vary across regions.

3.5 Conclusion

This study provides an analysis of the effect of German regional mobility rates on regional wage disparities. The estimation uses data from the "Indicators and Maps on Urban Development in Germany and Europe" (INKAR) and the "German Socio Economic Panel" (GSOEP) from the years 1998 to 2009 on the basis of German Spatial Planning Regions (RORs). In a first step, a structural wage equation is carried out to estimate the effect of the regional migration and commuting balances on the relative regional wage level. Here, a first specification estimates the effect of the overall migration balance while a second specification considers only internal migration. The latter is relevant for analyzing the effect of migration on disparities between different German regions. All estimations of this study calculate short-run and long-term effects. Dynamic panel estimations are conducted to account for simultaneity between the regional labor market situation and mobility, for dynamic wage adjustments and for endogeneity due to regional fixed effects.

Due to four or five endogenous variables in each estimation equation of this study, instrument proliferation can be assumed, also when the lag length is reduced to T-8 for basic estimations. Too many instruments may bias estimates and standard errors and may weaken the validity of the Hansen-Tests. The classical sign of too optimistic Hansen-test p-values are observed in the basic results. Following recommendations in the literature, for the main results of this study the instrument count is further reduced in two variants. In all cases this lowers the p-values to more realistic numbers and verifies basic results. However, the literature provides little guidance on how many instruments is too many. The research on instrument proliferation within the Difference and System GMM estimators is still in the early stages and as other authors claim, more methods are needed to further reduce the problem.

The results of the first specification indicate a small positive short-run and long-term wage effect of the regional overall migration balances. When the regional migration balance rate increases by 10 percentage point, the relative wage level increases by 0.0107 percent in the long run. The yearly changes of the migration balance of German regions lie in an interval of -50 to +50 percentage points (which equals a change in the value of -0.5 to

+0.5). Therefore, regions with a positive change rate of the migration balance can expect an increase of the relative wage rate of up to 0.054 percent. Regions with a negative change rate of the migration balance are expected to deal with a respective negative effect. In sum, the regions seem to benefit from new citizens, although the effect is small. One reason for the positive effect may be a higher consumption demand. This might also provide an explanation for the fact that no wage effect of commuting could be found in any output of this study. Commuters may spend more money at their places of residence rather than in their work regions.

The results of the second specification show a very small but negative wage effect of the migration balance which only considers migration between German regions. When the domestic migration balance in a region increases by 10 percentage points, the relative wage level decreases by 0.001 percent in the long run. By comparing the results of specifications 1 and 2, it can be concluded that German regions seem to benefit mostly from the combination of domestic migration and foreign migration. However, it has to be considered that both wage effects of overall and internal migration are very small.

In debates about migration, politicians often emphasize the fear that the regional labor market situation is worsened by migration, especially from other countries. The estimated small positive wage effect indicates that earning circumstances in German regions due not change much or may even improve with high positive migration balances. A possible explanation of the positive wage effect is selective migration. Self-selection can be considered in qualification but also in terms of unobserved characteristics such as general capability, motivation and courage. The moving incentive should be higher for individuals being more able or higher motivated in occupational field. This should especially apply with regard to the decision for relocating to another country. Hence, political debates about the impact of foreign migration should consider these results. As forecasted by the BBSR, the German population will decrease by about 2.52% in the years 2010 to 2030, the number of employed people is expected to decrease by about 6.69%. According to the ifo Institute, Germany may compensate the increasing labor demand by the unemployed people in the short run. However, labor reserves will not be able to fulfill the labor demand of firms in the long run. While for Germany as a whole, the GDP is supposed to increase by 1.14% p.a. from 2010 to 2030, growth rates will highly differ on the regional level. The ifo Institute emphasize the demographical development as a main reason for the differences. Regions with a stable labor force potential will be better off (Berlemann et al. 2012). This stability may also be supported by foreign migration.

Migration literature assumes that domestic migrants move to regions with high wages and

low unemployment rates. Focusing on work-related moving, Arntz (2010) confirms this assumption for Germany from 1975 to 2001. She shows that high-skilled job movers are mainly motivated by regional wage differences while less-skilled job movers are influenced by unemployment differences. As shown in studies presented in the second section, wage differences also mainly influence the migration flows from East to West Germany. It can be assumed that these crossing-boarder moves are primarily economically motivated moves. For the purpose of the research question, this study questions in a second step whether economic factors are main determinants of general migration within Germany. Only in this case, the estimated wage effect due to migration would be able to influence and to change regional wage disparities in the long run. Results indicate that the relative wage level shows no statistically significant influence on the regional domestic migration balance. Results probably differ from previous studies since the estimation considers migration that is not only motivated by economic factors. On average German households or individuals who decide to move, seem to have other reasons for moving such as family or housing-related issues.

Traditional migration literature assumes that labor mobility reduces regional labor market disparities. This conclusion is also made by Niebuhr et al. (2012) concerning unemployment rates. In this study when only considering internal migration within German regions, the estimated migration effect on relative wage levels turns out to be small and negative. Indeed, a negative effect may lead to an adjustment of disparities (although the impact would be low due to the small effect), but only if the migration rate due to wage disparities is high enough. Without analyzing this relationship, results remain hypothetical. Results of the second main estimation of this study indicate that German migration is not influenced by regional relative wage levels. An adjustment mechanism where disparities trigger migration and by this reduce existing disparities is not likely to occur in the coming years. Regional bindings might deter individuals leaving German regions with unattractive labor market circumstances. In addition, regional living expenses vary across Germany and thereby reduce earning disparities (Goebel et al. 2009). In this sense, disparities may still be too low to provide moving incentives.

On a single case basis, results can be used to determine how much the relative wage levels of regions may change due to migration. Since the estimated effect of the regional over-all migration balance on wages is positive, wages in regions with a positive balance will increase and decrease in regions with a negative balance. Hence, disparities will increase when regions with above-average wage levels are confronted with increases of the migration balance. In addition, disparities increase when regions with under-average wage

levels are faced with decreases of the migration balances. For the analysis relative average wage levels are calculated using SOEP expansion factors. Table 3.5 lists regions in which a positive wage distance to the national mean may further increase in the coming years. Large increases of above-average wage levels due to a high average growth of the migration balance can be expected for Hamburg, Neckar-Alb, Rhein-Neckar and Munich. The average change rate of the migration balance (for the years 1998 to 2009) in the first three regions is 2 percentage points which implies an average increase of the relative wage level of 0.002 percent due to the estimated wage effect of 0.00107. The average change rate in Munich is 5 percentage points. Hence, an average increase of the relative wage level of 0.005 percent can be expected.

Large decreases of under-average wage levels due to a large amount of relocations can be expected in particular for regions of Brandenburg. Here occur the highest negative average change rates of the regional migration balance. In Uckermark-Barnim, Prignitz-Oberhavel and Oderland-Spree average change rates (for the years 1998 to 2009) range from -11 to -14 percentage points. The estimated wage effect of 0.00107 leads to average declines of the relative wage level of 0.012 to 0.015 percent.

Table 3.5: Regions for which increasing disparities due to migration can be expected

Increases of over-average wage levels			**Decreases of under-average wage levels**		
ROR		Nuts1	ROR		Nuts1
201	**Hamburg**	**HH**	102	Schleswig-Holstein Nord	SH
305	Göttingen	NI	103	Schleswig-Holstein Süd-West	SH
307	Hannover	NI	302	Bremen-Umland	NI
507	Duisburg/ Essen	NW	303	Bremerhaven	NI
508	Düsseldorf	NW	304	Emsland	NI
510	Köln	NW	310	Oldenburg	NI
604	Rhein-Main	HE	312	Ost-Friesland	NI
605	Starkenburg	HE	313	Südheide	NI
806	**Neckar-Alb**	**BW**	502	Arnsberg	NW
812	**Rhein-Neckar**	**BW**	506	Dortmund	NW
906	Industrieregion Mittelfranken	BY	512	Paderborn	NW
910	**München**	**BY**	701	Mittelrhein-Westerwald	RP
1001	Saar	SL	702	Rheinhessen-Nahe	RP
			704	Trier	RP

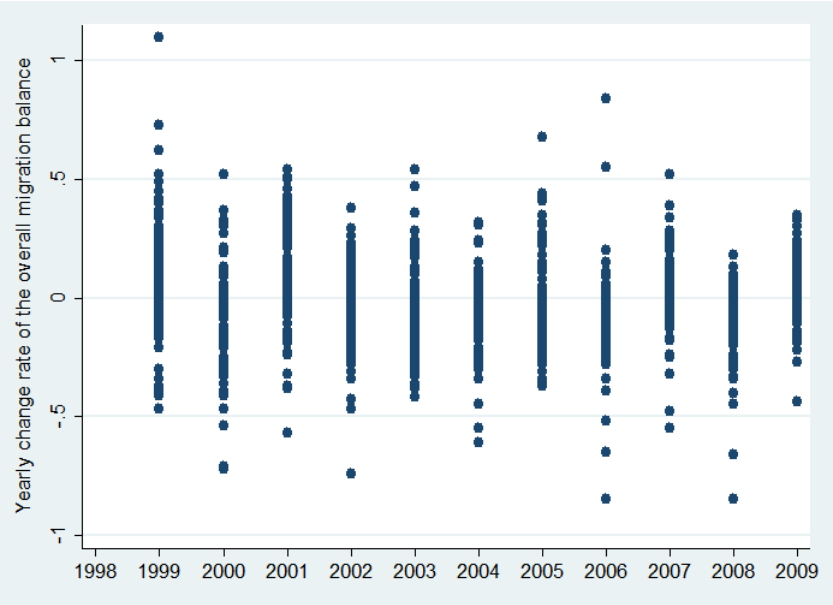
Table 3.5: Regions for which increasing disparities due to migration can be expected

	807	Nordschwarzwald	BW
	809	Schwarzwald-Baar-Heuberg	BW
	811	Südlicher Oberrhein	BW
	901	Allgäu	BY
	902	Augsburg	BY
	905	Donau-Wald	BY
	908	Landshut	BY
	911	Oberfranken-Ost	BY
	917	Westmittelfranken	BY
	1202	Lausitz-Spreewald	BB
	1203	**Oderland-Spree**	**BB**
	1204	**Prignitz-Oberhavel**	**BB**
	1205	**Uckermark-Barnim**	**BB**
	1301	Mecklenburgische Seenplatte	MW
	1304	Westmecklenburg	MW
	1402	Oberlausitz-Niederschlesien	SN
	1403	Südsachsen	SN
	1502	Anhalt-Bitterfeld-Wittenberg	ST
	1503	Halle (Saale)	ST
	1601	Mittelthüringen	TH
	1602	Nordthüringen	TH
	1603	Ostthüringen	TH
	1604	Südthüringen	TH

***Notes*:** Increases of over-average wage levels: for the years 1998-2009 the average relative wage level is larger than 1 and the average yearly growth of the migration balance is above 0. Declines of under-average wage levels: the average relative wage rate is smaller than 1 while the average growth of the migration balance is negative. Regions with an ROR > 1101 belong to the eastern part of Germany

3.6 Appendix

Figure 3.6: Yearly change of the migration balance by the observed years



Source: INKAR

Table 3.6: Estimation results for wage equations – 1. Specification with alternative set of instrument variables

	Reg. 1	**Reg. 2**
	DIF, 4 lags	*SYS, 4 lags*
Ln(Rel. wage (t-1))	0.3830***	0.6359***
	(0.0783)	(0.0627)
Rel. unemployment rate	0.0174	-0.0225
	(0.0591)	(0.0269)
MigB	0.0096	0.0421***
	(0.0207)	(0.0145)
ComB	0.0019	0.0006
	(0.0033)	(0.0008)
Additional Controlvariables[1)]	√	√
Year dummies	√	√
Obs.	950	1045
Regions	95	95
Instruments	169	215
AR 1	0.000	0.000
AR 2	0.473	0.214
Hansen	1.000	1.000
Difference- Hansen (1)		1.000
Difference- Hansen (2)	1.000	1.000

Notes: see Table 3.2

Table 3.7: Estimation results for wage equations – 2. Specification with alternative set of instrument variables

	Reg. 3	**Reg. 4**
	DIF, 4 lags	*SYS, 4 lags*
ln(Rel. wage (t-1))	0.3599***	0.6755***
	(0.0650)	(0.0508)
Rel. unemployment rate	-0.0042	-0.0413**
	(0.0527)	(0.0199)
DomMigB	-0.0055***	0.0003
	(0.0013)	(0.0021)
ComB	-0.0011	0.0006
	(0.0033)	(0.0006)
Additional Controlvar.[1)]	√	√
Year dummies	√	√
Obs.	950	1045
Regions	95	95
Instruments	169	215
AR 1	0.000	0.000
AR 2	0.512	0.163
Hansen	1.000	1.000
Difference- Hansen (1)		1.000
Difference- Hansen (2)	1.000	1.000

Notes: see Table 3.2

Table 3.8: Estimation results for migration equations – Difference GMM and System GMM estimation with alternative set of instrument variables

	Reg. 5	**Reg. 6**
	DIF, 4 lags	*SYS, 4 lags*
DomMigB(t-1)	0.9137***	0.9133***
	(0.0415)	(0.0150)
ln(rel. Wage)	-0.1630	0.1280
	(0.2412)	(0.1286)
Rel. Unempl. Rate	-1.0040***	-0.0182
	(0.3051)	(0.0356)
Rents	-0.5308***	-0.0098
	(0.1990)	(0.0231)
Year dummies	√	√
Obs.	950	1045
Regions	95	95
Instruments	131	167
AR 1	0.003	0.001
AR 2	0.268	0.249
Hansen	0.985	1.000
Difference- Hansen (1)		1.000
Difference- Hansen (2)	1.000	1.000

Notes: see Table 3.2

4 Work-related migration and unemployment

4.1 Introduction

The situation on the German labor market has changed for the better over the last eight to nine years.* Whereas in 2005 4.9 million people were unemployed, the number decreased to 2.7 million in October 2014 (German Federal Employment Agency). Yet, the individual situation of almost 3 million unemployed remains unimproved. Individual unemployment is still highly distressing and affects all areas of life. This study focuses on the possibility of ending unemployment by moving to another region for a new occupation. Most people are regionally bound to a particular area; often the family situation makes work-related moving difficult and moving is associated with high costs. However, many individuals and families overcome these obstacles successfully. The question thus arises of whether in Germany the unemployed are as willing to move as employed workers to escape unemployment. A lower willingness to move among the unemployed is likely to imply that certain moving obstacles only exist for this group or are at least of greater significance for them. In this case, for labor market policy the potential would exist to reduce unemployment by reducing moving obstacles. This study questions whether being unemployed increases or decreases the probability of undertaking a job motivated change of residence.

There are arguments for and against a higher job mobility of the unemployed. It can be assumed that rational utility-maximizing individuals compare the payoffs of different opportunities when a decision for migration needs to be made. According to Todaro (1969) the migration decision is governed by the expected differential between the income in the home and potential destination regions. Pursuant to this approach, unemployed people are more likely to consider a change of residence than employed workers due to the expected gain in income. Further positive effects are lower opportunity costs for the unemployed, for

*The paper is published in the Journal for Labour Market Research, see Fendel (2014)

example due to no loss of firm specific human capital (Juerges 1998). Previous US-studies confirm that the unemployed are more likely to migrate than employed people (DaVanzo 1978; Gross and Schoening 1984). On the contrary, the expected increase in income may not be sufficient due to regional price differences especially in housing costs. This applies especially for individuals with low qualifications and consequently low wages. The usually precarious financial situation of (long-term) unemployed job seekers might deter them from considering a change of residence even though basic moving expenses are usually paid by the employment agency once the work-related migration is approved.

Windzio (2004) emphasizes that not only opportunity differences between source and destination regions will influence the migration decision. Individual characteristics, especially in terms of human capital resources also influence the decision. A broader identification of moving motives is achieved by substituting monetary migration payoffs with overall utility increases. Non-monetary migration costs result for example from leaving familiar surroundings. A person may also be discouraged from moving by general personal inflexibility. Furthermore, Kitching (1990) attributes the lack of mobility among unemployed people predominantly to their on average lower educational level. A lower educational level can be assumed since it is per se related to a higher unemployment risk (Glocker and Steiner 2011). Many migration studies emphasize the high influence of education on mobility (Long 1973; Greenwood 1975; Karr and Koller 1987; Massay 1993; Haas 2000; Windizo 2004; Arntz 2005; Dustmann and Glitz 2011). When migration is understood as an investment decision the economic success of the migrant in the new destination is highly influenced by his or her educational background (Sjaastad 1962). In addition, it is often assumed that individuals with low education are less likely to get information about vacancies in other regions and to consider moving for a new job (Juerges 1998).

Using a bivariate probit approach and micro data from the German Socio Economic Panel (GSOEP), the present study analyzes whether the unemployment status has a positive effect on labor mobility. The findings indicate that the probability of moving in order to exit unemployment is much lower compared to the work-related moving probability of employed workers. Other empirical studies on this question are usually based on the IAB Regional File and show mixed results. With regard to labor market conditions, Windzio (2004) divides West Germany into superior south and inferior north regions. He asks which determinants mainly influence labor mobility between southern and northern states. A three-level time discrete model is used, embedding individual years in regional years that depend on the specific region. The model can refer to individual and context specific

factors. Windzio's results indicate that the migration probability increases with either an academic degree or an unemployment status. However, the probability decreases with unemployment duration and for individuals in regions with high unemployment rates. In a following study, Windzio (2008) looks at the mobility rates of the East German unemployed to the West German labor market applying a frailty hazard model for clustered data. His results indicate that migration probability increases with an academic degree but decreases with the distance to the East/West-border. Arntz (2005) concentrates on the migration behavior of West German unemployed job seekers. She finds contradicting effects. She uses a competing-risk search-theoretic framework to estimate hazard rates for exiting unemployment to jobs in a local or distant labor market area. Comparable to the aforementioned studies, the approach assumes that migration probabilities do not only depend on exogenous labor market factors but also on endogenous search strategies and therefore on individual factors. Arntz' empirical results indicate that the unemployed choose search strategies that promote leaving local labor markets with inferior conditions. In addition her study indicates that the willingness to migrate increases with unemployment duration and qualification level.

The outline of this paper is as follows. The next section 4.2 introduces the empirical model and provides justification for choosing the model. The data set used is described in section 4.3. Estimation results are discussed in section 4.4. Section 4.5 concludes.

4.2 Model specification

This analysis of the effect of unemployment on labor mobility is based on data from the GSOEP. This panel data set allows controlling for the most important determinants of migration such as education and family circumstances. Yet, it can be assumed that there are unobservable variables that influence labor-motivated migration decisions and, in a somewhat similar way, the probability of being unemployed. The hypothesis is that the two binary responses are correlated through unobservable variables. In this case, an endogeneity bias is likely to occur when a binary discrete choice model is used to estimate the influence of the unemployment status on the job-migration probability. A bivariate probit model tests whether the error terms of the two equations are correlated and estimates the joint probability of being unemployed and its influence on the job-migration decision (Greene 2010).

It can be assumed that the binary job-migration decision and the unemployment status are

interrelated as expressed by the following model structure:

$$\begin{aligned} y_1* &= \alpha_1 y_2 + \beta_1' x_1 + \varepsilon_1 \text{ with } \begin{cases} y_1 = 1 & if\ y_1* > 0 \\ y_2 = 2 & if\ y_2* > 0 \end{cases} \\ y_2* &= \beta_2' x_2 + \varepsilon_2 \end{aligned} \tag{4.1}$$

The observed binary outcome variable y_j (with j=1 for the job-migration decision and j=2 for the unemployment status) is defined as follows. y_1 equals 1 when a person moved due to work related issues and y_1 equals 0 if the person did not move. y_2 equals 1 when a person is registered as unemployed and equals 0 otherwise. y_j is assumed to be determined by an underlying unobserved "latent" variable y_1* . In this function x_j represents a vector of exogenous variables including a constant, whilst ε_j is the vector of residuals. For the job-related migration decision, the latent variable y_1* can be interpreted as the probability of moving due to work-related issues and for the unemployment status y_2* can be termed the "unemployment propensity" (Verbeek 2004).

It can be assumed that y_j* follows a bivariate normal distribution where the errors are dependent from one another:

$$\begin{aligned} y_1*, y_2* &\sim \Phi_2 \\ Corr(\varepsilon_1, \varepsilon_2) &= \rho \end{aligned} \tag{4.2}$$

Here Φ_2 represents the cumulative bivariate normal distribution. The marginal probabilities of y_1 and y_2 are

$$Pr\,(y_2 = 1|\varepsilon_2,\, x_2) = P(\varepsilon_2 > -\beta_2' x_2) = \Phi(\beta_2' x_2) \tag{4.3}$$

and

$$Pr\,(y_1 = 1|\varepsilon_1,\, x_1) = P(\varepsilon_1 > (\alpha_1 y_2 + \beta_1' x_1)) = \Phi(\alpha_1 y_2 + \beta_1' x_1) \tag{4.4}$$

Since the two probabilities are not independent, conditional probability has to be used to calculate the joint probability: $Pr(A\&B) = Pr(A|B) = Pr(A|B) \times Pr(B)$. The probability

of moving, given that a person is unemployed and given **x**, is

$$Pr\,(y_1 = 1|y_2 = 1, x) = \int_{-\beta_2 x_2}^{\infty} \Phi\left[\frac{\alpha_1 y_2 + \beta_1' x_1 + \rho\varepsilon_2}{(1-\rho)^{\frac{1}{2}}}\right] \varphi(\varepsilon_2) d\varepsilon_2$$

$$= \Phi(\alpha_1 y_2, \beta_1' x_1, \beta_2' x_2, \rho) \tag{4.5}$$

where φ represents the density function of bivariate normal distributed variables. The coefficients are estimated using maximum likelihood methods. (Greene 2008). Similar to the standard probit model, each observation contributes some combination of Pr (y_j=1) for j$\in$ 1,2 depending on the specific value of these variables (Maddala 1983). Denoting $Pr(y_1 = 1|y_2 = 1,\ x) \equiv Pr_{11}$ etc., the likelihood function is

$$L(\beta_1, \beta_2, \alpha_1, \rho) = \prod (Pr_{11}^{y_1, y_2}\, Pr_{10}^{y_1(1-y_2)}\, Pr_{01}^{(1-y_1)y_2}\, Pr_{00}^{(1-y_1)(1-y_2)}) \tag{4.6}$$

Labor mobility of the unemployed can also be analyzed by estimating a treatment effect in the presence of non-random assignment. Instead of estimating the influence of unemployment on the job-migration probability, the moving probability of the unemployed is compared to that of employed people. When comparing the probabilities, an endogeneity problem arises since it cannot be assumed that people are randomly distributed as employed or unemployed. Therefore, the difference between the two probabilities will not give the treatment effect. To improve the evidence, the job-migration probability of the unemployed can be compared to the average of the probability for matched employed people. Within the propensity score matching method matches can be applied on the basis of the observed characteristics x_2 determining the probability of being unemployed (Heckman et al. 1998). The method is mainly superior to the regression approach when the data is not representative since the number of observations is low in some sections. While in this case results of the regression estimation are based on a small number of cases for some parts of the estimated function, results of the non-parametric matching method are based on the area of common support of x_2 . However, it has been pointed out that the propensity score matching method does not work better in large samples (Guo and Fraser 2013). With a total of 9,971 people over nine years and 6,390 unemployment periods, the number of pooled observations is quite high in the data set used. Furthermore, the GSOEP is highly representative for Germany. Therefore, the regression approach is expected to give

significant and accurate results.

An alternative approach, allowing for the correlation of unobserved characteristics is the endogenous switching regression method. Here, the probability of unemployment, the probability of moving when being unemployed and the probability of moving when not being unemployed are determined jointly as probit regressions. Again, the two moving probabilities can be compared. Similar to the bivariate probit model used in this study, the covariances of the disturbances provide information about the selectivity of the unemployed and the employed for the migration probability (Winship and Mare 1992). Results are expected to be quite similar. However, since both outcomes, the job-migration decision and the unemployment status, are binary responses and are both assumed to have underlying unobserved "latent" variables, this model is more complicated than the model with structural shift given in (4.1).

To be logically consistent, models with latent variables and their dichotomous observations in different structural equations need some restrictions on the coefficients. On the one hand in equation (4.1) the observed counterpart y_2 of the second dependent variable y_2* appears on the right-hand side of the first equation. On the other hand y_1 does not appear in the second equation. Maddala (1983) showed that simultaneous equation models in which the second equation has the form $y_2* = \alpha_2 y_1 + \beta_2' x_2 + \varepsilon_2$ are logically inconsistent unless α_1 =0 or α_2 =0. If $\alpha_1 \alpha_2 \neq 0$, the probabilities would not sum up to 1. Since the analysis is conducted on the individual level and only job motivated moves are relevant, the model is in line with the contents. On the regional level there are arguments for simultaneity. The regional unemployment rate may not only influence the regional mobility rate. Mobility is also likely to influence the regional labor market conditions. If a region faces high migration flows from other regions, there is a high probability that labor market circumstances in this region will change. However, in this study based on the individual level, the mobility variable equals 1 when a person moved *due* to work-related issues. Therefore, a person moves to directly change his or her own employment status for the better. This migration variable in the unemployment equation would therefore not only influence the unemployment probability but directly determine it.

Although it is not needed for identification, a variable is integrated in the moving equation which does not influence the unemployment probability. It can be assumed that this applies for cases in which a person is a dwelling-owner or renter (see section 4.3).

In addition to conditions for logical consistency, identifiability conditions must be fulfilled. For models such as the one given in (4.1) in which the error terms are not independent, the parameters are not identified if x_1 includes all the variables considered in x_2 (Maddala

1983). Identification is reached by distinguishing the two structural equations with exclusion restrictions. Since the unemployment variable y_2 in the migration equation suffers from endogeneity, a variable in the unemployment equation is required that explains the unemployment status but is exogenous to the mobility equation. The exclusion restriction is a variable that affects the employment probability while not being correlated with the probability of moving conditional on the other covariates (Dujardin and Goffette-Nagot 2009). This applies for the gender variable. On the one hand being female should not influence the moving decision. For the given sample estimation results confirm this assumption. It is plausible that in the past the mobility rate of men used to be higher than that of women due to the better educational opportunities men enjoyed. The probability of relocating to study or for a new occupation was probably much higher among men than among women. Today this difference is not longer apparent. The Federal Institute for Population Research even pointed out that in 2010 young women were more mobile than young men. However, this applies only to age 18 to 27 (Bundesinstitut für Bevölkerungsforschung 2010). On the other hand the probability of being registered as unemployed is lower for women as indicated by the given sample as well as by data from the Federal Statistic Office. Since unification, the difference in unemployment risks between women and men has diminished. In fact, there are more opportunities for women than for men not to work without being registered as unemployed. While it is still common among women to stay at home and raise the children while living on their spouses' income, men usually do not make use of this opportunity.

4.3 Data and descriptive statistics

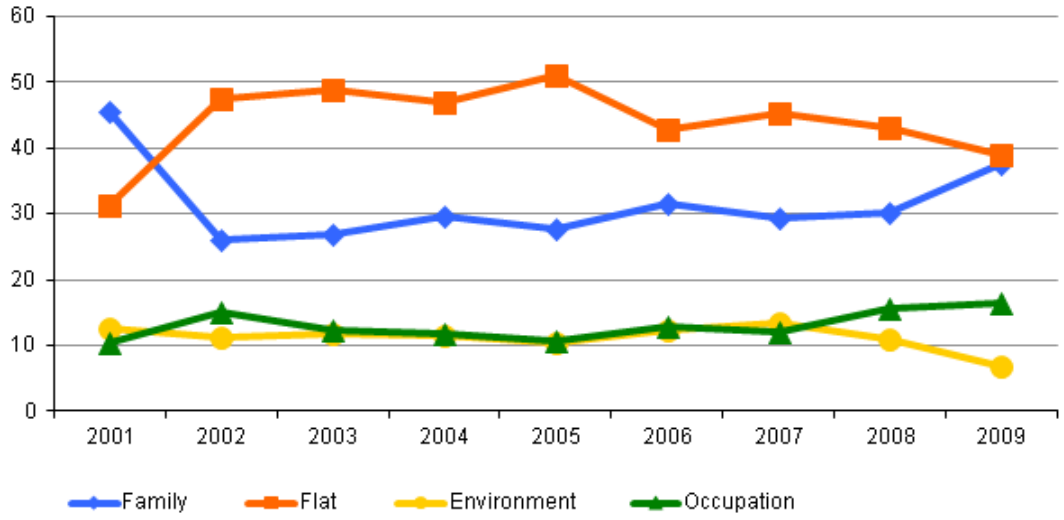
This analysis of the influence of unemployment on labor mobility is based on data from the German Socio Economic Panel. The GSOEP is an ongoing representative panel survey of private households in Germany. Introduced in 1984 it is the oldest longitudinal section study of private households in Germany and enjoys high international recognition. It allows longitudinal examinations as well as the conjunction of personal and household data. Most of the existing studies on the mobility of unemployed people have used data focusing on labor market factors. For Germany the IAB[6] employment subsamples (IAB-Beschäftigungstichproben, IABS) are most commonly used. The IABS contain information on the employment histories of employees entitled to social security benefits on a daily basis. Unfortunately periods of registered unemployment cannot be identified. The

[6] Institute for Employment Research

data includes information on periods during which individuals received unemployment compensation. Alternative financial resources such as spousal income are not recorded separately. Therefore it is not possible to distinguish between those who have left the labor force and those who are still unemployed but do not receive any unemployment compensation (Arntz 2005). The SOEP distinguishes between registered unemployment and non-working periods due to other reasons such as maternity leave. The data set is also superior since it contains information on additional determinants of migration such as family circumstances. Migration research usually points out that the decisions to migrate is in most cases not made by workers or employees alone but by households (Mincer 1978; Rossi 1980; Linnemann 1983).

In 2000 the SOEP doubled the household sample size. The number of moving households is generally low and their attrition (as well as that of new households in their first year) is high. Therefore, this analysis uses data from years 2001 to 2009. The study takes an individual-level approach. The SOEP-questionnaire asks whether a person was living in the same place a year ago. On the household level up to three motives for moving can be named. Figure 1 depicts the main reasons for moving (categories are subsumed). The shares do not sum up to 100% since the category "other reasons" is not included. As shown in the figure, occupation related moves are not undertaken anywhere near as often as housing or family related moves.

Figure 4.1: Most important moving reasons for SOEP-households in %



Source: SOEP

Another motivation for unemployed people to move presumably lies in the fact that they are not entitled to receive housing benefit when their current residence is too large. The additional question whether the moving reason is "related to work" ensures that these cases are excluded. In this case the central moving variable "MOVE_JOB" equals 1 and 0 if a person did not move. Other reasons for relocation are therefore not relevant and excluded. Here a missing value is generated for the MOVE_JOB variable. For the data used on the individual level the work-related moving probability has a yearly average value of 0.008 and a standard deviation of 0.0892.

Comparable studies usually estimate unemployment duration models and take into account the influence of the duration of unemployment on the willingness to move (Ahn, de la Rica and Ugidos 1998; Arntz 2005). Due to the low number of moves per year in the SOEP, the empirical analysis of this study is based on pooled data. Only the unemployment status itself, but not its duration is considered. The central unemployed status dummy variable (UNEMPL, (t-1)) displays periods of registered unemployment and has a yearly average value of 0.0892 with a standard deviation of 0.2851 in the data used. The estimation focuses on the question of whether the unemployment status of the previous period has an influence on the circumstance that the person moved due to job-related issues between the previous and the current year.

Since the moving probability of working age individuals is of interest in this study, the used data set is restricted to household members of ages 18 to 65. For this group the data set provides repeated measurements on moving and employment issues for about 9,971 people and 7,724 households. Robust standard errors are computed to account for correlation of the errors between household members. 25% of the people (under 66 years of age) are living in the former East Germany area and 53% of the people in the sample are women. In sum 6,225 relocations with 768 job-motivated moves were observed. A residential change was observed in 554 out of 6,571 unemployment periods, including 52 job motivated moves.

The following passage discusses the expected influence of the explanatory variables used in the estimation. Table 4.1 depicts the means and standard errors of shares for the respective variables. The table differentiates for the group of people in the sample who decided to move for work-related reasons and those who have been unemployed in at least one relevant year. Similar to the estimation only people under 66 years of age are considered.

The following personal and household specific exogenous variables appear in both equations in x_1 and x_2 and are therefore assumed to influence the migration and the unemployment probability: The educational level measured in years is included in both equations.

The variable EDUCATION ranges from 7 to 18 years for the observed data. The variable does not distinguish between school and vocational education. In migration literature, education is one of the main determinants of migration (Long 1973). This is especially true for this study, since the examination looks only at job-motivated relocations. A positive effect is assumed due to expected increasing economic success. The sample's average number of years of education is 12.17, 13.70 for people who moved for a work-related issue and 11.33 for people who were unemployed in one of the observed years (see Table 4.1). AGE and HEALTH are also expected to influence both probabilities. AGE is measured in years and five groups are built: (18-20); (21-27); (28-35) and (36-65). Each group is represented by a dummy variable. Most job changes are expected to take place before the age of 36. Therefore, the category 36-65 with a share of 60% is quite large. The average age of individuals (under 66) is 44.73 years. While younger people are expected to have a higher probability for job-related relocation (the average age for this group in the sample is 33.59), the effect on the unemployment status is not intuitively given. According to the German Federal Employment Agency the age groups 15 to 25 and 50 to 65 years have the highest unemployment probability (Bundesagentur für Arbeit 2012). The average age of the unemployed in the given sample is 45.86. Information on HEALTH is based on people's estimation of their health status on a scale of 1 to 5, from bad (1), less good (2), satisfying (3), good (4) to very good (5). Health is assumed to have a positive effect on the job motivated moving probability and a negative effect on the unemployment probability. The average health status in the sample is about 3 for all people and for the unemployed and 4 for people willing to relocate.

Not only personal characteristics but also the family situation adds to the migration decision and labor market situation. The household size (HH-SIZE) is considered in both equations and ranges from 1 to 14 with an average value of 2.86 people in the data used. It can be assumed that the smaller the household, the easier a decision to move due to a new occupation is made. The average number of household members among the people willing to move is 2.04 and 2.69 among unemployed people. The same line of argument for the effects on migration of the household size may apply for the following two considered variables. Being SINGLE is assumed to have a positive effect on the moving probability. Separated and divorced people are also considered as single and make up an average share of 33% of the sample. Here, about 67% (46%) of moving (unemployed) people are single. The existence of CHILDREN under 16 years of age in the household is assumed to have a negative effect on the moving probability. The average share amounts to 36% and about 24% (33%) of moving (unemployed) people have young children.

In both equations the existence of a migration background is considered in the form of a dummy variable (GERMAN) which equals 1 for Germans. 93% of the observed individuals are German. Almost the same value (93.36) applies for moving people. Germans can be assumed to be less mobile compared to individuals with a migration background. In contrast, a negative effect on unemployment can be expected. Examinations using data from the "Bundesagentur für Arbeit" and "Mikrozensus" have shown that individuals with a migration background are about twice as likely to be unemployed (Seebaß and Siegert 2011).

The household's income situation is also considered for both equations. Since the income in unemployment households is usually lower than that of employed people, this is not a useful explanatory variable. Therefore "other income" (O_INCOME) is used meaning the available income after subtracting the individual net income of employed workers. For the unemployed the unemployment benefit (ALG I) or unemployment compensation (ALG II) is subtracted. The average value of "other income" in the sample amounts to € 1,588 and € 1,212 for unemployed people. "Other income" is expected to have a negative effect on unemployment parallel to the effect of the individual's or household's educational level. Due to consistency "other income" is also used for the migration equation. The variable can have both a positive or negative influence. On the one hand, a higher probability can be assumed again due to the correlation between qualification and income in the household. On the other hand, another person in the household with a well-paid job might be a deterrent from work related relocation. The average value in the sample is € 997.62 for moving people. The value is scaled at 1,000 for this estimation.

Table 4.1: Mean and standard deviation of average shares for explanatory variables and separated for the group of moving and unemployed persons

	Total	**Job-motivated movers**	**The unemployed**
Education (in years)	12.17	13.7	11.33
	(2.54)	(2.94)	(2.12)
Age (in years)	44.73	33.59	45.86
	(11.92)	(9.39)	(11.56)
Health (in 5 categories)	3.45	3.77	3.18
	(0.89)	(0.84)	(0.96)
HH-Size (in Persons)	2.86	2.04	2.69
	(1.27)	(1.13)	(1.3)
Single (in %)	33.36	67.14	45.68
	(0.47)	(0.47)	(0.5)
Children less than 16 (in %)	35.69	24.22	32.68
	(0.48)	(0.43)	(0.47)
German (in %)	93	93.36	89.94
	(0.26)	(0.25)	(0.3)
Other income (in €)	1588.58	997.62	1211.6
	(1303.73)	(1011.1)	(951.48)
Partner Unemployed (in %)	7.44	1.03	6.11
	(0.26)	(0.31)	(0.42)
Owner (t-1) (in %)	52.40	17.68	33.11
	(0.50)	(0.38)	(0.47)
Gender (female, in %)	52.86	53.26	52.02
	(0.50)	(0.50)	(0.50)
Number of Observations	81,600	768	6,571

Notes: Standard deviations in parentheses

Source: SOEP

It can also be assumed that the employment status of the spouse or partner is relevant for job-migration decisions and for the individual unemployment status. Therefore, a dummy variable displaying whether the partner is unemployed (P_UNEMPL = 1) or not (= 0) is integrated into both equations. Moving due to a spouse's working situation is expected to

be easier when the other spouse is not forced to look for a new occupation or commuting option. Furthermore, it has often been pointed out that the unemployment probability is higher when the partner is unemployed, too. On average 7% of all people, 1% of the moving people and 6% of the unemployed people in the sample have a partner who is unemployed. To control for regional and time effects both equations include year- and regional dummies. The latter are based on the German Bundesländer (NUTS 1 level).

The vector of explanatory variables x_1 for the migration equation contains the dummy variable OWNER (t-1) with an average share of 52% in the observed data. It can be assumed that a dwelling-ownership is relevant for the job-moving decision while it is not influencing the unemployment status. The vector of explanatory variables x_2 for the unemployment equation contains the dummy variable GENDER with an average share of 53% of women in the sample. While it can be assumed that the moving probability is not influenced by the gender, the probability of being unemployed should be lower for women (see section 2). Therefore the variable functions as an exclusion restriction for estimating the causal effect of being unemployed on regional mobility. The average share of female moving persons in the sample is also 53% and 52% for unemployed women.

4.4 Results

In the simple probit model about the moving decision the central unemployment variable turns out not to have a statistically significant effect on the job-related moving decision. However, as the results below show, the coefficient is biased anyways. Estimation results from pooled probit models about the moving decision and the unemployment status are very similar from those from the bivariate probit model. The coefficient's signs are all equal, computed marginal effects are similar.

Table 4.2 below depicts the results of the bivariate probit model. The bivariate probit model tests whether the two discrete equations about the decision to change residence and the unemployed status are interrelated by unobservable factors. Furthermore, the model determines the joint probability to move and to be unemployed and estimates the effect of being unemployed in t-1 on the probability that a person relocates due to a new occupation between t-1 and t. If a statistically significant correlation of the error terms occurs, the unemployment variable is endogenous in a simple probit estimation. In this case estimating the joint probabilities is the leading technique to deal with the endogeneity bias (Greene 2010).

Table 4.2: Estimated coefficients of the two probit system

	Job-Mobility		**Unemployed (t-1)**	
UNEMPL (t-1)	-0.8190***	(0.3138)	-	-
OWNER (t-1)	-0.7450***	(0.0818	-	-
EDUCATION	0.0364**	(0.0156)	-0.0765***	(0.0051)
SINGLE	0.0255	(0.0795)	0.2072***	(0.0353)
CHILDREN	0.2214**	(0.096)	-0.0488*	(0.0282)
O_INCOME	-0.045	(0.0304)	-0.0312***	(0.0099)
AGE_-20	-4.7322***	(0.2801)	-4.1706***	(0.2000)
AGE_21-27	*Base category*		*Base category*	
AGE_28-35	0.0255	(0.1425)	-0.0446	(0.0941)
AGE_36-65	-0.2121	(0.1374)	0.0357	(0.0909)
HEALTH	0.0479	(0.0363)	-0.1224***	(0.0115)
GERMAN	-0.2336**	(0.0969)	-0.3972***	(0.0363)
HH-SIZE	-0.1290**	(0.0519)	0.0318***	(0.0119)
P_UNEMPL (t-1)	0.2092*	(0.1112)	0.5618***	(0.0292)
GENDER	-	-	-0.0575***	(0.0217)
Constant	-2.0855***	(0.3551)	-0.4183***	(0.1263)
Year dummies	√		√	
German state dummies	√		√	
# Observations	40,357			
Corr. of residuals, ?	0.5105**(0.1980)			
Log likelihood	-10655.045			
LR test	4.4278			

Notes: Standard errors in parentheses; * significant at 10%; ** at 5%, *** at 1%

Results of the bivariate probit model show that the model fits the data well. The Akaike and Bayesian information criterion are 2,1450.09 (AIC) and 22,052.48 (BIC) respectively. The likelihood-ratio (LR) Test on rho=0 (χ^2 = 4.4277) suggests that the two disturbances are significantly correlated. The estimated correlation ρ is with 0.5105 unequal from zero and statistically discernible (p= 0.0354). This shows the significance of the bivariate model. It confirms that the central estimates obtained from a univariate migration decision framework would be biased. The migration decision and the unemployment status should be jointly determined to account for an endogeneity bias of the unemployment status. The central unemployment variable coefficient shows a significant negative sign which is discussed in detail below. The positive sign of the correlation between job motivated relocation and unemployment is counterintuitive compared to the negative sign of the unemployment variable coefficient. However, the correlation of the error terms is only affected by personal traits that are not observable (Dubin and Rivers 1989). The positive correlation

suggests that individuals who have a higher probability of moving for a job than can be explained by their observed characteristics are more likely to be unemployed than explained by considered variables. Within this model it is not possible to account for the unemployment duration. Unemployment might often be a transition period between a person's decision to change jobs and the actual relocation.

Turning to the estimated coefficients in columns 2 and 4 of Table 4.2 most coefficients are statistically significant and have the expected sign as discussed in section 4.3. Although the sign and significance of coefficients estimated by probit models are meaningful, their magnitudes are by themselves not useful. Table 4.3 depicts the computed marginal effects. It has to be kept in mind that in contrast to a linear model, marginal effects from nonlinear models are not constant. In a linear estimation model, for example on income determinants, every year of education is supposed to have the same effect. In contrast, in non linear models the effect of education can vary between, for example the years 9 and 15 (Karaca-Mandic et al. 2012). In Table 4.3 the marginal effects for the respective variables (dy/dx) are computed given the sample averages of this variable $\bar{x}$. The second column gives marginal effects on the moving probability only for the unemployment group. The third column shows the partial effects on the moving probability of all people in the sample. Column 4 displays the respective effects on the unemployment probability. The last column gives the average value of the variable for the dataset. These may differ from the means in Table 4.1 since not all observations are used in the estimation.

The following paragraph discusses the effects of variables influencing the work related moving probability given in columns 2 and 3 of Table 4.3. Comparing the values in columns 2 and 3, every marginal effect turns out to be lower for the unemployed group. The unemployment situation seems to weaken the relevance of common work related moving determinants. The overall probability (Pr) of moving due to work-related issues Pr(MOVE_JOB=1) is 0.2043%. The central unemployment variable turns out to have a statistically significant negative effect on the job related moving decision. When a person is unemployed the probability of moving due to a new job decreases by 0.23 percentage points. Except for some AGE categories all other variables show statistically significant effects on the moving probability. For the group of unemployed people the variables SINGLE, O_INCOME and HEALTH are insignificant. The variable on dwelling ownership that only appears in the migration equation has a negative effect and has the highest effect on the job related moving decision compared to the remaining variables. At its average of 0.62% the moving probability decreases by 0.29 percentage points for unemployed owners and by 0.74 percentage points if a person owns her or his dwelling. The next highest

marginal effect in the second column is given for the variable indicating whether the partner is unemployed. This circumstance has a positive effect on the moving decision. For the group of unemployed people the probability increases in this case by 0.16 percentage points and by 0.18 points for all people.

As discussed in section 4.3, a change of residence seems to be easier when a partner is not also forced to find a new occupation or has to accept commuting due to the move. Being German highly decreases the mobility probability. It can be assumed that foreigners are less bound to a certain region than Germans. Having children younger than 16 years of age increases the probability to move due to a new occupation. Here the sign is not in line with the negative effect of the HH-SIZE (and the positive effect for SINGLEs in column 3). The moving probability may decrease for larger households since more individuals are affected. However, for households with young children the effects seems to work differently. It seems to be relevant that the existence of young children indicates that parents are young as well. Although most of the age categories are not statistically significant in this output, it is more likely that occupational changes leading to residency changes take place in a person's younger years. The only significant AGE category with a negative coefficient is the one representing people under 20 years of age who usually still live with their parents. The marginal effect of EDUCATION is very small but statistically significant and, as expected, positive. For all people in the sample (see column 3) the OTHER_INCOME variable shows a negative effect. Living together with a person with a high income can be assumed to be a deterrent from work-related moves. The HEALTH variable has a positive influence on the moving decision of all people in the sample.

Table 4.3: Marginal effects on the migration and unemployment probability separately, after bivariate probit

	Job-Mobility of the Unemployed	**Job-Mobility**	**Unemployed (t-1)**	
	dy/dx	**dy/dx**	**dy/dx**	**x̄**
UNEMPL (t-1)	-0.0012***	-0.0023***	-	0.0764
OWNER (t-1)	-0.0029***	-0.0072***	-	0.6193
EDUCATION	0.0000**	0.0002***	-0.0088***	12.0381
SINGLE	0.0003	0.0002***	0.0274***	0.0696
CHILDREN	0.0006**	0.0015*	-0.0056*	0.4127
O_INCOME	-0.0002	-0.0003***	-0.0036***	1.772
AGE_-20	-0.0011***	-0.0020***	-0.0574***	0.0000
AGE_21-27	-	-	-	-
AGE_28-35	0.0000	0.0002	-0.0050	0.1075
AGE_36-65	-0.0007	-0.0017	0.0040	0.8802
HEALTH	0.0000	0.0003***	-0.0141***	3.3710
GERMAN	-0.0015**	-0.0020***	-0.0593***	0.9288
HH-SIZE	-0.0003**	-0.0008***	0.0037***	3.1531
P_UNEMPL (t-1)	0.0016*	0.0018***	0.0926***	0.0743
GENDER	-	-	-0.0066***	0.5277

Notes: * significant at 10%; ** at 5%, *** at 1%

The results of the unemployment equation are given in column 4 of Table 4.3. Except for the AGE categories all variables show statistically significant effects. Most of the signs are as expected and discussed in section 4.3. Effects turn out to be much higher compared to those on the job-related moving decision. The P_UNEMPL variable indicating whether the person's partner is unemployed has the highest effect on the unemployment probability. Then the unemployment probability increases by 9.26 percentage points. It can be assumed that especially long term unemployed people are more likely to have a relationship with a person in the same distressing situation. It has often been suggested that unemployment leads to high social exclusion (Böhnke 2001). The next highest marginal effect exists for the GERMAN dummy variable. For Germans the unemployment probability decreases by 5.93 percentage points. Many studies have emphasized that foreigners are in an inferior position in the German labor market with regard to the extent and status of employment (Seebaß and Siegert 2011).

Against expectations, being SINGLE has a positive effect on the unemployment probability. This might be explained by conditions for receiving unemployment compensation. The compensation amount is based on requirements of so-called "Bedarfsgemeinschaften"

(needs-based-households) following the principle of subsidiary. Unemployment compensation can only be claimed if the sum of income earned by all household members is too low to ensure subsistence level. Since the Hartz reforms, people under 25 years of age are considered to belong to the "Bedarfsgemeinschaft" of their parents. The intention of this reform was to avoid moving out of the parental home only to be entitled to higher unemployment compensation. The same incentive may often apply for couples. The marginal effect of the HH-SIZE variable is positive which is counterintuitive concerning the positive SINGLE variable. However, it is the smallest marginal effect of the determinants of unemployment. In Germany a high share of the unemployed people live in single households and there is a very small tendency towards larger households. However, having CHILDREN decreases the unemployment probability. Women who do not work may not be registered as unemployed due to other financial resources such as the spouse's income. This may also be an explanation for the lower unemployment probability for women. Being female decreases the probability by 0.66 percentage points. Furthermore, the probability decreases with every year of EDUCATION at a mean of 12 years by 0.88 percentage points. As expected, HEALTH has a significant influence on the unemployment probability.

4.5 Conclusion

This paper examines the willingness of the unemployed people to relocate for a new job compared to the mobility of employed workers. It is assumed that the two binary responses are interrelated due to the existence of unobserved variables influencing both the migration decision and the unemployment status. A bivariate probit model with structural shift is applied. The model tests whether unobserved characteristics in the migration and unemployment equations are correlated and accounts for endogeneity by jointly determining the two outcomes. Empirical findings confirm that the error terms of the two equations are correlated. In addition, the model estimates the effects of main individual moving and unemployment determinants of German individuals. The results indicate that the work related moving decision is negatively influenced by a dwelling ownership. In addition, having an unemployed partner appears to have a positive influence on the moving decision and the unemployment probability. The same applies for a migration background. Furthermore, the group of unemployed are often single and in inferior health condition.

The results show that the unemployment status variable decreases the work-related moving probability. In addition other main moving determinants have lesser effects on the group of the unemployed. In Germany, job-motivated migration is often an investment decision

made by people who are successful in their occupational field. Most unemployed people do not seem to consider relocation as an option to escape from frustrating circumstances. This has been the result of IAB-surveys among unemployed people examining the willingness to make concessions for a new occupation. On the one hand most of the unemployed people were willing to change their profession and would accept inconvenient working hours, longer commuting ways and even a lower income (at least temporarily). On the other hand the concession to relocated was only acceptable to a small number of unemployed people. In a survey from 2000, conducted among all (also former) unemployed workers, about 66% of the workers in the East and 61% in the West were not willing to move for a new occupation (Brixy and Christensen 2002). In 2005, the IAB conducted a survey among people receiving ALG II who were predominantly long-term unemployed workers. Here even 83% expressed their unwillingness to relocate for a new occupation (Bender et al. 2007).

There are different possible explanations for the lower mobility of unemployed people. In economic terms these explanations can be defined as immaterial and material moving costs that appear to exceed the benefits of moving. Due to failure and disappointment in the occupational field, family and private relationships in the close surroundings of the residence are presumable valued higher than a new distant job by the (long-term) unemployed. It is often suggested that individuals with lower productivity or unobserved characteristics, leading to a higher unemployment probability are not as flexible and adaptable as other. Furthermore, negative duration dependence might occur: these soft skills could get lost during long periods of unemployment (Steiner 2001). As early as 1933, Jahoda in the famous study on the social impact of unemployment in a small community (Marienthal) pointed out the enormous negative psychic consequences of unemployment, especially in terms of resignation.

Furthermore, material moving costs can be assumed to be deterrents from moving. Long terms of unemployment usually leads to precarious financial situations. Moving expenses are usually paid by the employment agency once the work-related migration is approved as being necessary for taking up a new occupation. However, in addition to the rent and gas for a moving truck, other costs are expected to incur. In addition, the benefits of moving, especially for people with low qualification profiles, are often small since the potential wages are often very close to unemployment compensation. Furthermore, regional varying living costs often limit the benefits of moving. Further research should address which fields are predominantly relevant for the lower moving probability of the unemployed.

Although most people are regionally bound to a particular area, for many people per-

sonal incentives outbalance immaterial and material moving costs. This study points out that being unemployed highly decreases the work-related moving probability. Effects of central moving determinants and potential moving incentives are much more distinct for employed people. For labor market policy, these results depict the potential to reduce unemployment rates in certain German regions. Political decision makers should try to create incentives for the unemployed to motivate them to relocate for a new occupation. The German Constitution grants the right of abode. No one can be forced to move for a new occupation. However, this study demonstrates that self-selection is highly relevant to the work-related moving decision. Selection is usually assumed since moving incentives are presumably higher for individuals who are more able or higher motivated in occupational field (Chiswick 1978). While relocation is merely considered as a new challenge by employees, it can be an option to escape a highly distressing situation for a long-term unemployed person. More effort is therefore also requested on the side of the supervising employment agencies. They should propose distant job offers for the unemployed to decrease their moving barriers. Furthermore their regional interchange is highly important in order to make use of the full potential of labor demand and human capital.

5 Economic impact of a potential EU-ASEAN-FTA on the German economy

5.1 Introduction

As early as 1970 the Association of the Southeast Asian Nations (ASEAN) was trying to intensify trade relations with the EU.* The former British colonies Malaysia and Singapore were concerned about losing their comparatively liberal Commonwealth trade preferences. In addition there was an attempt to balance the strong American economic presence and the aggressive Japanese trade offensive in the EU (Rüland 2001). The EU also feared competition from the USA, Japan and China in the ASEAN region (Schilder et al. 2005). The EU-ASEAN relations were intensified in the early 2000's with the aim of negotiating and signing a free trade agreement (FTA). In 2007, negotiations became difficult. In 2009, the EU member states decided to continue with bilateral negotiations in order to consider the specific development levels of the highly heterogeneous countries and to avoid negotiations with Myanmar which was a stratocracy until 2011.

The objective of this paper, which was written in 2007, is to investigate the possible impacts of an overall free trade agreement on the German economy. We analyze the potential welfare and income gains and changes in output and trade which are likely to occur under different FTA scenarios. This analysis allows a careful consideration of various policy options and provides necessary information for European and German trade policy decision making. The analysis is conducted using the GTAP 6 Computable General Equilibrium model and Data Base. The data encompasses an aggregation of 33 industries that cover

*This paper is based on joint work with Konstantin A. Kholodilin Ph.D. habil. from DIW Berlin, see Kholodilin and Fendel (2008). Within the work for a research project at the DIW Berlin Dr. Kholodilin carried out the simulation and my tasks were to collect data and literature, to carry out the describtive statistics as well as to write the textes.

agriculture, manufacturing and service sectors. The FTA is modeled as a reduction or complete removal of the tariff barriers. In addition, it is modeled as a reduction or complete removal of the non-tariff barriers which exist especially for the trade in services. Since the non-tariff barriers are difficult to quantify, they are estimated using a gravity modeling approach. Here, the non-tariff barriers are computed as the difference between the trade value in a free trade situation and the actual trade value.

In addition to the FTA between the EU and ASEAN, the effects of several potential FTAs or FTAs that were signed after 2001 are into consideration. These include the FTAs between ASEAN and Australia, China, Japan, South Korea and the USA on the one hand and an FTA between the EU and Mercosur on the other hand. It is important to take these FTAs into account since they may have a strong influence on the outcomes of the EU-ASEAN free trade agreement. In particular, they can reduce the gains from this agreement by diverting ASEAN's trade towards other countries.

The paper is organized as follows. Section 5.2 introduces other studies, evaluating different aspects of a potential ASEAN-EU FTA. Section 5.3 describes the EU and ASEAN economies as well as their trade pattern for the years before the simulation was undertaken. Section 5.4 introduces the simulation model and data while section 5.5 reports the results. Finally section 5.6 concludes.

5.2 Literature on a potential ASEAN-EU FTA

To the best of our knowledge, only a few studies have focused on this particular FTA, none of which has been carried out with a special focus on possible economic effects on Germany. Before negotiations with the ASEAN countries commenced, the Directorate General of Trade of the European Commission contracted two major studies which led to reports by Boumellassa et al. (2006) and Andreosso-O'Callaghan et al. (2006) (Chen et al. 2011). While the latter one is a qualitative analysis on the expected impacts in form of a cost benefit analysis, Boumellassa et al. use comparable quantitative methods for calculating economic and welfare effects.

Using a Computable General Equilibrium model called MIRAGE and the GTAP 6 database, Boumellassa et al. (2006) estimate the effects of a potential ASEAN-EU FTA for three different scenarios. As a fixed time frame, the tariff reduction is realized in the period between 2008 and 2015. Welfare effects are calculated for 2020. Due to different main objectives compared to our study which focuses on the German economy, the paper dis-

plays effects for the EU25 as a whole but separately for the six higher developed ASEAN members Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Equal to our study, for the ASEAN members, results indicate large positive welfare effects, adding up to more than 2% increases of the used Equivalent Variation measure in 2020. For the EU25 increases would reach about +0.10%. Most welfare gains are explained by liberalization in services. Most benefits are observed for Malaysia as a result of its high initial level of protection in services. However, different to our results, the exclusion of sensitive products from the liberalization measures would highly increase expected welfare gains for ASEAN as well as for the EU25. Since existing and expected FTAs with other countries will clearly influence the impact of an ASEAN-EU FTA, we ran parallel simulations of these FTA for each scenario. Boumellassa et al. (2006) take other potential FTAs into account in one separate scenario. Here, even stronger overall gains are expected when the ASEAN-EU agreement occurs in conjunction with an EU-Mercosur and an ASEAN-Japan FTA.

The following part presents two studies that were published after our study was conducted. Using a CGE model and the GTAP Data Base 7.5, Francois et al. (2009) estimate effects of an ASEAN-EU-FTA for three different scenarios. The used data are defined to represent 2004 and are projected to 2014. Equal to Boumellassa et al. (2006) the study names effects for EU27 as a whole but separately for the higher developed ASEAN countries Indonesia, Malaysia, Philippines, Singapore and Vietnam. As structured in the GTAP Data Base, the remaining ASEAN members Brunei, Cambodia, Laos and Myanmar are considered as one category. In addition the study calculates effects for other main trading partners and for the rest of the world (ROW) separately.

Francois et al.'s results also indicate small but in the long run positive effects for EU27 and positive effects for most ASEAN members. Negative effects are observed for the less developed countries Brunei, Cambodia, Laos and Myanmar. While results indicate the highest GDP growth for Vietnam, the EU27 and Singapore benefit primarily in terms of income gains. Comparable to the previous study, this is mostly due to the removal of service trade barriers. The removal of non-tariff barriers in services also leads to high positive effects, especially for Thailand. Furthermore, positive effects for the EU27 and ASEAN are displayed by higher wages for both skilled and unskilled workers. Considering important other trading partners, results indicate negative trade diversion effects, especially for India and Pakistan. The model also projects the impact of a potential FTA on the environment. The overall change in emissions ranges from 0.06% in the short-run up to 0.21% in the long-run. The impact is evaluated as negligible due to the agreement's small impact

on the EU27 and the relatively small share of ASEAN in global output and emissions.

The estimated negative effect for the less developed ASEAN countries is stressed by Chen et al. (2011). This study analyzes the potential impact of an ASEAN-EU FTA in particular on bilateral level with the five strongest ASEAN countries (Indonesia, Malaysia, Philippines, Singapore and Thailand). Here, the focus is on possible effects for the least developed ASEAN members Cambodia, Laos and Myanmar (C-L-M). As the authors argue, this is important especially due to their vulnerable position within the federation and a marginalization of C-L-M from the trade negotiations. Results of a country level analysis indicate that a free trade agreement with the EU is not likely to contribute to more economic cohesion for the three countries; at best only marginal absolute positive effects can be expected. Results are explained with the countries inferior position. The C-L-M economies highly suffer from poor participation in production-sharing networks and from weak linkages to the industrial value chains in which the economically stronger ASEAN members are deeply involved.

To consider the varying development level of the ASEAN members, the EU continued negotiations in a region-to-region framework in 2009. In 2010, two initial bilateral EU FTAs with the ASEAN member countries Singapore and Malaysia were launched (European Commission 2011). It was also agreed on the first round of negotiations with Vietnam (Chen et al. 2011). In December 2012, the agreement between Singapore and the EU came into force (European Commission 2013).

The European Commission's Directorate-General for Trade (2013) forecasts expected effects of the first agreement with Singapore. Expected effects especially for the EU vary from predicted results of a general FTA between ASEAN and EU as presented in this study. Singapore's economy is one of the most developed among the ten ASEAN countries. In addition, the country has an outstanding position in the EU-ASEAN trade. Singapore is by far the EU's largest trade and investment partner in the region. While EU-ASEAN trade is characterized by a negative trade balance, the EU has a positive trade balance with Singapore. The European Commission's Directorate-General for Trade predicts an increase of EU imports from Singapore by about EUR 3.5 billion for the following ten years. EU exports to Singapore are expected to increase by EUR 1.4 billion. While the EU real GDP is expected to grow by around EUR 550 million, the Singaporean real GDP should grow by EUR 2.7 billion (EU Commission 2013).

5.3 The EU and ASEAN: Economic relations

For analyzing the economic effects of a free trade agreement, it is important to visualize the economic situation for the respective time period. Therefore this section describes the EU and ASEAN economies and trade pattern in 2005 and 2006 respectively.

5.3.1 Economic situation in the EU and ASEAN

Table 5.1 compares some key figures characterizing the EU25 (including Germany) and the ASEAN member economies in 2006. In particular the development level, the openness degree and the degree of intra-regional integration are considered.

Table 5.1: Comparison of the key characteristics of the EU25 and ASEAN member countries, 2006

	EU 25	**ASEAN10**
GDP per capita (PPP, 1000 current int. Dollars)		
Minimum	16.0	2.1
Average	28.3	4.9
Maximum	75.2	30.4
Variation coefficient	0.4	2.1
Openness to trade (% of GDP)		
Minimum	31.3	28.1
Average	63.6	130.9
Maximum	180.8	385.6
Intra-regional trade (% of total trade)		
Minimum	54.4	18.6
Average	65.2	25.1
Maximum	82.0	79.8

Source: ASEAN Statistics, Eurostat, IMF and own calculations

The first five rows of Table 5.1 display the development level in respect to gross domestic product (GDP). In order to make this measure comparable across countries it is expressed in the purchasing power parities (PPP). GDP per capita is on average higher in the EU25 than in the ASEAN10. The average GDP per capita in the EU25 (28,288 international dollars) is about six times bigger than that of the ASEAN10 (4,868 international dollars). Moreover, the development level among the ASEAN countries is much more heterogeneous than among the EU25. The variation coefficient of the GDP per capita in ASEAN

is almost five times as large as that in the EU25. According to their development levels the ASEAN members can be divided into two groups: Myanmar, Cambodia, Laos and to a certain extent Vietnam can be classified as less developed countries (LDC). The remaining six ASEAN countries (Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand) can be treated as middle income countries. In the former subgroup the average GDP per capita is 2,549 international dollars compared to 13,877 international dollars in the middle income subgroup. This division is also supported by the economic structures of these countries. Whereas in the middle-income countries on average 8% of GDP is produced in the primary sector, in Myanmar, Cambodia, Laos and Vietnam this number exceeds on average 39%.

The second key indicator given in Table 5.1 is the openness to trade, measured as the trade in goods divided by GDP. The average openness to trade of the ASEAN countries is more than two times higher than the openness of the EU25. In the EU25 the most open economy is Belgium (180.8%) while the least open economy is Greece (31.3%). Among the ASEAN members the most open economy is Singapore (385.6%). The least open ASEAN economy is Laos which, with 28.1%, is comparable to Greece.

The third key indicator is the degree of intra-regional integration. This is measured as a share of trade of a country with other members of the same regional union in relation to the total trade of this country. Here, the EU25 with an average intra-regional trade of 65.2% turns out to be much more integrated than ASEAN - with an average intra-regional trade of 25.1%. In the EU25 the country with the most integrated economy is the Czech Republic (82.0%) while the lowest degree of regional integration again exists in Greece (54.4%). In the ASEAN10 the country with the highest degree is Laos (79.8%) while the Philippines is the country with the lowest degree of regional integration (18.6%).

5.3.2 Trade between Germany and ASEAN

As Tables 5.2 and 5.3 show, Germany and ASEAN play relatively unimportant roles for each other's foreign trade in 2005. In fact Germany is the 9-th (5-th) largest exporter to (importer from) ASEAN. ASEAN is the 8-th (7-th) largest exporter to (importer from) Germany. The ASEAN's share in the German trade in goods is about 2%, while Germany's share in the ASEAN trade in goods is 3.1%. In contrast, the EU25 is a very important market for ASEAN, accounting for 12.5% of ASEAN's merchandise trade. EU- and Germany-ASEAN trade is characterized by a negative trade balance. EU25 (Germany) imports 40% (17%) more from ASEAN than the EU member states export to ASEAN.

Table 5.2: Germany's major trading partners in 2005

Exports				**Imports**			
Rank	**Partner**	**bn. $**	**% of total**	**Rank**	**Partner**	**bn. $**	**% of total**
1	EU24	620.0	63.5	1	EU24	458.3	59.0
2	USA	86.1	8.8	2	USA	51.4	6.6
3	Switzerland	37.4	3.8	3	China	49.4	6.4
4	China	26.4	2.7	4	Switzerland	29.3	3.8
5	Russia	21.4	2.2	5	Russia	26.9	3.5
6	Japan	16.6	1.7	6	Japan	26.6	3.4
7	Turkey	15.9	1.6	7	ASEAN	20.0	2.6
8	ASEAN	15.7	1.6	8	Norway	18.6	2.4
9	Korea	8.8	0.9	9	Korea	11.2	1.4
10	South Africa	8.3	0.8	10	Turkey	10.3	1.3
11	Mexico	7.3	0.8	11	Brazil	7.1	0.9
12	Norway	7.1	0.7	12	Libya	4.8	0.6
13	Canada	6.8	0.7	13	Rumania	4.3	0.5
14	Brazil	6.8	0.7	14	India	4.2	0.5
15	Rumania	6.6	0.7	15	South Africa	4.2	0.5
	ROW	85.8	8.8		ROW	50.4	6.5
	World total	977.0	100.0		**World total**	776.9	100.0

Source: IMF and own calculation

Table 5.3: ASEAN's major trading partners in 2005

Exports				Imports			
Rank	**Partner**	**bn. $**	**% of total**	**Rank**	**Partner**	**bn. $**	**% of total**
1	USA	92.9	19.2	1	Japan	81.1	18.6
2	Japan	72.8	15.0	2	China	61.1	14.0
3	China	52.3	10.8	3	USA	61.0	14.0
4	Korea	24.4	5.0	4	Korea	23.6	5.4
5	Australia	19.6	4.1	5	Germany	14.7	3.4
6	Netherlands	17.0	3.5	6	Australia	11.6	2.7
7	India	15.0	3.1	7	Taiwan	11.5	2.6
8	Hong Kong	13.9	2.9	8	India	8.0	1.8
9	Germany	13.7	2.8	9	France	7.2	1.7
10	UK	11	2.3	10	UK	6.8	1.6
11	Taiwan	8.3	1.7	11	Saudi-Arabia	6.4	1.5
12	France	6.6	1.4	12	Hong Kong	5.6	1.3
13	Belgium	3.2	0.7	13	Italy	4.5	1.0
14	Canada	3.1	0.6	14	Netherlands	3.8	0.9
15	Italy	2.9	0.6	15	Russia	3.2	0.7
	ROW	127.6	26.3		ROW	125.7	28.8
	World total	**484.3**	**100.0**		**World total**	**435.7**	**100.0**

Source: IMF and own calculation

Within the German goods-exports to ASEAN the Standard International Trade Classification (SITC) group "Machinery and transport equipment" has the highest share of 67.5%. It is followed by the groups "Chemicals and related products" (12.7%) and "Manufactured goods" (9.4%). Cambodia is the only country for which medical and pharmaceutical products are a more important German import group than machinery. Among the goods that Germany imports from ASEAN, "Machinery and transport equipment" also play a dominant role with a share of 59.6%. It is followed by the SITC group "Miscellaneous manufactured articles" with a share of 23.2%. Nevertheless, the structure of German imports from ASEAN varies, depending on the exporting ASEAN member. On the one hand Germany imports mainly textiles and clothes from Myanmar, Cambodia, Laos - and to a certain degree also from Vietnam. On the other hand, Germany's imports from the more developed ASEAN countries such as Malaysia, Singapore and the Philippines are dominated by "Machinery and transport equipment" with an average share of 80% of the value of goods trade. The largest shares in the SITC group "Machinery" are made up of "Office machines and automatic data-processing machines" and "Electrical machinery, apparatus and appliances and electrical parts". In the period from 1994-2004 German trade with

the ASEAN members is characterized by positive growth rates (except for Brunei). The largest increase in trade with Germany are observed in Cambodia (+30.9%) and Vietnam (+15.4%).

For the German service sector, the transport services accounting is with 38% the most important component of the ASEAN trade. This can mainly be explained by the large distance between Europe and Southeast Asia. Other important categories of service include merchant transaction, construction and overhead costs. Similar to the goods trade, the services trade between Germany and the ASEAN countries in recent years has mainly been characterized by positive growth rates.

5.3.3 Existing trade barriers

Governments usually erect trade barriers in order to protect their economy from international competition, to prevent anti-dumping or to raise their revenues. Since tariff barriers are relatively easy to quantify, they could be eliminated in bilateral and multilateral negotiations for almost all sectors. Therefore, on the one hand, countries often use non-tariff barriers (NTBs) to protect important products and in particular services of their economies from international competition. On the other hand, NTBs also exist without the intention to restrict trade. Although these provisions are generally restricted by the World Trade Organization (WTO), exceptions are allowed when they serve to protect the life or health of human beings, animals and plants, public morality and order, cultural assets or natural resources (Past et al. 2007). They are therefore observed in all relevant trade fields and even a notional differentiation is problematic. The United Nations Conference on Trade and Development (UNCTAD) classifies seven groups of measures: price, finance and quantity control measures, automatic licensing measures, monopolistic, technical and other measures. Due to their increased relevance, many bilateral or multilateral FTAs concentrate on the elimination of NTBs. In order to remove NTBs, the partner countries can include restricted items into their free trade agreements. Alternatively, partner countries can adjust standards or transform the non-tariff measures into tariff equivalents (TE) to eliminate them like custom duties. NTBs are not transparent to price effects but highly influence trade patterns (Fujii 2002). Therefore, a transformation into TEs can only be realized approximately. Different estimation methods have been developed here. To estimate the TEs for both, goods and services trades, we use a typical gravity model. The gravity model was first introduced to research on international trade by Tinbergen (1963) and Pöynöhen (1963). A regression function is erected to estimate the import volume between two trading

partners where their national incomes and the geographical distance between the two are the main determinants (Wall 1999). In the residual-based method used here, conducted similar to Park (2002), the functions error term represents the influence of NTBs. This method is usually applied to the service sector but can be used for the goods sector as well. For details on the estimation method see the Appendix in section 5.7. Alternatively, a dummy variable can be integrated into the regression function to estimate the effect of a specific provision (Philippidis and Sanjuán 2007).

Table 5.9 in the Appendix depicts both the actual tariff barriers and the estimated non-tariff barriers. Both country groups apply the highest trade obstacles in their primary sectors. For the ASEAN countries, the major NTBs to exports to the EU are considered to be technical safety standards as well as environmental requirements. These are often difficult to meet for less developed countries, although they may not be erected to limit trade. Import protections also exist for certain sensitive agricultural products of interest to ASEAN. For the EU the major trade and investment barriers erected by ASEAN are restrictions in the service sector as well as national policies aimed at supporting selected ASEAN industrial sectors (see ASEAN-EU Vision Group 2006).

5.4 GTAP simulation

The Global Trade Analysis Project (GTAP) is a global network of researchers and policymakers conducting quantitative analysis of international policy issues. The project is coordinated by the Center for Global Trade Analysis in Purdue University's Department of Agricultural Economics. Established in 1992, it continuously updates a standard modeling framework, a documented, publicly available, global data base as well as the software for manipulating the data and implementing the model (Hertel 1997). As used in this study, GTAP was originally developed for analyzing the effect of trade policy reforms. However, it is also used for other policy issues. Baldos and Hertel (2014) use it to forecast the development of the global crop prices until 2051. Aquiar and Walmsley (2013) investigate the long run economic implications of alternative U.S. immigration policy scenarios. Asafu-Adjaye and Wianwiwat (2012) analyze effects of Thailand's recent domestic energy development plan about replacing fossil fuel imports by renewable sources.

To analyze the effects of a potential FTA between ASEAN and the EU, this study uses a multiregional GTAP model and the GTAP 6 Data Base. Both are described in the following Section 5.4.1 and 5.4.2.

5.4.1 GTAP model

For the simulations the standard GTAP model version 6.2a is used. The version was released in May 2007 and is still the latest version available in December 2014. Five major versions have been released since the first model version GTAP.TAB 2.2a was introduced in 1994.

Hertel and Tsigas (1997) give an introduction on the basic notation, equations and intuition behind the multiregional computable general equilibrium (CGE) model. The GTAP model is based on the conventional neoclassical assumptions of utility- and profit-maximizing behavior of economic agents. The utility of a representative regional household is aggregated over private (non-homothetic) demand, public demand and investment demand. Hence, it allocates private, government and savings expenditures of a regional household. Due to the multiregional nature of the topic, two additional global sectors are taken into consideration. Firstly, investment behavior is governed by a fictional "global bank". To satisfy the savings demand of regional households, the bank creates a composite investment good, based on a portfolio of net regional investment. Secondly, a sector for international trade and transport activity accounts for the difference between f.o.b. and c.i.f. values. It produces a composite good to move merchandise trade among regions, considering transport and insurance services. The GTAP model adopts the Armington approach to import demand, where products are differentiated by origin (Armington 1969). For each industry in the model, production under perfect competition is characterized by a constant returns-to-scale technology. Firms purchase primary factors as well as intermediate inputs which are imported or produced domestically. The primary factors of production are land, labor and capital. Here, factors are distinguished which are perfectly mobile and those that are sluggish to adjust as land.

Hertel and Tsigas (1997) emphasize that in terms of Walras' Law, the model is general equilibrium in nature due to accounting relationships between sectors. When fixing variables exogenously within a partial equilibrium analysis, some of the general equilibrium conditions have to be dropped. For example when certain prices are fixed, the associated market clearing condition is no longer valid, since in this case prices must be free to adjust. Implications of a trade policy shock within the model can be described as follows: A reduction of the bilateral tariff on imports of commodity i from region r into s will result in a lower price of i in s. Domestic users will substitute away from competing imports. As a result, prices of domestic products fall and households increase their consumption. In addition, the composite import prices, facing the production sector, decrease. The aggregate demand for respective intermediates will increase, leading to excess profits. Output in s

will expand which in turn generates an expansion effect and thereby an increased demand for primary factors of production. Region r which produces the imported commodity faces a changed demand from sales of i in s, which in return also changes total output (Hertel and Tsigas 1997).

5.4.2 GTAP database

This study uses data from the GTAP 6 Data Base. The latest version, the GTAP 8 Data Base was released in March 2012. Walmsely et al. (2012) denote the data base as the centerpiece of the Global Trade Analysis Project, reflecting high quality due to world-wide collaboration. The data is based on contributions from the network's individual members who provide sector specific Input-Output tables. Data on income taxes are based on IMF data. Furthermore, the World Bank supplies macroeconomic data.

The GTAP 6 Data Base, which is supposed to represent the world economy at the base year 2001, contains data on 87 countries/regions, 57 sectors and five factors of production (land, skilled labor, unskilled labor, natural resources and capital). Each region is summarized by sales or uses of domestic and imported commodities of the five production factors as well as inputs into production of the commodities. Following conventions of Input-Output tables, total sales should equal total costs. Exports and imports are identified separately by commodity, source and destination along with trade at f.o.b. and c.i.f. prices. Within the CGE model the value of imports at market prices has to equal the value of imports purchased by firms, government, investment and private consumption (also at market price). Furthermore, a region's exports must equal the sum of imports in other countries from this region. To eliminate differences due to numerous data sources, the Center staff decides which data to believe and which data to adjust to ensure consistency (Walmsley 2012).

For the purposes of our analysis we have aggregated these data into 10 regions and 33 sectors. The following relevant trading partners are considered: 1. ASEAN (Indonesia, Malaysia, the Philippines, Singapore, Thailand, Vietnam, and the rest of Southeast Asia), 2. EU24 (EU25[7] excluding Germany), 3. Germany, 4. Australia, 5. China (People's Republic of China and Hongkong), 6. Japan, 7. South Korea, 8. USA, 9. Mercosur (Argentina, Brazil and Uruguay), and 10. the rest of the world (ROW). Following Boumellassa et al. (2006) the 33 sectors are aggregated as shown in Table 5.10 in the Appendix. This

[7] EU28, excluding Romania, Bulgaria (became member states in 2007) and Croatia (entered the EU in 2013).

aggregation is designed to reflect as well as possible the specific trade pattern between the EU24 (Germany) and ASEAN.

5.4.3 Scenarios

The GTAP data used in this study refer to the year 2001. Many new FTAs in which either ASEAN or the EU take part, have come into force since then. It can be assumed that different preferential trade agreements of the respective regions have an impact on one another (see Strutt and Rae 2007). In particular the FTA between ASEAN and China, which was signed in 2002 (and came fully into force in 2010), as well as that between ASEAN and South Korea from 2006 play important roles and are therefore included in the simulation.

Moreover, at the time the simulation is undertaken, the EU and ASEAN are planning several further FTAs which could strongly influence the impact of a potential FTA between the EU and ASEAN. Therefore, the following FTAs, which were negotiated in 2007, are additionally simulated: ASEAN-USA, ASEAN-Japan, ASEAN-Australia and EU-Mercosur. Given the lack of data in the GTAP database, the potential FTA between ASEAN and GCC (Golf Cooperation Council) is not simulated. Tables 5.11 and 5.12 in the Appendix list the relevant trading partners' GDPs and their value of goods trade in 2005. Furthermore, the tables give the agreements' status quo for 2014.

The scenarios examined in this study are listed in Table 5.4 below. The basic scenario (0) is simulated given no FTA between the EU and ASEAN. However, it includes the parallel considered FTAs mentioned above. In the alternative scenarios (1) through (4) different degrees of liberalization are simulated. These range from a partial to a complete removal of tariff and non-tariff trade barriers in EU-ASEAN trade. In scenario (2), for example, a 50% liberalization in the primary and tertiary sectors together with a 100% liberalization in the secondary sector is simulated. Contrary to scenario (3), which implies a complete removal of all trade barriers between the EU and ASEAN, scenario (4) is based on the assumption that certain so-called sensitive products are excluded from the liberalization measures. For the ASEAN countries, the list of sensitive products was created using a corresponding list which was included in the existing FTA between ASEAN and China. A product is included in the list if at least one ASEAN member excluded it from the liberalization of trade with China. The exclusion is modeled at a relatively high aggregation level. Hence, for the ASEAN countries meat and other agricultural products are treated as sensitive. Similarly for the EU countries the list of sensitive products is based on the FTA between the EU and

Chile which came into force in 2005. According to this list, the goods belonging to the group "Beverages, tobacco and milk products" are excluded from liberalization.

Table 5.4: Alternative simulation scenarios of removing trade barriers

	Scenario 0 no EU-ASEAN FTA	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4 excluding sensitive products**
			Other FTA		
Primary sector	100	100	100	100	100
Secondary sector	100	100	100	100	100
Tertiary sector	100	100	100	100	100
			FTA between the EU and ASEAN		
Primary sector	0	50	50	100	100
Secondary sector	0	100	100	100	100
Tertiary sector	0	25	50	100	100

5.5 Simulation results

5.5.1 Welfare and real income effects

The welfare and income effects are measured using the real GDP and the Equivalent Variation (EV) following McDougall (2003). It is a controversial issue which indicators should be used to comprehensively measure the welfare level of a certain region (see Jochimsen 2012). Both measures used in this study are monetarily based. As the most frequently used indicators, Gohin (2005) names real wages, real GDP, real income, consumer surplus as well as the Hicksian Compensating Variation (CV) and Equivalent Variation (EV). The real GDP as a conventional indicator displays a region's value of production output adjusted for price changes. According to Kohli (2003) the real GDP, based on the Laspeyres-price index, tends to underestimate the real income effects which are created through changes in the terms of trade. As an example he points out that Switzerland's terms of trade improved by 34% from 1980 to 1996. This indicates a technological progress since the country can import more for what it exports or has to export less for what it imports. However, the improvement is not displayed by the real GDP which only focuses on production per se. With one of the highest real incomes Switzerland has with 1,3% between 1980 and 1996 the lowest GDP growth rate of 26 OECD countries (Kohli 2003). In these

terms the EV (and CV) are typically reported in the literature as more significant measures to evaluate welfare effects of foreign policy actions. The CV and EV can be described following the Hicksian definition of the substitution and income effect (see Varian 2001). The CV measures the net revenue with which a consumer is compensated for the price change, to hold the utility level constant at original level. The EV is the respective money amount which changes the consumer's utility in the same way as the concrete price change (Mas-Colell et al. 1995).

As described in section 5.4.1, the GTAP model's center is build by an aggregate utility function of a regional household which is influenced by per capita private household consumption, per capita government spending and per capita savings. For the simulation of a policy shock, the model computes the percentage change in aggregate per capita utility. Displaying the EV, the model computes a money metric equivalent of this utility change and any change in population (Huff and Hertel 2000). McDougall (2003) defines the EV as $Y_{EV} - \bar{Y}$, where Y_{EV} denotes regional income required to obtain the new level of utility (after the shock) at initial prices and $\bar{Y}$ denotes the available initial regional income.

Results are given in Table 5.5. The changes in EV in million US dollars and the percent changes in real GDP are calculated for ASEAN, EU24(excluding Germany), Germany, for the respective trading partners of the other FTAs considered and for the rest of the word (ROW). As can be seen, for ASEAN a free trade agreement would provide the largest economic gains. The changes in EV range from 10.8 to 11 billion US dollars for ASEAN compared to (on average) 4 billion US dollars for the EU. Since the EU is a more important trading partner for ASEAN than ASEAN is for the EU, EU welfare gains would be about 36% smaller than ASEAN welfare gains. When only considering the other FTAs (Scenario 0) the EV changes of ASEAN would be about 28% smaller than with a FTA between ASEAN and the EU. The German EV-welfare gains would be about one quarter of those of the EU. In scenario (0) the EV-changes would be about 45% lower for Germany and 23% lower for the EU compared to scenarios (1)-(4). Hence Germany would profit from an agreement disproportionally compared to the other EU member states.

Changes in real GDP do not vary much between scenarios. Again with output changes of +0.72 to +0.75% the highest changes would result for ASEAN. Output effects in the EU24 and in Germany would be rather small. GDP is expected to increase on average by +0.09% for the EU and by +0.05% to +0.06% for Germany. Due to the other parallel simulated FTAs, the highest changes in GDP can be found for Mercosur, Japan and Korea.

5.5.2 Sectoral changes in the output

Changes in the output for different sectors and for the scenarios (0) to (4) are given in Table 5.6. The largest output increases in ASEAN are expected in the secondary sector for clothing, textiles and leather where the estimated output growth rates lie between 18% and 37%. The respective output values for the EU and Germany would decrease by 0.5 – 3.3%. In the primary sector sugar production would increase by about 11% in ASEAN and would decrease in the EU and Germany. However, the respective negative growth rates are again much lower. The highest contracting industries for ASEAN can be found within the manufacturing sector. The three sectors cars and trucks (with a change rate of about -9.9%), other transport equipment (-12.5%) and metal and mineral products (-7.2%) would provide the largest drops in the ASEAN-output.

For the EU24 and Germany the largest output gains are expected to occur in the primary products sector (with an average growth rate of +1.6%). However, this relatively large growth is due to the small absolute output of the primary sector in the EU and Germany. Therefore, these gains are not relevant for the EU and Germany. Our analysis also predicts large positive change-rates for the EU24 upon electronic equipment (+0.8%) as well as machinery and equipment (+0.7%). In Germany the largest output increases are expected in industries such as cars and trucks (with an output increase of about +0.5%), machinery and equipment (+0.4%) and chemical, rubber and plastic products (+0.32%). These increases are more relevant due to larger absolute output volumes. The largest decline in output for EU24 (Germany) can be found in rice production with output decreases of about -20.27% (-40.81%), poultry production with decreases of -7.38% (-7,42%) and leather production with decreases of -2.75% (-3.28%).

Table 5.5: Overall welfare and real income effects

	Scenario 0		**Scenario 1**		**Scenario 2**		**Scenario 3**		**Scenario 4**	
	EV in million US Dollar	**real GDP in %**	**EV in million US Dollar**	**real GDP in %**	**EV in million US Dollar**	**real GDP in %**	**EV in million US Dollar**	**real GDP in %**	**EV in million US Dollar**	**real GDP in %**
ASEAN	8060.3	0.52	10825.8	0.72	10920.3	0.73	11337.58	0.75	11310.56	0.75
EU24	3248.5	0.07	4041.5	0.09	4101.6	0.09	4323.40	0.09	4326.13	0.09
Germany	476.6	0.03	993.5	0.05	1010.7	0.05	1126.49	0.06	1128.35	0.06
ROW	-3330.5	-0.02	-3980.3	-0.03	-3991.1	-0.03	-4036.92	-0.03	-4033.22	-0.03
Australia	2.5	0.02	-39.0	0.02	-39.7	0.02	-45.80	0.02	-40.61	0.02
China	-513.8	0.01	-829.8	0.01	-832.2	0.01	-856.69	0.01	-856.91	0.01
Japan	4994.4	0.11	4439.8	0.11	4435.6	0.11	4362.23	0.11	4357.86	0.11
Korea	530.2	0.09	418.0	0.09	417.0	0.09	407.08	0.09	407.02	0.09
USA	-1855.5	0.00	-2214.2	0.00	-2229.2	0.00	-2281.20	0.00	-2281.38	0.00
Mercosur	2843.5	0.16	2791.5	0.16	2791.1	0.16	2765.31	0.16	2767.06	0.16

Table 5.6: Changes of sectoral output, in %

	Scenario 0			**Scenario 1**			**Scenario 2**			**Scenario 3**			**Scenario 4**		
	ASEAN	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**
Fish	0.45	0.13	0.11	0.58	0.13	0.06	0.59	0.13	0.06	0.78	0.13	0.07	0.76	0.14	0.07
PrimProd	-3.53	1.34	1.48	-4.96	1.42	1.63	-4.97	1.42	1.62	-5.60	1.52	1.75	-5.62	1.56	1.79
Rice	1.40	-0.16	0.11	2.43	-11.50	-22.93	2.43	-11.49	-22.91	4.21	-29.05	-58.7	4.20	-29.04	-58.68
Sugar	11.41	-1.52	-0.84	11.01	-1.45	-0.79	11.00	-1.45	-0.79	11.09	-1.35	-0.68	11.03	-1.35	-0.67
Poultry	1.74	-6.88	-6.50	4.16	-7.19	-7.05	4.15	-7.19	-7.05	8.07	-7.54	-7.77	8.26	-7.59	-7.82
Animal	-0.44	-2.14	-1.37	0.23	-2.20	-1.48	0.24	-2.20	-1.48	1.11	-2.25	-1.59	1.12	-2.26	-1.59
OAP	-0.06	-1.40	-1.54	-0.03	-1.47	-1.70	-0.03	-1.47	-1.69	0.16	-1.52	-1.82	0.22	-1.58	-1.88
VegOil	-2.08	0.68	-0.06	-2.63	0.47	-0.13	-2.66	0.47	-0.12	-1.53	0.11	-0.21	-1.54	0.11	-0.21
Beverage	-2.32	-0.01	-0.05	-2.81	0.09	-0.04	-2.80	0.09	-0.04	-3.28	0.20	0.00	-3.69	0.23	0.02
FoodProd	0.25	-0.69	-0.70	0.21	-0.74	-0.82	0.19	-0.74	-0.82	0.87	-0.79	-0.91	0.82	-0.79	-0.92
Apparel	27.38	-0.08	-0.17	35.63	-1.45	-1.58	35.58	-1.45	-1.57	35.21	-1.41	-1.55	35.20	-1.41	-1.55
Textile	13.04	-0.08	-0.42	18.22	-0.60	-1.36	18.16	-0.60	-1.36	17.7	-0.56	-1.33	17.64	-0.55	-1.32
Leather	20.75	-0.04	-0.34	37.59	-2.79	-3.31	37.52	-2.79	-3.3	37.1	-2.72	-3.26	37.03	-2.70	-3.25
WoodProd	-2.62	0.38	0.13	-4.71	0.45	0.15	-4.76	0.45	0.15	-5.14	0.47	0.17	-5.12	0.48	0.18
Car	-8.83	0.17	0.09	-9.88	0.39	0.46	-9.88	0.39	0.46	-9.96	0.40	0.47	-9.95	0.40	0.47
OTE	-13.26	-0.41	-0.87	-12.26	-0.60	-1.13	-12.3	-0.60	-1.13	-12.64	-0.58	-1.12	-12.62	-0.57	-1.12
Metal	-5.47	0.12	0.11	-7.07	0.28	0.21	-7.10	0.28	0.21	-7.36	0.29	0.22	-7.34	0.30	0.22

Table 5.6: Changes of sectoral output, in %

	Scenario 0			**Scenario 1**			**Scenario 2**			**Scenario 3**			**Scenario 4**		
	ASEAN	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**
Paper	-2.86	0.10	0.06	-4.69	0.18	0.07	-4.71	0.18	0.07	-4.92	0.18	0.07	-4.92	0.18	0.07
Chemical	2.66	0.20	0.22	1.95	0.27	0.31	1.93	0.27	0.31	1.67	0.28	0.33	1.67	0.28	0.33
Electronic	-1.20	0.71	0.29	-2.28	0.78	0.17	-2.32	0.79	0.17	-2.66	0.84	0.21	-2.63	0.84	0.21
Machine	1.69	0.49	0.37	0.09	0.68	0.36	0.05	0.68	0.36	-0.31	0.70	0.37	-0.28	0.70	0.37
OM	-3.55	0.21	0.04	-4.29	0.29	0.00	-4.32	0.29	0.00	-4.60	0.31	0.00	-4.59	0.31	0.00
Dwelling	0.77	0.04	0.03	1.09	0.04	0.05	1.10	0.04	0.06	1.17	0.04	0.06	1.16	0.04	0.06
Transport	-1.25	0.17	0.11	-1.61	0.19	0.10	-1.59	0.19	0.10	-1.61	0.20	0.10	-1.61	0.20	0.10
AirTrans	-2.01	0.14	0.04	-2.46	0.14	-0.06	-2.39	0.15	-0.07	-2.36	0.16	-0.07	-2.35	0.16	-0.07
Recreat	-0.39	0.06	0.00	-0.36	0.06	0.00	-0.34	0.06	0.00	-0.37	0.07	0.00	-0.38	0.07	0.00
FinServ	-1.09	0.04	0.02	-1.40	0.03	0.01	-1.41	0.03	0.01	-1.47	0.03	0.01	-1.46	0.03	0.01
BusServ	-3.90	0.11	0.06	-4.62	0.11	0.05	-4.54	0.11	0.05	-4.51	0.11	0.05	-4.50	0.11	0.05
Energy	-0.09	0.00	0.03	-0.22	0.01	0.03	-0.22	0.01	0.03	-0.26	0.00	0.03	-0.27	0.00	0.03
PIS	-0.26	0.04	0.01	-0.24	0.03	0.02	-0.23	0.03	0.02	-0.20	0.03	0.02	-0.20	0.04	0.02
Communic	-2.06	0.07	0.03	-2.56	0.07	0.01	-2.55	0.07	0.01	-2.60	0.07	0.02	-2.59	0.07	0.02
Construct	4.95	-0.10	-0.11	6.26	-0.07	-0.07	6.29	-0.07	-0.07	6.35	-0.06	-0.06	6.33	-0.06	-0.06
Trade	-0.45	0.03	0.02	-0.51	0.03	0.03	-0.50	0.03	0.03	-0.50	0.03	0.03	-0.50	0.03	0.03

5.5.3 Trade effects

As can be seen in Table 5.7, ASEAN exports are predicted to increase by 2.6% due to the EU-ASEAN free trade agreement. The EU24's and Germany's export increases will be much smaller, namely 0.34% and 0.27% respectively. Since the other FTAs included in our simulations are mainly ASEAN ones, the difference between the average of scenario (1) to (4) and scenario (0) for ASEAN is smaller (12%) than the difference for the EU24 (38%) and for Germany (29%).

Table 5.7: Changes of real merchandize exports, in %

	Scenario 0	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**
ASEAN	2.28	2.66	2.66	2.64	2.63
EU24	0.21	0.33	0.33	0.35	0.35
Germany	0.15	0.26	0.26	0.28	0.28
ROW	-0.08	-0.10	-0.10	-0.10	-0.10
Australia	0.75	0.71	0.71	0.70	0.70
China	1.40	1.35	1.35	1.34	1.34
Japan	0.81	0.81	0.81	0.80	0.80
Korea	0.50	0.51	0.51	0.51	0.51
USA	0.51	0.50	0.50	0.49	0.49
Mercosur	1.77	1.78	1.78	1.79	1.79

The export effects by sectors are reported in Table 5.8. They turn out to be similar to the output effects examined in the previous subsection (see Table 5.6). ASEAN is expected to experience large increases in the primary sector, especially in sugar (about +112%), rice (+34%) and poultry production (+45%). Large export gains could also be achieved in the light industry with apparel, textiles and leather. Compared to this, exports in the heavy industry and in the service sector would decrease.

The results indicate the largest export gains for the EU24 (excluding Germany) in the vegetable oils and fats sector (with an average increase of +3%) as well as in primary products (+2.5%). This can be explained by the small absolute size of these exports from the EU24 to ROW. Smaller relative increases in manufacturing (in particular in electronic equipment, machinery and equipment and other manufactures) correspond to large changes in absolute terms.

Table 5.8: Changes of the real export to the rest of the world by sectors, in %

	Scenario 0			Scenario 1			Scenario 2			Scenario 3			Scenario 4		
	ASEAN	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU25**	**DE**
Fish	-1.05	0.32	0.64	-1.64	0.28	0.64	-1.66	0.28	0.64	-1.88	0.26	0.62	-1.89	0.28	0.65
PrimProd	-5.78	2.31	4.12	-7.79	2.42	5.39	-7.81	2.42	5.39	-8.73	2.60	5.75	-8.75	2.67	5.86
Rice	16.99	-0.11	-1.16	25.61	-22.68	-26.44	25.57	-22.67	-26.43	41.6	-54.89	-62.32	41.56	-54.86	-62.30
Sugar	112.08	-5.43	-9.16	111.07	-4.42	-6.29	111.02	-4.42	-6.29	113.41	-3.08	-1.61	113.43	-3.07	-1.61
Poultry	15.38	-21.83	-25.27	30.87	-22.79	-25.91	30.77	-22.79	-25.91	59.21	-24.14	-26.38	59.11	-24.43	-26.67
Animal	-6.60	-1.23	-1.11	-7.73	-1.42	-1.18	-7.78	-1.42	-1.18	-9.92	-1.44	-0.88	-9.96	-1.42	-0.86
OAP	3.55	0.13	0.22	2.26	0.17	0.22	2.23	0.17	0.22	0.88	0.32	0.47	0.79	0.07	0.19
VegOil	-3.97	3.84	1.50	-4.91	3.51	0.70	-4.98	3.52	0.71	-3.01	2.65	-0.35	-3.02	2.67	-0.35
Beverage	0.57	-0.03	-0.38	-0.99	0.35	-0.34	-1.01	0.35	-0.34	-1.28	0.81	-0.12	-4.68	0.89	-0.01
FoodProd	3.56	-1.18	-2.06	4.01	-1.13	-2.30	3.97	-1.13	-2.29	6.31	-1.05	-2.41	6.22	-1.04	-2.41
Apparel	45.60	-0.38	-0.53	60.62	-2.14	-2.82	60.53	-2.14	-2.81	59.92	-2.08	-2.76	59.91	-2.07	-2.76
Textile	22.96	-0.20	-0.66	31.86	-0.33	-1.38	31.77	-0.33	-1.38	31.18	-0.27	-1.33	31.08	-0.26	-1.32
Leather	29.11	-0.37	-0.94	53.08	-3.24	-4.56	52.99	-3.24	-4.55	52.44	-3.14	-4.49	52.36	-3.13	-4.47
WoodProd	-2.94	0.74	0.61	-5.42	0.94	0.77	-5.50	0.94	0.77	-5.99	0.99	0.84	-5.95	1.00	0.84
Car	-0.11	0.32	0.18	8.26	0.74	0.83	8.20	0.74	0.83	7.82	0.75	0.83	7.86	0.75	0.83
OTE	-9.19	-0.57	-1.06	-6.30	-0.79	-1.31	-6.37	-0.79	-1.31	-6.88	-0.76	-1.31	-6.84	-0.76	-1.30
Metal	-5.00	0.29	0.37	-6.94	0.71	0.64	-7.00	0.71	0.64	-7.43	0.73	0.66	-7.40	0.74	0.66
Paper	-2.50	0.43	0.26	-5.5	0.75	0.40	-5.55	0.75	0.40	-5.94	0.76	0.40	-5.90	0.76	0.40
Chemical	10.61	0.42	0.46	10.03	0.65	0.71	9.99	0.64	0.71	9.53	0.67	0.74	9.53	0.67	0.74

Table 5.8: Changes of the real export to the rest of the world by sectors, in %

	Scenario 0			**Scenario 1**			**Scenario 2**			**Scenario 3**			**Scenario 4**		
	ASEAN	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU24**	**DE**	**ASEAN**	**EU25**	**DE**
Electronic	-1.06	1.04	0.54	-2.14	1.28	0.45	-2.18	1.29	0.45	-2.53	1.35	0.50	-2.50	1.35	0.50
Machine	4.50	0.84	0.58	3.14	1.17	0.6	3.09	1.17	0.60	2.69	1.19	0.61	2.71	1.20	0.61
OM	-4.90	0.61	0.44	-5.52	0.98	0.52	-5.59	0.98	0.52	-6.10	1.02	0.55	-6.07	1.02	0.55
Dwelling	0.73	0.04	0.03	1.04	0.04	0.05	1.05	0.04	0.05	1.11	0.04	0.06	1.11	0.04	0.06
Transport	-3.18	0.61	0.72	-3.81	0.67	0.76	-3.7	0.68	0.77	-3.59	0.72	0.81	-3.58	0.72	0.81
AirTrans	-3.29	0.19	0.10	-3.89	0.22	-0.01	-3.72	0.22	-0.01	-3.53	0.25	0.01	-3.51	0.25	0.01
Recreat	-7.41	0.27	0.11	-8.57	0.29	0.02	-8.32	0.30	0.03	-8.35	0.35	0.08	-8.37	0.35	0.08
FinServ	-9.95	0.35	0.21	-11.91	0.41	0.14	-11.73	0.42	0.16	-11.6	0.47	0.19	-11.57	0.47	0.19
BusServ	-7.24	0.40	0.28	-8.01	0.44	0.19	-7.71	0.45	0.20	-7.36	0.48	0.23	-7.34	0.48	0.22
Energy	-10.35	0.39	0.46	-12.09	0.36	0.26	-11.82	0.37	0.26	-11.61	0.39	0.28	-11.57	0.40	0.28
PIS	-8.16	0.09	-0.10	-10.01	0.06	-0.26	-9.85	0.07	-0.25	-9.85	0.12	-0.21	-9.83	0.12	-0.21
Communic	-10.56	0.29	0.16	-12.4	0.29	0.07	-12.16	0.30	0.08	-11.89	0.33	0.11	-11.85	0.33	0.11
Construct	-4.96	0.50	0.47	-5.16	0.65	0.55	-4.85	0.67	0.58	-4.45	0.73	0.65	-4.43	0.73	0.65
Trade	-9.08	0.74	0.65	-10.51	0.83	0.73	-10.25	0.84	0.76	-9.94	0.88	0.84	-9.91	0.88	0.83

The simulated impact of the FTA on Germany's exports is similar to the simulated impact on the EU24's exports. The largest growth rates are expected for primary products (with an average increase of +5.5%). Large growth rates are also estimated for the cars and trucks sector (with average increases across scenarios (1)-(4) of about +0.83%) as well as for chemical, rubber and plastic products (+0.72%). The German services exports are also expected to increase. All transport and trade services are expected to increase due to the large distance between the EU and ASEAN (both with average increases of +0.8%). For EU24 (Germany) high decreases are realized for exports of rice -38.78% (-44.37%) and poultry -23.54% (-26.25%). However, the large values are again due to the small absolute output.

5.6 Conclusion

This study examines the impact of a potential free-trade agreement between the EU and ASEAN on the German economy. Results indicate that the highest effects can be expected for ASEAN. In contrast the effects on the German economy will be very small. However, the lack of an FTA between the EU and ASEAN reduces the EU's and Germany's ability to take advantage of the benefits created by trade liberalization. These advantages could be taken by the other ASEAN trade partners and this would imply a loss of Germany's and the EU's international competitiveness.

In terms of welfare, Germany's benefits from a FTA would be higher than for other European member countries. The observed changes at the sectoral level would have a positive impact on the German economy. The largest decline in production and exports is likely to take place in the primary sector (in particular for sugar, rice as well as for poultry, rabbits and pork) and in the light industry (for apparel, textiles and leather). In contrast to results of Boumellassa et al. (2006), the exclusion of sensitive products is expected to increase the expected gains and reduce the expected losses only marginally. In sum, the losses would have a relatively small effect on the German economy compared to other EU members (e.g. Greece) since the respective sectors are rather underrepresented in Germany. Hence, their decline is not likely to result in a significant reduction of jobs. In contrast, the production and export of manufacturing products (in particular of cars and trucks, chemical, rubber and plastic products and of machinery and equipment) as well as the production and export in the services sector are expected to undergo a relatively large increase. Given that these sectors are very important to the German economy in terms of the labor force and value added, the corresponding gains are expected to more than offset the losses in

the primary sector. In sum, the projected FTA can be positively evaluated for the German and the EU economy.

For the first bilateral agreements, the EU has chosen the stronger ASEAN members with a high degree of development. Following the European Commission's Directorate-General for Trade (2013), the first FTA with Singapore is supposed to increase EU exports by about EUR 1.4 billion. Similar effects can be expected from trade agreements with the other strong ASEAN members Malaysia, Vietnam, Thailand, Indonesia and Philippines. As Chen (2011) points out, these bilateral agreements should at best have very little effects on the least developed ASEAN members owing to their low integration in the ASEAN economic networks. Furthermore, he emphasizes a marginalization of Cambodia, Laos and Myanmar from trade negotiations. For Myanmar, this is also due to its particular political situation; the process of democratization in Myanmar has just commenced in 2011.

This study calculates large positive effects for ASEAN as a whole, and small but positive effects for the EU and Germany. Due to the increasing relevance of the Southeast Asian countries for the EU trade, on the one hand trade negations with all ASEAN members can be expected in the following years. On the other hand, these negotiations carefully have to take into account the specific needs of the highly heterogeneous ASEAN members in terms of their degree of development.

5.7 Appendix

5.7.1 Appendix 1

Table 5.9: Bilateral trade barriers between EU25 and ASEAN classified by sectors

	EU25 trade barriers for ASEAN imports			**ASEAN trade barriers for EU25 imports**		
	Tariff barriers	**Non-tariff barriers**	**Tariff + Non-tariff barriers**	**Tariff barriers**	**Non-tariff barriers**	**Tariff + non-tariff barriers**
			Primary Sector			
Non-agricultural primary products	0.0	32.1	32.1	1.5	155.1	156.6
Fishing	3.0	23.5	26.5	1.4	29.1	30.5
Rice	96.2	64.6	160.8	5.8	76.9	82.7
Sugar	53.9	85.4	139.3	35.3	50.2	85.5
Poultry	23.9	31.9	55.8	7.8	35.7	43.5
Animals and other meat	0.6	27.2	27.8	1.1	36.6	37.7
Other agricultural products	2.7	31.4	34.1	11.9	12.5	24.4
Vegetable oils and fats	5.0	48.8	53.8	4.8	75.1	79.9
Beverages, tobacco and diary	17.0	44.2	61.2	12.9	7.4	20.3
Food products	12.0	40.3	52.3	11.3	13.0	24.3
			Secondary Sector			
Apparel	9.6	10.7	20.3	11.5	25.2	36.7
Textile	7.7	30.9	38.6	11.1	15.7	26.8
Leather	8.6	34.8	43.4	5.9	42.1	48.0
Wood products	1.1	21.5	22.6	6.8	28.9	35.7
Cars and trucks	5.5	42.6	48.1	28.5	27.9	56.4
Other transport equipment	2.5	9.3	11.8	1.3	3.7	5.0

Table 5.9: Bilateral trade barriers between EU25 and ASEAN classified by sectors

	EU25 trade barriers for ASEAN imports			**ASEAN trade barriers for EU25 imports**		
	Tariff barriers	**Non-tariff barriers**	**Tariff + Non-tariff barriers**	**Tariff barriers**	**Non-tariff barriers**	**Tariff + non-tariff barriers**
Metal and mineral products	2.2	24.5	26.7	5.8	0.0	5.8
Paper and publishing	0.1	24.6	24.7	5.3	12.8	18.1
Chemical, rubber and plastic products	2.3	26.0	28.3	4.7	4.3	9.0
Electronic equipment	0.9	20.7	21.6	1.4	0.0	1.4
Machinery and equipment	0.9	18.0	18.9	3.0	0.0	3.0
Other manufactures	1.2	12.2	13.4	5.1	13.8	18.9
Tertiary Sector						
Dwellings	-	-	-	-	-	-
Transport	-	24.5	24.5	-	13.3	13.3
Air transport	-	4.2	4.2	-	3.9	3.9
Recreation and other services	-	11.8	11.8	-	14.2	14.2
Financial services	-	21.9	21.9	-	20.9	20.9
Business services	-	23.4	23.4	-	0.0	0.0
Energy and water supply	-	26.7	26.7	-	54.2	54.2
Public interest services	-	9.2	9.2	-	15.7	15.7
Communication	-	15.9	15.9	-	21.5	21.5
Construction	-	33.2	33.2	-	32.8	32.8
Trade	-	38.2	38.2	-	22.0	22.0

Source: GTAP 6 Data Base; own estimations

Table 5.10: Mapping between our model's aggregation and that of GTAP 6

Our aggregation	GTAP aggregation
Non-agricultural primary products	
	Coal
	Oil Gas
	Mineral nec
Agriculture and food	
Fishing	Fishing
Rice	Paddy rice
	Processed rice
Sugar	Sugar cane, sugar beet
	Sugar
Poultry	Bovine cattle, sheep and goat meat products
	Meat products
Animals and other meat	Bovine cattle, sheep and goats, horses
	Raw milk
	Wool, silk-worm cocoons
Other agricultural products	Wheat
	Cereal grains nec.
	Vegetables, fruits, nuts
	Oil seeds
	Plant-based fibers
	Crops nec.
	Animal products nec.
Vegetable oils and fats	Vegetable oils and fats
Beverages, tobacco and diary	Dairy products
	Beverages and tobacco products
Food products	Beverages and tobacco products
Industry	
Apparel	Wearing apparel
Textiles	Textiles
Leather	Leather products
Wood products	Forestry
	Wood products
Cars and trucks	Motor vehicles and parts

Table 5.10: Mapping between our model's aggregation and that of GTAP 6

Our aggregation	**GTAP aggregation**
Other transport equipment	Transport equipment nec.
Metal and mineral products	Mineral products nec.
	Ferrous metals
	Metals nec.
	Metal products
Paper and publishing	Paper products, publishing
Chemical, rubber and plastic products	Petroleum, coal products
	Chemical, rubber, plastic products
Electronic equipment	Electronic equipment
Machinery and equipment	Machinery and equipment nec.
Other manufactures Manufactures nec.	Manufactures nec.
Services	
Dwellings	Ownership of dwellings
Transport	Transport nec.
	Water transport
Air transport	Air transport
Recreation and other services	Recreational and other services
Financial services	Financial services nec.
	Insurance
Business services	Business services nec.
Energy and water supply	Electricity
	Gas manufacture, distribution
	Water
	Public admin. And defence, education, health
Communication	Communication
Construction	Construction
Trade	Trade

Table 5.11: Selected EU FTA

Country/ region	GDP in billion USD, 2005	EU goods trade, billion USD, 2005				FHA status	Year of entry into force
		EU exports to	EU imports from	Trade balance	Total trade		
ASEAN	897.9	48.9	66.2	-17.3	115.1	B	
Central America	82.2	4.6	6.4	-1.8	10.9	C	
GCC[a]	618.2	62.5	46.2	16.3	108.7	B	
India	809.7	26.5	24.3	2.2	50.8	C	
Mercosur[b]	1088.2	25.8	41.3	-15.5	67.1	B	
Korea	791.3	25.4	43.7	-18.2	69.1	A	2011
Egypt	93.0	10.6	6.6	4.0	17.1	A	2004
Chile	119.0	4.9	10.7	-5.9	15.6	A	2003
Lebanon	22.1	3.9	0.3	3.7	4.2	A	2003
Jordan	12.9	2.9	0.3	2.6	3.3	A	2002
South Africa	241.7	22.9	22.9	0.0	45.8	A	2000
Morocco	51.6	14.6	11.4	3.2	26.1	A	2000
Israel	131.2	17.0	12.6	4.3	29.6	A	2000
Mexico	767.9	20.9	10.7	10.2	31.6	A	2000
Tunisia	28.7	9.9	8.6	1.4	18.5	A	1998
Faroe Islands	na	0.5	0.5	0.0	0.9	A	1997
Syria	27.9	3.5	3.7	-0.1	7.2	A	1977
Algeria	103.1	13.1	26	-12.9	39.0	A	1976

Source: Global Insight; Eurostat; European Commission, Global Insight; IMF

Note: A = agreed; B = under negotiation; C = under consideration.
Other EU FTA with Albania; Algeria; Bosnia and Herzegovina; Cameroon; Group of African, Caribbean and Pacific states; EFTA, Former Yugoslav Republic of Macedonia; Iceland; Ivory Coast; Mexico; Norway; Overseas Countries and Territories; Malaysia; Montenegro; Palestine; Serbia; Singapore; Switzerland; Ukraine.
a) Gulf Cooperation Council.
b) Argentina, Brazil, Paraguay and Uruguay.

Table 5.12: ASEAN FTAs

Country/ region	**GDP in billion USD, 2005**	**ASEAN goods trade, billion USD, 2005**				**FHA status**	**Year of emtry into force**
		ASEAN exports to	**ASEAN imports to**	**Trade balance**	**Total trade**		
China	2244.1	52.3	61.1	-8.9	113.4	A	2010
India	809.7	15	8	7.1	23	A	2010
Japan	4553.4	72.8	81.1	-8.3	153.8	A	2009 [a]
Korea	791.3	24.4	23.6	0.8	48	A	2006
Australia	710.9	19.6	11.6	8.1	31.2	A	2011
New Zealand	108.8	2.6	1.5	1.2	4.1		
USA	12433.9	92.9	61	32	153.9	B	Partly[b] 2004
EU25	13583.6	66.2	48.9	17.3	115.1	B	Partly [b] 2012

Source: Global Insight; ASEAN Trade Statistics.

a) with exception of Indonesia and Philippines

b) with Singapore

5.7.2 Appendix 2

The estimation of "tariff equivalents" (TE) for trade in goods and services is conducted using a two-step procedure similar to that of Park (2002). At the first stage the following equation is estimated using the OLS method

$$m_{ij} = \alpha_0 + \alpha_1 EU25 + \alpha_2 ASEAN + \alpha_3 NAFTA + \alpha_4 Mercosur +$$

$$\alpha_5 ComLang + \alpha_6 GDP_i + \alpha_7 GDP\_PC_i + \alpha_8 RP_j +$$

$$\alpha_9 GDP_j + \alpha_{10} GDP\_PC_j + \alpha_{11} RP_j + \alpha_{12} Dist_{ij} + \varepsilon_{ij} \tag{5.1}$$

where m_{ij} represents the imports from country i to country j. EU25, ASEAN, NAFTA, and Mercosur are regional dummies which equal 1 if exporter and importer belong to the same country group and 0 otherwise. (For example the dummy EU25 = 1, if i $\in$ EU25 and j $\in$ EU25 but EU25 = 0, if $\forall$i; j $\in$ EU25). ComLang is a common language dummy. It equals 1 if both country i and country j use a common language and 0 otherwise. GDP_k and GDP_PC_k represent the real GDP and real GDP per capita in country k (with k = i, j). RP_k is the relative price level in country k (k = i, j). This price level is computed following Philippidis and Sanjuán (2007) as a ratio of the US dollar equivalent of PPP to the exchange rate of the foreign currency with respect to the US dollar (both values are measured in 2001). $Dist_{ij}$ is the geographical distance between the capitals of country i and j. The above equation is a typical gravity model which accounts for bilateral trade flows. All variables except the constant and the region dummies are given in logarithms. Zero-trade entities, i.e. when the bilateral trade in a certain item is zero, are replaced by the minimum values across the corresponding sector. The data on bilateral imports are taken from the GTAP 6 Data Base. The data on GDP are from the Global Insight's database. The distances were computed using the great circular distance formula based on the geographical coordinates of the capitals taken from the CIA World Factbook. All data refer to the year 2001 since the GTAP 6 data are linked to this period. The number of countries is 69 (all countries from the GTAP 6 Data Base excluding the country groups). 36 gravity equations were estimated: 33 for the sectors considered in our simulations (these include 23 commodity and 10 service sectors) and 3 for the highly aggregated sectors (primary sector=mining and agriculture, secondary sector = manufacturing and tertiary sector = services). The estimation results are reported in Table 5.13 below. Most of the estimated coefficients are as expected. The GDP in levels has coefficients close to 1 (the

average coefficients for the GDP of exporting and importing countries are 0.591 and 0.637, respectively). The common language has a positive coefficient (the average coefficient is 0.456), whereas the distance negatively influences the imports (the average coefficient is -0.575). The goodness-of-fit of the estimated gravity models as measured by the adjusted R^2 varies from 0.226 to 0.890 and is quite high, reaching on average 0.629.

At the second stage tariff equivalents (in percentage of the trade value) for goods and services imported from country i to country j were computed using the residuals of the following equation:

$$TE_j = 100exp\,(-\sum_{i=1}^{I} \frac{AFH_{ij}}{\sigma}) - 100 \tag{5.2}$$

where AFH_{ij} is a deviation from free trade ($AFH_{ij} = \hat{\varepsilon_{ij}} - max(\hat{\varepsilon})$, where $\hat{\varepsilon_{ij}}$ is a residual of equation (5.1); $\hat{\varepsilon}$ is a vector of residuals of equation (5.1)). I is the total number of trade partners of country j and σ is the elasticity of substitution of imports. The corresponding elasticities of substitution are taken from the GTAP 6 Data Base and are reported in the last column of Table 5.13. Notice that the estimates of the tariff equivalents for services flowing to and from ASEAN and the EU25 as well as between them were obtained by adding up the corresponding residuals across member states. E.g. $\hat{\varepsilon}_{ASEAN,EU} = \sum_i \sum_j \hat{\varepsilon_{ij}}$, where i $\in$ ASEAN, j $\in$ EU.

Table 5.13: Results of the gravity models estimation

Sector	**Constant**	**EU**	**ASEAN**	**NAFTA**	**Mercosur**	**ComLang**	GDP_1	GDP_PC_1	RP_1	GDP_2	GDP_PC_2	RP_2	**Dist**	R^2adj	σ
Primary	3.938***	0.119	2.083***	0.626	1.475**	0.917***	0.845***	0.01	0.002	0.875***	-0.312***	-0.012	-0.860***	0.676	3
Secondary	2.559***	0.011	2.253***	-0.519	0.518	0.698***	0.920***	0.045***	0	1.091***	0.111***	-0.039***	-1.118***	0.837	3.5
Tertiary	-5.905***	-0.015	1.141***	-0.693**	-1.293***	0.054	0.792***	0.154***	0.015**	0.691***	0.387***	-0.073***	-0.278***	0.89	1.9
Prim Prod	2.982***	0.05	1.780***	3.360***	1.604**	0.852***	0.578***	-0.106***	0.027*	0.650***	-0.363***	0	-0.611***	0.439	2.5
Fish	-0.655***	0.287***	0.919***	2.315***	0.559	0.318***	0.250***	0.009	0.048***	0.200***	-0.088***	0.012	-0.287***	0.311	13.4
Rice	-0.614***	0.303***	1.607***	1.112***	2.388***	0.260***	0.128***	-0.011	0.009	0.266***	-0.237***	0.036***	-0.116***	0.226	6.4
Sugar	0.272	0.164***	0.874***	3.528***	0.930**	0.582***	0.238***	-0.082***	0.037***	0.248***	-0.117***	-0.041***	-0.302***	0.297	5.4
Poultry	-0.36	0.405***	0.793***	2.633***	2.318***	0.588***	0.455***	-0.006	0.054***	0.453***	0.005	0.079***	-0.527***	0.487	8.3
Animal	-1.196***	0.142**	-0.531***	4.245***	1.496***	0.401***	0.241***	-0.039***	0.01	0.155***	-0.01	-0.021**	-0.239***	0.274	6.7
OAP	3.280***	0.269***	1.401***	2.080***	1.406**	0.800***	0.685***	0.018	-0.024*	0.755***	-0.445***	-0.062***	-0.691***	0.573	4.9
VegOil	0.690**	0.309***	1.971***	2.416***	1.219**	0.496***	0.271***	-0.096***	-0.01	0.349***	-0.134***	0.002	-0.369***	0.309	6.6
Beverage	-0.737**	0.505***	2.251***	1.856***	1.843***	0.871***	0.519***	-0.008	0.048***	0.490***	0.181***	0.036***	-0.662***	0.605	4.1
FoodProd	1.753***	0.149*	2.079***	0.784	1.823***	0.855***	0.635***	0.047**	0.060***	0.765***	-0.157***	0.021	-0.798***	0.648	4
Apparel	3.026***	0.165*	0.385	1.238**	0.421	0.433***	0.618***	0.142***	0.058***	0.707***	-0.328***	-0.040***	-0.871***	0.645	7.4
Textile	4.255***	0.291***	1.234***	0.681	0.722	0.624***	0.692***	-0.050***	-0.009	0.889***	-0.229***	-0.093***	-1.009***	0.706	7.5
Leather	2.822***	0.376***	0.807***	0.653	2.350***	0.420***	0.576***	0.002	0.048***	0.721***	-0.380***	0.026**	-0.687***	0.585	8.1
WoodProd	3.274***	0.610***	0.995***	1.938***	0.904	0.530***	0.651***	0.018	0.060***	0.638***	-0.148***	0.050***	-0.940***	0.661	6.7
Car	0.893***	0.801***	1.168***	3.428***	2.586***	0.465***	0.594***	-0.060***	0.041***	0.912***	0.037*	-0.033**	-0.865***	0.688	5.6

Table 5.13: Results of the gravity models estimation

Sector	**Constant**	**EU**	**ASEAN**	**NAFTA**	**Mercosur**	**ComLang**	GDP_1	GDP_PC_1	RP_1	GDP_2	GDP_PC_2	RP_2	**Dist**	R^2adj	σ
OTE	0.602*	0.193**	1.281***	2.215***	-0.177	0.621***	0.498***	0.012	0.002	0.770***	-0.059***	0.045***	-0.734***	0.578	8.6
Metal	3.738***	0.156*	1.519***	-0.061	0.411	0.745***	0.860***	-0.063***	0.001	0.960***	-0.041**	-0.045***	-1.150***	0.772	6.9
Paper	2.341***	0.338***	1.459***	1.341**	1.722***	0.873***	0.637***	-0.122***	0.028**	0.712***	0.106***	0.063***	-0.957***	0.705	5.9
Chemical	2.755***	0.05	2.089***	-0.355	1.207**	0.698***	0.820***	-0.104***	-0.009	0.997***	0.108***	0.001	-1.092***	0.805	6.1
Electronic	-1.851***	0.433***	3.806***	1.592**	-0.552	0.809***	0.645***	0.081***	0.011	0.904***	0.169***	0.041***	-0.759***	0.652	8.8
Machine	1.412***	-0.005	2.209***	0.621	0.377	0.670***	0.744***	-0.049***	0.030**	0.998***	0.250***	-0.01	-1.103***	0.791	8.1
OM	-0.017	0.023	1.164***	0.647	-0.555	0.757***	0.648***	0.031*	0.053***	0.787***	-0.068***	0.024**	-0.703***	0.7	7.5
Transport	-6.971***	-0.157***	0.662***	-0.385	-1.164***	0.025	0.735***	0.173***	0.007	0.572***	0.283***	-0.114***	-0.175***	0.848	3.8
AirTrans	-8.806***	-0.345***	1.006***	0.396	-1.368***	0.221***	0.687***	0.154***	0.023***	0.584***	0.335***	-0.037***	-0.042***	0.809	3.8
Recreat	-7.249***	0.256***	0.907***	0.566	-1.467***	0.120**	0.633***	0.129***	0.004	0.574***	0.273***	-0.042***	-0.166***	0.778	3.8
FinServ	-7.501***	0.035	0.896***	1.331***	-1.591***	0.279***	0.620***	0.115***	-0.012	0.582***	0.307***	0.024**	-0.139***	0.744	3.8
BusServ	-6.594***	0.255***	1.668***	-1.590***	-2.704***	-0.017	0.724***	0.120***	0.079***	0.659***	0.385***	-0.043***	-0.295***	0.767	3.8
Energy	1.103***	0.252***	-1.205***	2.335***	0.09	0.08	0.337***	-0.013	0.033***	0.285***	0.061***	0.042***	-0.634***	0.441	5.6
PIS	-5.353***	-0.113*	-0.116	0.485	-1.512***	0.158***	0.655***	0.061***	0.01	0.573***	0.164***	-0.019**	-0.212***	0.758	3.8
Communic	-6.309***	0.095	-0.148	0.713*	-1.463***	0.045	0.576***	0.186***	0.044***	0.459***	0.211***	0.101***	-0.197***	0.756	3.8
Construct	-1.876***	0.582***	0.138	-0.708	-2.180***	-0.415***	0.429***	-0.022	0.053***	0.426***	0.061***	-0.034***	-0.381***	0.498	3.8
Trade	-7.077***	0.176**	1.264***	-0.756	-2.366***	0.132**	0.737***	0.061***	0.009	0.603***	0.315***	-0.066***	-0.168***	0.763	3.8

6 Summary and conclusion

6.1 Main results

Presenting three empirical studies this thesis gives a differentiated analysis of current effects of migration and trade in Germany. Whereas two studies concentrate on migration, one study focuses on trade effects.

The first study examines the effect of domestic migration on regional wage disparities. By using panel data it is possible to account for time-invariant region-specific effects. Furthermore, dynamic wage adjustments and simultaneity between the regional labor market situation, regional housing prices and local wages are taken into account, using dynamic GMM panel estimations. Various robustness checks are conducted to detect possible biased coefficients resulting in this estimation method from instrument proliferation. An error correction model provides a reconciliation of short-run and long-run effects.

The results indicate a small but positive relative wage effect of the regional migration balance. An increase of the overall migration balance of 10 percentage point leads in the long-run to an increase of the relative wage level of 0.0107 percentage points. When analyzing the relationship of migration and regional disparities, only internal migration between German regions is taken into account. Migration from or to other countries is ignored here. Then the estimated wage effect turns out to be even smaller and negative. Domestic migration alone does not seem to be able to create positive wage effects, however both effects of domestic and over-all migration are very small.

Without assuming certain migration pattern, no direct conclusions of migration effects on wages can be drawn regarding regional disparities. Disparities would only be affected when assuming that people react to disparities by moving to areas with attractive labor market circumstances. Considering the negative wage effect due to domestic migration, above-average wages in attractive regions would decrease and under-average wages would increase disparities (although the impact would be small due to the estimated small effect). In a second step, the presented study tests whether this assumption has applied for Ger-

many in recent years. The results indicate no influence of relative wage levels and relative unemployment rates on the regional migration balance. Local earning circumstances do not seem to have relevant impact on domestic migration in Germany. An adjustment process, where disparities lead to a high amount of moves and thus permanently reduce wage disparities is not likely to occur in the next few years.

However, estimation results can be used to determine how much the relative wage levels of regions may change because of the existence of migration. The positive estimated effect of the overall migration balance on wages indicates that wages in regions with a positive balance will increase and wages with a negative balance will decrease. Large increases of above-average wage levels due to a high average growth of the migration balance can be expected for Hamburg, Neckar-Alb, Rhein-Neckar and Munich. For the years 1998 to 2009 the average change rate of the migration balance in the first three regions is 2 percentage points. The estimated wage effect of 0.00107 leads to an average increase of the relative wage level of 0.002. The average change rate in Munich is 5 percentage points which implies an average increase of the relative wage level of 0.005 percent.

Large decreases of under-average wage levels due to migration can be expected for the regions Uckermark-Barnim, Prignitz-Oberhavel and Oderland-Spree in Brandenburg. Here, the average change rate of the migration balance lies between -11 and -14 percentage points and hence the estimated wage effect of 0.00107 implies average declines of the relative wage level of 0.012 to 0.015 percent.

Concentrating on moves which are motivated by occupation, the second study evaluates main individual moving determinants. The central question is whether being unemployed has a positive effect on labor mobility. A bivariate probit model is used to jointly estimate the probability of being unemployed and its influence on the moving probability. It is shown that unobserved factors influencing the moving and unemployment probabilities are correlated. In this case a binary probit model would estimate a biased unemployment coefficient in the migration equation.

In the first study focusing on the regional level, simultaneity between the migration rate and the labor market outcome is assumed and approved by endogeneity tests. This does not apply for the study focusing on the individual level, where only work-related moves are taken into account. The moving decision may be influenced by the unemployment status. However, when moving due to a new occupation, the unemployment status is directly changed and not only influenced by the moving decision.

Using the Socio Economic Panel to evaluate the main determinants of migration and unemployment turns out to be favorable. The results indicate that a work related decision to

move is highly influenced by dwelling ownership. In addition, the unemployment status of a partner turns out to influence moving and unemployment probabilities. In addition to information on the traditional family situation (marriage and children), the household size turns out to be important especially for the moving decision. Furthermore, the income of the household can be considered in the SOEP where household and individual data are merged. As discussed in the study, the individual income is not a usable explanatory variable in this context, since it is directly influenced by the (un)employment status.

The main finding of the second study is a negative influence of the unemployment status on the work-related moving probability. The moving decision seems to be made most often by people who are successful in their occupational field.

The third empirical study analyzes the effects of a free trade agreement between the European Union and the Association of Southeast Asian Nations (ASEAN) on the German economy. Using the GTAP 6 computable general equilibrium model and Data Base, potential welfare and income gains and changes in the output and trade are calculated. Four scenarios are simulated, differing in the degree of reducing tariff barriers and non-tariff barriers in the first, second and third sectors. Many comparable studies do not simulate partial but only the complete removal of barriers (see Philippidis and Sanjuán 2007; Ando and Urata 2006). In one additional scenario of the study, sensitive products are excluded from the liberalization measures.

The results show that the welfare impact on the German economy would be positive but low in contrast to the effects for the ASEAN countries. The observed changes at the sectoral level would have an overall positive impact on the German economy. Mainly the production and exports of primary products (in particular sugar-, rice- and poultry products) and of light industry products (clothing apparel, textiles and leather) are expected to decrease. Losses should therefore be limited to sectors which are underrepresented in the German economy. The production and export of manufacturing products (in particular cars & trucks; chemical, rubber & plastic products and machinery & equipment) as well as of the supply in the services sector is expected to increase. The higher gains in these more important sectors are expected to compensate for losses. The exclusion of sensitive products from liberalization measures would change results only marginally. In sum for Germany and the EU the economic effects would be rather small. However, when there is no FTA these advantages could be taken by the other ASEAN trade partners, especially by China and this would imply a loss of Germany's and the EU's international competitiveness.

6.2 Political implications

The results of this doctoral thesis indicate positive trade effects due to a potential free trade agreement between ASEAN and the EU. The presented study focuses on effects for Germany. On the European level it is important for decision-making to carve-out differentiated effects for the heterogeneous member states resulting from overall EU free trade agreements. Welfare effects of a potential ASEAN-EU-FTA are expected to be higher for Germany than for other EU members. Furthermore, observed losses at the sectoral level would be relatively small due to the production structure.

In the trade liberalization debate, industrial countries are often accused of prohibiting the development of trade partners with a lower degree of development. This critique usually refers to trade negotiations with Least Developed Countries. The Southeast Asian countries are classified as Middle and Less Developed Countries. However, development policy arrangements have been considered over the last several years of EU-ASEAN trade relations (see ASEAN-EU Vision Group 2006). Rüland (2001) points out that Europe has been more important for ASEAN in the last 30 years of the interregional relationship than vice versa. The results of the presented study point in the same direction. They indicate that compared to effects for the ASEAN countries, effects for Germany and the EU would be relatively small.

In the last years of trade negotiations, it became apparent that an agreement between the EU and the ASEAN as a whole is not yet realizable. To start with, the EU has been negotiating on bilateral level with three of the economic stronger ASEAN partners. However, the Southeast Asian countries are priority markets for the EU exporters and their economies are expected to grow by about 6% in the coming years (European Commission's Directorate-General for Trade 2013). And it is of significant importance to find external demand in times of fiscal consolidation and weak economic growth. Therefore, negotiations can also be expected with the other ASEAN member countries. The EU lately also announced that it is planned to take up again the negotiations on a general FTA with ASEAN. Here, a formation of arrangements which considers the degree of development of the heterogeneous countries is highly important. First steps have been made within the first existing free trade agreement between the EU and Singapore. Apart from trade issues, it has been agreed on to adjust environmental and labor protection to core international standards. Furthermore, trade and investment should support sustainable development in terms of social responsibility and green growth (European Commission's Directorate-General for Trade 2013). It is important to continuously control the implementation and

adaption of the targets set.

This doctoral thesis further demonstrates that self-selection can be expected to be relevant to the work-related moving decision. The results of the second study show that the labor moving probability is much lower for unemployed people. For the group that may benefit the most from moving, material and immaterial moving costs seem to be evaluated much higher than for individuals who are successful in their occupational field. The study names several possible explanations.

Due to a precarious financial situation, moving costs may be evaluated too high. Income gains might be small due to varying regional living costs. This can especially be expected when the qualification level of an individual is low. A broader supply of moving assistance from job centers could confine financial moving deterrents. However, it is questionable whether financial aid is the only way to support the willingness to move. Personal characteristics may also have a strong negative influence on the moving probability of the unemployed. A correlation between qualification level and mobility could be relevant here. In migration literature it is assumed that individuals who decide to move due to employment perspectives are on average better educated. A lower qualification level of the unemployed may lead to a lower mobility. Apart from education and qualification, for Chiswick (1978) self-selection within the moving decision occurs since migration in response to economic incentives is generally more profitable for individuals with a higher motivation, resolution or adaptability. These characteristics can be expected to be less pronounced for the group of the unemployed. In addition, it has often been pointed out that long periods of unemployment lead to psychic damages especially such as resignation. Labor market policy should therefore provide work-related moving incentives for the group of the unemployed. Juerges (1998) points out that people with low qualifications (with a higher unemployment probability) are less likely to get information about vacancies in other regions. Hence, the support of job centers is also required in terms of general assistance. They should expand their regional interchange programs and should propose distant job offers to the unemployed to further decrease moving barriers.

The doctoral thesis additionally indicates small positive effects of the regional overall migration balance on local wage levels. The common fear that earning opportunities in the destination region are deteriorated by migrants can be negated for Germany in the last years. Again self-selection may be a possible explanation for this positive relationsship. The on average higher qualification level of the migrants may increase productivity and profits in the destination area. Furthermore, consumption demand should increase in the new region due to additional high incomes.

It turns out that the wage effect of migration is only positive when migration between Germany and other countries is additionally considered. Therefore, the results are also relevant for the effect of migration from other countries. The new regulation on labor mobility of new EU-member states that came into force on January 1st, 2014 have led to much public discussion. Concerns about rising costs to the German social systems have been expressed, presumably resulting from the on average lower qualification level of migrants from Bulgaria and Romania compared to foreigners from other countries (Brücker et. al 2013). Thus, selectivity can also be expected in unobservable characteristics such as general capability, resolution, motivation or courage. In their report about expected effects, Brücker et. al (2013) do not deny possible challenges especially for large cities as major destinations of migrants when the qualification of new migrants is low. However, in sum Germany benefits from migrants. A simulation study on a 1% increase of the expected labor force estimates an increase in production. While for Germans employment perspectives are not expected to change, only marginal deteriorations are expected for people with a migration background.

Switzerland has also highly benefited from migration. Although the country's cultural landscape has been marked by buildings due to new citizens, almost full employment exists. Whether the modification of the EU agreement on the free movement of workers, that was made as a result of a referendum against large-scale immigration, will harm the Swiss economy remains to be seen in the next few years. The debate is a suitable example of the relation of migration and trade issues. Detractors of the referendum have also emphasized potential negative effects for trade. The migration agreement is interlinked to an expansion to EU-trade issues from which Switzerland highly benefits. The disapproval of the Swiss economy and population against the decision in February 2014 is reflected by the latest referendum in November 2014. 74.1% of the swiss voters voted against a reduction of the migration balance to 0,2% per year.

6.3 Further research

The findings presented in this thesis offer various possible extensions for further research. In addition, future research results due to certain research limitations.

Using computable general equilibrium models, the impact of FTAs on the countries' welfare levels is usually measured with the GDP or the equivalent variation (EV) (see European Commission's Directorate-General for Trade 2013; Philippidis and Sanjuán 2007; Kawasaki 2003; Brown et al. 2002). For evaluating the effects of the first existing and

following agreements between the EU and ASEAN, the consideration of other welfare indicators would be insightful. In recent years, there have been attempts in many countries to develop a statistic indicator system to evaluate welfare by also taking into account factors such as the country's income distribution, health care system and environmental protection measurs (see Enquête-Kommission "Wachstum, Wohlstand, Lebensqualität" 2013). Such an indicator system could also be used to examine the question of whether measures in the field of development aid policy have been implemented successfully.

Concerning the migration topic, further evidence for or against the assumption of self-selection could be an important objective. The thesis names several potential reasons for a lower moving probability of unemployed people in comparison to those who are employed. It is important to evaluate to what extent the financial situation or individual characteristics have a negative influence on the moving decision of the unemployed. As the results indicate, all main moving determinants have less influence on the work-related moving decision of the unemployed. This is a strong evidence for moving deterrents which only work or work stronger for the group of unemployed people. Future research should investigate which main determinants are important for this finding.

The results derived in the first study hint to additional research potential for approving the assumption of self-selection for the moving decision. A positive wage effect resulting from over-all migration can be explained by the on average higher qualification level of migrants. However due to data limitation, reasons remain unclear. In coming examinations, the use of data with differentiated information on the qualification composition of migration rates should add to an understanding of the extent to which the qualification level of migrants causes positive wage effects.

Another important approach to future research on migration would be the analysis of employment effects as well as the impact on public finances for German regions today. Although this has been analyzed in previous studies for various regions and times, it is an ongoing prevailing issue (see Longhi et al. 2008, Kerr and Kerr 2011). On the one hand, findings about the migration impact on employment and public finances are relevant for German urban regions where high migration rates can be expected for the years to come. On the other hand, results are also relevant for rural areas which are already confronted with high negative migration balances. Many villages in rural East and West German regions are continuously losing population and literally die out. Translated results of the thesis indicate that wages decrease due to leaving a region. Similar effects on employment and public finance are likely to worsen the problem of rural exodus for many communities.

6.4 Concluding remarks

This doctoral thesis demonstrates positive economic effects of a reduction or removal of trade barriers. It also signals small but positive wage effects due to migration. Furthermore, it emphasizes that self-selection can be expected to be an important issue within labor migration. On the one hand, self-selection appears to be the main force of positive migration effects. On the other hand, labor market policy may be able to reduce unemployment by removing migration barriers for the group of the unemployed. The purpose of this examination is not to undervalue regional bindings but to point out self-selection within the moving decision which is made every year by numerous individuals and families.

The thesis further emphasizes that moving incentives due to regional earning disparities are low in Germany. Migration does not appear to be, as assumed in traditional approaches, an effective mechanism to reduce wage disparities. It should therefore be a main aim of regional policy to keep welfare differences low between German regions. There are highly deprived areas in East as well as in West Germany where the share of people living below the poverty line is higher than 20% (Schneider et. al 2013). The formulation of support programs for laggard regions is of high importance for adjusting living conditions. In addition, political debates on reforming the financial equalizations in Germany are still prevailing.

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German summary

Die Zielsetzung dieser Dissertation ist es, eine differenzierte Analyse über aktuelle Effekte von Migration und Güter- /Dienstleistungshandel für Deutschland zu geben. Angesichts grundlegender Unterschiede wird Migration und Handel getrennt betrachtet. Im Anschluss an einen einleitenden Survey zu wesentlichen Migrations- und Handels-Theorieansätzen folgen zwei Studien zum Thema Migration sowie eine dritte Studie mit einer handelsbezogenen Fragestellung. Es werden Einflüsse auf verschiedene relevante Wohlfahrtsmaße analysiert. So tragen die Ergebnisse zur öffentlichen Debatte unterschiedlicher migrations- und handelsbezogener Sachverhalte bei. Die Untersuchungen finden auf unterschiedlichen Ebenen statt. Die erste Studie beschäftigt sich mit Disparitäten zwischen deutschen Regionen, die zweite ist auf der individuellen Ebene angesiedelt und die dritte Studie analysiert Handelseffekte zwischen zwei Staatenbünden. Für die drei empirischen Untersuchungen werden unterschiedliche ökonometrische Analysemethoden sowie relevante Datensätze verwendet.

Im folgenden Abschnitt der deutschen Kurzfassung werden die Inhalte und wesentlichen Ergebnisse der drei Studien dargelegt. Anschließend werden politische Implikationen herausgestellt.

Inhalt und Ergebnisse der drei Studien

Inländische Migration und regionale Disparitäten auf dem deutschen Arbeitsmarkt

Die erste Studie der Dissertation analysiert den Einfluss inländischer Migration und Pendeln auf Lohnunterschiede zwischen deutschen Regionen. Große Lohnunterschiede existieren nicht nur zwischen dem ehemalig Ost- und Westdeutschen Teil sondern auch innerhalb der Regionen. Traditionelle Ansätze überprüfend, untersucht die Studie ob Migration

hier als Anpassungsmechanismus fungieren kann, ob ein gegenteiliger Effekt zunehmender Disparitäten resultiert oder kein Einfluss auf Lohnunterschiede existiert.

Für die empirische Analyse werden der INKAR Datensatz (Indikatoren und Karten zur Raum- und Stadtentwicklung in Deutschland und Europa) und das SOEP (Sozio-ökonomisches Panel) für die Jahre 1998 bis 2009 verwendet. Die Panelstruktur der Datensätze ermöglicht es zeitinvariante regionalspezifische Effekte zu berücksichtigen. Um zudem dynamische Lohnanpassungen und Simultanität zwischen regionalen Migrationsraten, regionalen Wohnkosten und der betreffenden regionalen Arbeitsmarktsituation zu berücksichtigen, kommen dynamische GMM (Generalized Method of Moments) Panelschätzungen zum Einsatz. Es kann angenommen werden, dass regionale Migrationsraten nicht nur die lokale Arbeitsmarktsituation beeinflussen sondern letztere auch die Migrationsraten beeinflusst.

In einem ersten Schritt wird der kurzfristige und langfristige Effekt der regionalen Netto-Migrationsraten auf das relative regionale Lohnniveau geschätzt. Die Ergebnisse zeigen einen geringen signifikant positiven Lohneffekt der Netto-Migration. Steigt in einer Region die Nettomigration um 10 Prozentpunkte führt dies zu einem langfristigen Anstieg des relativen Lohnniveaus um 0,0107 Prozent. Die jährlichen Veränderungsraten der Nettomigration deutscher Regionen liegen in einem Intervall von +/- 50 Prozentpunkte. Demzufolge liegen die jährlichen Veränderungen des relativen Lohnniveaus aufgrund von Mobilität in den letzten Jahren in einem Intervall von ca. +/-0,0535 Prozent. Um nun den Einfluss von Migration auf regionale Disparitäten zu analysieren, sollte nur die inländische Migration berücksichtigt werden. Der hier resultierende Effekt inländischer Migration (bei Nicht-Berücksichtigung ausländischer Migration) auf das relative regionale Lohnniveau fällt noch kleiner aus und ist negativ. Deutsche Regionen scheinen in der Summe von neuen Bewohnern zu profitieren, wobei die inländische Migration dies alleine nicht bewirken kann.

Dieses Ergebnis führt zu keiner direkte Schlussfolgerung bezüglich des Effektes von Migration auf regionale Lohndisparitäten. Die Migration hätte nur dann einen Einfluss auf Disparitäten, wenn die Bevölkerung stark auf diese Lohnunterschiede reagieren und vermehrt in Regionen mit attraktiven Arbeitsmarktbedingungen ziehen würde. Der geschätzte negative Effekt der inländischen Migration auf regionale Löhne würde dann zu einem Anpassungsmechanismus führen (wobei der Einfluss aufgrund des geringen Effektes klein wäre). In Hochlohnregionen würde das Lohnniveau durch Zuzugsraten sinken. In Niedriglohnregionen würde sich gegenteiliges durch vermehrtes Wegziehen ergeben. Dieser Einfluss der regionalen Arbeitsmarktbedingung auf das Migrationsverhalten wird in ei-

nem zweiten Schritt anhand einer Migrationsfunktion untersucht. Die Ergebnisse zeigen keinen signifikanten Einfluss des relativen Lohnniveaus oder der relativen Arbeitslosenrate auf die Migration. Ein Anpassungsmechanismus, bei dem Disparitäten verstärkt Migrationsströme hervorrufen und damit die Disparitäten reduzieren, sollte in den nächsten Jahren nicht resultieren.

Die Ergebnisse können jedoch verwendet werden, um für einzelne Regionen die durchschnittliche Veränderung des Lohnniveaus aufgrund von Migration zu prognostizieren. Da der geschätzte Lohneffekt der Gesamtmigration (auch ausländische Migration beachtend) positiv ausfällt, ist zu erwarten, dass Löhne in Regionen mit hohen positiven Nettomigrationsraten ansteigen und Löhne in Regionen mit hohen negativen Nettomigrationsraten sinken. Weitere Lohnanstiege in Hochlohnregionen aufgrund hoher positiver Nettomigrationsraten können insbesondere für Hamburg, Neckar-Alb, Rhein-Neckar und München erwartet werden. Für die Jahre 1998 bis 2009 liegt die durchschnittliche Änderungsrate der Nettomigration in den ersten drei Regionen bei 2 Prozentpunkten. Aufgrund des geschätzten Lohneffektes von 0.00107 kann hier mit durchschnittlichen Lohnanstiegen von 0.002 Prozent gerechnet werden. Die durchschnittliche Änderungsrate der Nettomigration in München beträgt 5 Prozentpunkte. Dort kann ein migrationsbedingter Anstieg des relativen Lohnniveaus von 0,005 Prozent erwartet werden. Ein weiteres Absinken der Löhne in Niedriglohnregionen aufgrund hoher negativer Nettomigrationsraten kann für die Brandenburger Regionen Uckermark-Barnim, Prignitz-Oberhavel und Oberland-Spree erwartet werden. Die hier in einem Intervall von -11 bis -14 Prozentpunkten liegenden durchschnittlichen Änderungsraten der Nettomigration führen den Ergebnissen folgend aufgrund des geschätzten Lohneffektes zu einem Absinken der Löhne von 0,012 bis 0,015 Prozent.

Die Umzugsentscheidung von Arbeitslosen

Die zweite Studie der Dissertation beschäftigt sich mit der Umzugsbereitschaft von Arbeitslosen, um diese zu beenden. Für die meisten Menschen sind regionale Bindungen von hoher Bedeutung, häufig erschwert die Familiensituation den berufsbedingten Umzug und es ergeben sich hohe Kosten. Jedoch überwinden jedes Jahr viele Menschen diese Hürden für eine neue Beschäftigung. Daher ist für die Arbeitsmarktpolitik die Frage, ob in Deutschland Arbeitslose die gleiche Bereitschaft zum berufsbedingten Wohnortwechsel aufweisen wie beschäftigte Arbeitnehmer von hoher Bedeutung. Die ökonometrische Schätzung basiert auf Daten des Sozioökonomischen Panels für die Jahre 2001 bis 2009.

Es wird ein bivariates Probitmodell verwendet, um die beschäftigungsmotivierte Umzugswahrscheinlichkeit von Arbeitslosen sowie die Wahrscheinlichkeit arbeitslos zu sein, gemeinsam zu schätzen. Es zeigt sich, dass unbeobachtbare Faktoren die die beiden Wahrscheinlichkeiten beeinflussen, korreliert sind. In diesem Fall würde ein binäres Discret Choice Modell einen verzerrten Arbeitslosenkoeffizienten in der Umzugsgleichung schätzen. Neben dem Einfluss des Arbeitslosenstatus auf die Umzugswahrscheinlichkeit schätzt das Modell den Einfluss anderer wesentlicher Determinanten der Wahrscheinlichkeit umzuziehen beziehungsweise arbeitslos zu sein. Hier zeigt sich, dass die Umzugswahrscheinlichkeit bei Wohneigentum sehr viel niedriger ausfällt. Personen in einer Beziehung mit einem Arbeitslosen weisen eine höhere Wahrscheinlichkeit auf arbeitslos zu sein und entscheiden sich eher für einen Umzug. Ähnlich wie bei Personen in einem großen Haushalt können höhere Umzugsbarrieren erwartet werden wenn der Partner beruflich gebunden ist. Auch Personen mit einem Migrationshintergrund sind häufiger mit dem Problem der Arbeitslosigkeit konfrontiert und entscheiden sich eher für einen beschäftigungsmotivierten Umzug. Zudem zeigt sich, dass Arbeitslose häufig alleinstehend sind und in schlechterer gesundheitlicher Verfassung als nicht-arbeitslose Personen.

Als zentrales Ergebnis zeigt sich, dass die Umzugswahrscheinlichkeit von Arbeitslosen, die durch den Wohnortwechsel ihre Arbeitslosigkeit beenden, sehr viel niedriger ist als die berufsbedingte Umzugswahrscheinlichkeit von Beschäftigten. Auch sind Effekte der zentralen Umzugsdeterminanten sehr viel geringer für diese Gruppe. Bestimmte Umzugsbarrieren scheinen nur für Arbeitslose zu existieren bzw. für sie sehr viel stärker ins Gewicht zu fallen.

Auswirkungen eines Freihandelsabkommens zwischen der Europäischen Gemeinschaft und den ASEAN-Staaten auf die deutsche Wirtschaft

In der dritten Studie werden die Auswirkungen eines potentiellen Freihandelsabkommens (FHA) zwischen der Europäischen Union (EU) und dem Verband Südostasiatischer Nationen (ASEAN) untersucht. Es werden Einkommens-, Wohlfahrts-, Produktions- und Handelseffekte geschätzt sowie die sektoralen Veränderungen der Produktion und der Handelsströme zwischen ASEAN und der EU beziehungsweise Deutschland.

Anhand eines allgemeinen berechenbaren Gleichgewichtsmodells, des GTAP Modells 6.2a und der GTAP 6 Datenbank werden vier Szenarien des Abbaus tarifärer sowie nicht-tarifärer Handelsbarrieren simuliert. Zur Bestimmung von Zolläquivalenten nicht-tarifärer

Handelsbarrieren wird ein Gravitationsmodell angewendet. Die Szenarien unterscheiden sich im Liberalisierungsgrad im 1., 2. und 3. Sektor; im vierten Szenario werden zusätzlich sensible Produkte ausgeschlossen. Der Ausschluss dieser Produkte erfolgt auf Grundlage anderer bereits beschlossener FHA und auf relativ hohem Aggregations- niveau. Für die ASEAN Länder, basierend auf einem FHA mit China, werden „Fleisch und andere Agrarprodukte“ als sensibel eingestuft. Für die EU, basierend auf dem FHA mit Chile, gelten „Getränke, Tabak und Milchprodukte“ als sensibel. Das Modell berücksichtigt in allen Szenarien zudem relevante ASEAN- und EU-FHA mit anderen Ländern. Die Ergebnisse belegen, dass die ASEAN Länder sehr viel stärker von einem Abkommen profitieren würden als Deutschland und die EU. Die handelsschaffenden und handelsumlenkenden Effekte wären für die deutsche Wirtschaft gering aber positiv. Zum stärksten Rückgang der Produktion und der Exporte käme es für Deutschland im Primären Sektor (vor allem bei Zucker-, Reis- und Geflügelprodukten) und in der Leichtindustrie (bei Kleidung, Textilien und Leder). Da diese Sektoren für die deutsche Wirtschaft nur wenig Relevanz haben, fallen die Verluste sehr viel geringer aus als für andere EU-Länder (wie zum Beispiel für Griechenland). In Deutschland sollte es durch resultierende Verluste somit zu keinem hohen Arbeitsplatzabbau kommen. Bei Ausnahme sensibler Produkte von den Liberalisierungsmaßnahmen würden sich keine signifikanten Änderungen ergeben. Ein stärkerer Anstieg der Produktion und der Exporte ist dagegen im Bereich der Schwerindustrie (vor allem bei den Gütergruppen Personen- und Lastwagen, Chemikalien, Gummi- und Plastikprodukte, Maschinerie und Gerätschaft) sowie im Dienstleistungsbereich zu erwarten. Diese Sektoren sind für Deutschland gemessen an Arbeitsplätzen und am Anteil an der Wertschöpfung sehr viel bedeutender. Somit überwiegen in der Summe die Handelsgewinne. Trotz geringer Wirkung für die europäische und deutsche Wirtschaft kann das Freihandelsabkommen als insgesamt positiv bewertet werden. Würde es zu keinem Freihandelsabkommen kommen, würden die prognostizierten Gewinne den anderen ASEAN-Handelspartnern der hier parallel betrachteten FHA, insbesondere China zukommen.

Politische Implikationen

In der vorliegenden Arbeit werden positive Handelseffekte aufgrund eines FHA zwischen der EU und ASEAN prognostiziert. In der betreffenden dritten Studie liegt der Fokus auf Auswirkungen für Deutschland. Für die heterogenen Mitgliedsstaaten ist es im Rahmen der Entscheidungsfindung auf Europäischer Ebene von hoher Bedeutung, die aus gesamteuropäischen Freihandelsabkommen für sie resultierenden Effekte differenziert heraus-

zustellen. So zeigt sich, dass die Wohlfahrtseffekte aus dem potentiellen Freihandelsabkommen für Deutschland sehr viel höher ausfallen als für andere EU-Länder. Auch zu erwartende Verluste auf sektoraler Ebene fallen für Deutschland aufgrund der Produktionsstrukturen relativ gering aus.

Industriellen Ländern wird häufig der Vorwurf gemacht, die Entwicklung ökonomisch schwächerer Handelspartner durch Liberalisierungsmaßnahmen zu hemmen. In der Regel bezieht sich diese Kritik auf Verhandlungen mit Entwicklungsländern. Die ASEAN-Länder werden als mittlere Einkommensländer und so genannte LDCs (Less Developed Countries) eingestuft. Doch wurden auch in Handelsgesprächen zwischen ASEAN und der EU entwicklungsunterstützende Maßnahmen thematisiert. In der Literatur wird hervorgehoben, dass Europa für ASEAN in den letzten 30 Jahren der interregionalen Beziehung bedeutsamer war als ASEAN für Europa. Die Ergebnisse der vorliegenden Studie weisen in die gleiche Richtung. Sie zeigen auf, dass ASEAN im Vergleich zu Deutschland und der EU durch ein FHA sehr viel größere wirtschaftliche Gewinne generieren könnte.

Die präsentierten Ergebnisse dieser Dissertation wurden Ende 2007 ermittelt und analysieren Effekte eines allgemeinen Abkommens zwischen den beiden Staatenbünden. In den folgenden Jahren stellte sich heraus, dass ein allgemeines Abkommen zwischen der EU und ASEAN noch nicht zu realisieren ist. So verhandelt die EU seit 2009 auf bilateraler Ebene zunächst mit drei der ökonomisch stärkeren ASEAN Länder Singapur, Malaysia und Vietnam. 2012 wurden die Verhandlungen eines FHA mit Singapur abgeschlossen. Jedoch stellen die Südost-asiatischen Länder für die EU Exporteure bedeutsame Märkte dar; für die nächsten Jahre ist hier ein Wirtschaftswachstum von ca. 6% zu erwarten. Auch kommt der Generierung ausländischer Nachfrage in Zeiten finanzieller Konsolidierung und geringem Wirtschaftswachstums eine hohe Bedeutung zu. Daher kann erwartet werden, dass Handelsabkommen mit den übrigen ASEAN Ländern folgen. Auch plant die EU derzeit, die Verhandlungen über ein allgmeines Abkommen wieder aufzunehmen. Bei der Ausgestaltung dieser Abkommen ist es von hoher Bedeutung den Entwicklungsstand der stark heterogenen Länder zu berücksichtigen. So wurde bereits im ersten existierenden Freihandelsabkommen zwischen Singapur und der EU neben Handelsthemen u.a. beschlossen, dass der Umwelt- und Arbeitnehmerschutz in Singapur an internationale Standards angepasst wird. Die Implementierung und Durchsetzung gesetzter Ziele sollte hier kontinuierlich überprüft werden.

Auf der Ebene des deutschen Arbeitsmarktes hebt die vorliegende Arbeit des Weiteren die Relevanz von Selbstselektion bei arbeitsbezogenen Umzügen hervor. Ergebnisse der zweiten hier präsentierten Studie zeigen auf, dass die Umzugswahrscheinlichkeit von Ar-

beitslosen sehr viel geringer ist als die von beschäftigten Personen. Für die Gruppe, die wahrscheinlich am meisten von einem Umzug profitieren würde, wirken Umzugsbarrieren scheinbar sehr viel stärker als für Personen, die beruflich erfolgreich sind. Die Arbeit nennt verschiedene mögliche Erklärungsansätze, deren Relevanz in zukünftigen Forschungsarbeiten überprüft werden sollte.

So könnten Umzugskosten aufgrund einer arbeitslosigkeitsbedingt prekären finanziellen Situation als zu hoch eingeschätzt werden. Auch könnte der Einkommensanreiz durch regional variierende Lebenshaltungskosten gering ausfallen. Dies trifft insbesondere zu wenn angenommen wird, dass Arbeitslose durchschnittlich niedriger qualifiziert sind und demzufolge weniger verdienen. Ein breiteres Angebot finanzieller unterstützender Maßnahmen von Seiten der Arbeitsämter könnte zu einer Reduzierung von Umzugsbarrieren führen. Jedoch ist es fraglich, ob die niedrigere Umzugswahrscheinlichkeit der Arbeitslosen allein auf eine zu geringe finanzielle Unterstützung zurückzuführen ist. So könnten zudem personelle Charakteristika der Arbeitslosen eine Rolle spielen. In der Migrationsliteratur wird angenommen, dass umziehende Personen über eine durchschnittlich höhere Bildung verfügen. So könnte die häufig niedrigere Qualifikation der Arbeitslosen mit einer niedrigeren Mobilität einhergehen. Auch wird angenommen, dass umziehende Personen aufgrund von Selbstselektion in der Regel über eine höhere Motivation, Durchsetzungskraft und Anpassungsfähigkeit verfügen. Diese Eigenschaften könnten die Wahrscheinlichkeit arbeitslos zu sein reduzieren und somit bei Arbeitslosen weniger ausgeprägt sein als bei beschäftigte Personen. Des Weiteren wird häufig dargelegt, dass lange Phasen der Arbeitslosigkeit psychisch stark beeinträchtigend wirken und mit Resignation einhergehen. Für die Arbeitsmarktpolitik ist es daher von hoher Bedeutung Umzugsanreize für die Gruppe der Arbeitslosen zu generieren. In der Literatur wird auch betont, dass Niedrigqualifizierte (mit einer höheren Wahrscheinlichkeit arbeitslos zu sein) seltener über offene Stellen in anderen Regionen informiert sind. So ist auch die nicht finanzielle Unterstützung der betreuenden JobCenter gefragt. Sie sollten ihren regionalen Austausch ausbauen und Arbeitslosen Angebote aus anderen Regionen vorschlagen.

Die Dissertation stellt des Weiteren geringe positive Effekte der Migration auf regionale Löhne heraus. Die verbreitete Befürchtung, dass Migration die Arbeitsmarktbedingungen in der Zielregion verschlechtern, scheint für deutsche Regionen in den letzten Jahren nicht zuzutreffen. Erneut kann hier Selbstselektion eine mögliche Erklärung liefern. Das in der Migrationsliteratur angenommene durchschnittlich höhere Ausbildungsniveau von Migranten könnte zu Produktivitäts- und Profitsteigerungen in den Zielregionen führen. Zudem könnte es hier durch zusätzliche hohe Einkommen zu einem Anstieg der Konsum-

nachfrage kommen. Leider liefern die verwendeten Daten keine Informationen über die Qualifikationsstruktur der regionalen Migrationsraten. Die betreffende Studie zeigt zudem auf, dass der Einfluss von Migration auf das lokale Lohnniveau nur positiv ausfällt, wenn neben der inländischen Migration auch Migration zwischen Deutschland und dem Ausland berücksichtigt wird. Somit sind die Ergebnisse auch relevant für Arbeitsmarkteffekte durch ausländische Zuwanderung. Das Auslaufen der letzten Übergangsregelung zum 1. Januar 2014 zur Freizügigkeit der jüngsten EU-Mitgliedsstaaten ist ein viel diskutiertes Thema. So werden hohe Kosten für die deutschen sozialen Sicherungssysteme erwartet, da Migranten aus Bulgarien und Rumänien durchschnittlich niedriger qualifiziert sind als Migranten aus anderen Ländern. Jedoch ist wie vorangehend bereits beleuchtete Selektion von Zuwanderern auch durch andere unbeobachtbare Faktoren zu erwarten, beispielsweise durch allgemeine Fertigkeit, Durchsetzungskraft, Motivation oder Mut. Brücker et al. (2013) leugnen nicht, dass insbesondere auf große Städte als Hauptziele aufgrund der niedrigen Qualifikation der Zuwanderer möglicherweise hohe Herausforderungen zu- kommen. Doch profitiert Deutschland in der Summe von der Zuwanderung. Eine betreffende Simulationsstudie zu einem 1%-igen Anstieg der ausländischen Arbeitnehmerschaft bei zu erwartendem Qualifikationsniveau zeigt einen Anstieg der Produktion auf. Während sich für deutsche Arbeitnehmer die Arbeitsmarktbedingungen nicht verändern sollten, sind für ausländische Arbeitnehmer nur sehr geringe Verschlechterungen zu erwarten.

Auch die Schweiz profitiert von der Zuwanderung. Zwar musste aufgrund neuer Bewohner Kulturraum bebaut werden, jedoch existiert nahezu Vollbeschäftigung. Ob sich die Beschränkung des Freizügigkeitsabkommens mit der EU aufgrund des Entscheids „Gegen Masseneinwanderung“ wirtschaftlich negativ auswirkt, wird sich in den nächsten Jahren zeigen. Die Debatte ist ein passendes Beispiel um die Wechselwirkungen zwischen Handel und Migration zu beleuchten. So werden auch negative Effekte auf den Schweizer Handel erwartet, da das Freizügigkeitsabkommen an weitere Verträge zur Ausweitung des EU-Binnenmarktes gekoppelt ist. Die Ablehnung der Schweizer Wirtschaft und auch der Bevölkerung gegen die Entscheidung von Februar 2014 zeigt sich im letzten Referendum vom November 2014. 74,1 % der Schweizer Wähler stimmten gegen eine Begrenzung der Nettozuwanderung auf 0,2% pro Jahr.

Zusammenfassend zeigt die vorliegende Dissertation positive ökonomische Effekte durch den Abbau von Handelsbarrieren auf. Des Weiteren werden positive Auswirkungen von Migration herausgestellt. Hierbei kommt der Selbstselektion ein hoher Stellenwert zu. Einerseits lassen sich dadurch positive Effekte auf die regionalen Arbeitsmarktbedingungen erklären. Andererseits ergeben sich für die Arbeitsmarktpolitik Potentiale die Arbeitslo-

sigkeit zu reduzieren. Es ist wichtig Umzugsbarrieren für die Gruppe der Arbeitslosen zu verringern um einer Selektion entgegenzuwirken.

Als letzter Aspekt sollte hervorgehoben werden, dass die regionalen Lohnunterschiede innerhalb Deutschlands derzeit keine Umzugsanreize geben. Im Widerspruch zu traditionellen Ansätzen scheint die Migration kein wirksamer Mechanismus zu sein um Lohndisparitäten zu reduzieren. Ein wesentliches politisches Ziel sollte es daher sein, regionale Wohlfahrtsunterschiede gering zu halten. In Ost- wie auch in Westdeutschland gibt es benachteiligte Regionen, in denen der Anteil der Menschen, die unter der Armutsgrenze leben, bereits mehr als 20% beträgt. Um Lebensstandards anzupassen, ist die Erarbeitung von Förderprogrammen für strukturschwache deutsche Regionen wichtig. Zudem kommt der Debatte zur Reformierung der Finanzausgleiche weiterhin eine hohe Bedeutung zu.