Germany as an Immigration Country – Empirical Evidence

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Chapter 1

Introduction and Overview

Germany has been an immigration country for more than 30 years now, although many politicians persistently claim the opposite and many people in Germany are inclined to agree with their assessment. However, it is the actual experience with immigration, and not what people would like to experience nor legal or administrative definition, which qualifies a country as an immigration country. On this grounds it seems safe to argue that any assessment of Germany as "no immigration country" is far from reality. The well-documented (see. e.g. Schmidt (1996), Schmidt and Zimmermann (1992) and Zimmermann (1995)) history of immigration to Germany since the 1950's clearly suggests the conclusion that post World War II-Germany in fact has been and still is an immigration country. Moreover, the German experience with immigration is not an isolated phenomenon. Since the end of World War II Europe as a whole which was an emigration region in the 19th century has made its way through a transition process to an immigration region (see e.g. Chiswick and Hatton (2001)). In the course of this transition process Germany has become the main receiving country within Europe at least in absolute terms.

The aim of this introductory chapter is to provide some evidence for this claim and to present some stylized facts on the German immigration record. Furthermore, it will be clarified how research on this experience in economics may be conceptualized in order to provide a common frame of reference for the contributions of this thesis to the

received literature. Clearly, the immigration experience of Germany poses a large number of research questions which have not been addressed yet. Moreover, all these research questions are of prominent relevance for economic as well as social policy. However, it is naturally beyond the scope of this thesis to provide answers to all or even the majority of these research questions. Contributions necessarily have to remain highly selective. However, it will be argued in this chapter that all these research questions are intimately related and that a contribution to one of the open questions may hopefully be able to contribute to the research conducted in related areas in the future.

1.1 The German Immigration Experience – Current Situation and Historical Development

The current situation regarding the population of immigrants in Europe is the result of the variegated and multi-faceted migration experience of this continent after 1945. It may be illustrated by the following table. **Table 1** reveals that most of the Western European countries display large shares of foreign or foreign born individuals in their population. Furthermore, these individuals also constitute a substantial fraction of the labor force of the respective countries. On average, the share of total population being foreign or foreign-born is 7.4% (5.6% without Luxembourg) and the average share in the labor force is 8.2% (5.2% without Luxembourg) in these countries. Therefore, Germany's share of foreigners in the population and the labor force is remarkably above-average compared to other countries in Western Europe.

Table 1: Foreign or Foreign-Born Population and Labor Force in Selected European Countries in 1996

Country	Foreign Population		Foreign Labor Force	
	Thousands	% of Total Population	Thousands	% of Total Labor Force
Austria	728	9.0	328	10.0
Belgium	912	9.0	341	8.1
Denmark	238	4.7	84	3.0
Finland	74	1.4	19	0.8
France	3,597	6.3	1605	6.3
Germany	7,314	8.9	2559	9.1
Ireland	118	3.2	52	3.5
Italy	1096	2.0	332	1.7
Luxembourg	143	34.1	118	53.8
Netherlands	680	4.4	218	3.1
Norway	158	3.6	55	2.6
Portugal	173	1.7	87	1.8
Spain	539	1.3	162	1.0
Sweden	527	6.0	218	5.1
Switzerland	1,338	19.0	709	17.9
United Kingdom	1,972	3.4	878	3.4

Source: OECD (1998). Figures for France are for 1990.

Table 2 reports the most current figures for the country-of-citizenship composition of non-citizens living in Germany. The table reveals that the majority of foreigners currently living in Germany are citizens of a European country, with citizens of Turkey building the largest group.

Table 2: The Composition of Non-Citizens in Germany in 2000

Citizen of	Thousands	Per Cent
European Countries:		
Turkey	1,998.5	27.4
EU-Countries	1,872.7	25.7
Yugoslavia	662.5	9.1
Poland	301.4	4.1
Croatia	216.8	3.0
Bosnia	156.3	2.1
Romania	90.1	1.2
Hungary	54.4	0.7
Bulgaria	34.4	0.5
Non-European Countries:		
African Countries	299.3	4.1
Asian Countries	213.3	2.9
Australia and Oceania	10.4	0.1
Stateless and unknown	74.3	1.0

Source: Statistisches Bundesamt (2001). All figures for 31.12.2000.

Citizens of Turkey and of EU-countries amount to more than 53% of the stock of foreigners currently residing in Germany. Together with the states of former Yugoslavia these countries represent more than 67% of the foreign population share. This population stock is the result of a steady immigration of people to Germany since the end of World War II. However, the composition of these immigration flows as well as their magnitude varied substantially over time.

Migrant influx to Germany displayed several peaks during the second half of the 20th century (see e.g. Schmidt and Zimmermann (1992) and Zimmermann (1995)). In the *first* period, after the Second World War, several million people relocated from Eastern and South-Eastern Europe to what became West and East Germany in 1949. From that time until the dissolution of the Eastern Bloc around 1990, the Eastern part of Germany only received moderate numbers of additional immigrants. In West Germany the years from the end of World War II to the early 1960's were characterized by the post-war

migration flows. During the first post-war years, until about 1950, these flows consisted mainly of displaced people of German ethnicity originating in Eastern Europe. Thereafter, West Germany was affected by migration of ethnic Germans from Eastern Europe leaving the Soviet occupation zone in the East having arrived there from Eastern Europe, and of Germans originating directly from this eastern part of Germany (see SCHMIDT (1996)).

The *second* period from 1955 to 1973 was characterized by labor migration within Europe from the Mediterranean to the northern countries and - to a lesser extent - the immigration of labor from overseas. During this time, as a reaction to a perceived shortage of unskilled labor, West Germany pursued a policy of active "guest worker" recruitment from several selected European countries (Italy, Spain, Greece, Turkey, Portugal and Yugoslavia), as well as from Morocco and Tunisia. Thus, in these years immigration to Germany was clearly dominated by demand-oriented migration incentives.

The middle of the 1970's, especially the year 1973, constitutes a fundamental regime switch and the beginning of the *third* period of immigration to Germany. This development was triggered to the largest extent by the first oil crisis and the ensuing economic problems all over the world. In Germany, one of the major reactions to the first oil price shock and the beginning of a recession was that the recruitment of guest workers was stopped and immigration was restrained. Similarly, all across Europe immigration policy was tightened by setting up a broad range of institutional barriers to immigration from *outside* Europe. Only two major channels of legal immigration to Germany remained: family reunification and applying for asylum. Apparently as a reaction to the suppression of other channels, one could observe a surge in asylum seekers and refugees in this period. On the other hand and in contrast to such outside-barriers the EU and its predecessors fostered *internal* migration in Europe, e.g. by EU-wide acknowledgment of university diplomas and formal training.

The situation again changed drastically after 1989. The *fourth*, most current period of immigration to Germany started at the end of the 1980's with the dissolution of socialism and has led to an increased inflow of people from Eastern Europe. In addition, the civil war in Yugoslavia has triggered a new surge of refugees and asylum seekers migrating to all countries of Western Europe. With the inflow of "ethnic Germans" (*Aussiedler*)

from Central and Eastern European countries, a new set of origin countries as well as new cultural and language backgrounds were added to the existing population of migrants in Germany. Today, with the upcoming enlargement of the European Union towards these Central and Eastern European countries, the extension of freedom of movement regulations to the prospective EU members is a heavily debated issue.

The most current experience with immigration to and emigration from Germany is summarized in **Table 3**.

Table 3: Gross and Net Migration from 1980 to 1999

Year	Gross Inflow		Net Inflow
	Thousands	% from Europe	Thousands
1980	767.8	80.0	301.5
1985	511.6	68.2	55.0
1987	645.3	76.8	214.6
1989	1185.5	84.3	604.5
1991	1199.0	82.2	602.5
1992	1502.2	77.5	782.1
1993	1277.4	73.8	462.1
1994	1082.6	69.8	315.0
1995	1096.0	69.6	397.9
1996	959.7	67.1	282.2
1997	840.6	65.9	93.6
1998	802.5	68.6	47.1
1999	874.0	70.0	202.0

Source: Statistisches Bundesamt (2001).

As outlined above, over the years many people immigrated to Germany, but there was also substantial outmigration. On average, between 1980 and 1999 around 980,300 individuals immigrated to Germany p.a., yielding a *net* inflow of roughly 335,000 people per year. The major share of this inflow came from European countries and a substantial number of migrants eventually staying in Germany consisted of ethnic Germans. **Table 4** demonstrates that the inflow of ethnic Germans builds a substantial fraction of the (presumably net) inflows to Germany, although these numbers are declining in absolute

terms over time.

Table 4: Immigration of ethnic Germans from Central and Eastern Europe

	1990	1995	1996	1997	1998	1999	2000
Total	397,075	217,898	177,751	134,419	103,080	104,916	95,615
from:							
Poland	113,253	1677	1175	687	488	428	484
Former SU	147,455	209,409	172,181	131,895	101,550	103,559	94,558
Romania	107,189	6,519	4,284	1,777	1,005	855	547

Source: STATISTISCHES BUNDESAMT (2001).

To summarize, since the end of the second World War immigration has been a dominant factor for the German society and in all likelihood it will continue to be one in the future. This insight found expression on August 03, 2001 in the proposed bill by Otto Schily, the German Minister of the Interior, that intends to give Germany its first regulated immigration system ever. The proposed bill is motivated by the insight that "Germany is an immigration country" (Otto Schily) and that the country has to engage itself in the international competition for high-skilled workers due to its own economic interests. One major change to the existing law is the intention to actively regulate immigration by combining the work and residence permits with a point system for the selection of high-skilled immigrants.

This proposal triggered a heavy dispute among the political parties as well as in the public regarding many details of the intended regulation of future immigration to Germany. It is not surprising that some of these debates completely went astray, e.g. on the economic impact of immigration for the German labor market, since many questions related to the causes and consequences of immigration are still not answered. Current political developments, especially in the aftermath of September 11, 2001, suggest that the discussion on the adequate regulation of future immigration will continue to stay on top of the political agenda for quite a while.

These stylized facts of the German immigration experience as well as the current political developments may well serve as the departure point for many questions of economic migration research. Indeed, the 1990's witnessed a considerable amount of research

addressing various topics of the German immigration record. Since this thesis aims at contributing to this literature the succeeding paragraphs will briefly outline a conceptual framework of economic migration research. Furthermore, a brief overview on the state of the discussion on these topics for the case of Germany is provided. A more detailed survey of the relevant literature will be provided in each of the chapters of this thesis. The following discussion is supposed to shed some light on open research areas and to formulate unsolved research questions. Some of these questions will then be addressed in the succeeding chapters of this thesis.

1.2 The Conceptual Framework - Three Principal Topics

Naturally, there is no unique, all-encompassing theoretical framework linking together all aspects of the different topics of economic migration research. However, it is possible to outline a conceptual framework which provides the brackets for the discussion of the interrelated and complex issues of economic migration research and for the studies conducted in this thesis. Specifically, economic research concerning migration issues can be conceptualized into three broad fields, each of them interrelated with each other. All these research areas carry important implications for immigration policy, again reflecting an intimate relationship between them. These fields may be described most sensibly by the following set of research questions:

1. Which factors determine the *decision* to migrate, i.e. which are the motives or driving forces behind observed immigration flows? Naturally, since the decision to migrate is in all likelihood the outcome of a systematic process, the characteristics of those who decide to relocate from their original home to a new destination are hardly a random sample of the indigenous population of either country. Understanding the composition of migration flows seems therefore to be an important prerequisite for the analysis both of migrant performance and the impact of immigration, that is the remaining two aspects of economic migration research.

2. Which factors determine the *economic performance* of immigrants in the destination country, i.e. do migrants' wages, employment prospects or the risk to depend on welfare payments converge or diverge to those of comparable natives as the duration of residence unfolds and what are the reasons for these developments? What structural explanation can be offered for the observed convergence or divergence patterns, i.e. is it assimilation or discrimination? A related aspect are the determinants of the *perception* of as well as the *attitudes* towards immigrants by the native population in the destination country.

3. Which factors determine the *economic impact* of immigration on the destination country as a whole or on the population indigenous to the destination country, i.e. does immigration, for instance, exhibit a significant impact on the age structure of the destination country's society or does it reduce the wages/employment prospects of, say, low-skilled natives or resident migrants of preceding entry cohorts, and if so, what are the mechanisms at work?

These three areas are interrelated with each other and exhibit a close connection to immigration policy. Clearly, the composition of immigration flows can, at least in principle, be regulated by different policy regimes yielding a different skill or country-of-origin mix of observable inflows. Since formal and informal human capital endowments determine the economic performance of immigrants in the destination country and the transferability of these endowments may vary with the country of origin, immigration policy plays a decisive role for the economic performance of immigrants. Moreover, economic prospects of immigrants, the impact of immigration on the destination countries economy and the perception of migrants by the natives are certainly closely related and might exhibit repercussions on the decision of potential migrants to enter the country.

1.3 The Current State of Discussion

1.3.1 The Migration Decision

For the case of Germany evidence for the determinants of immigration is quite scarce, and if available, only at the aggregate level. The traditional literature on explaining aggregate migration flows (see e.g. Harris and Todaro (1970) for a seminal study) usually departs at differential developments of economic activity (per capita), unemployment rates and other socio-demographic factors, such as geographic distance, in a set of origin countries/regions compared to one destination. However, pinning down any stable relationship between these economic factors and immigration activities has been notoriously difficult throughout this literature. This has made the creation of a satisfactory connection between the in parts overwhelmingly sophisticated economic theory of the migration decision (see e.g. Stark (1991) or Berninghaus and Seifert-Vogt (1991)) and the scarce evidence for the validity of its predictions a very frustrating endeavor.

Vogler and Rotte (2000) escape from this dilemma - which also plagues their study - by altering their focus in an innovative way: Their analysis explicitly addresses the issue whether political oppression in the country of origin fosters the decision of potential emigrants, with particular emphasis on the role that the current state of economic development plays for this process. Karras and Chiswick (1999) utilize pooled cross section-time series data to analyze aggregate migration flows to Germany for a sample of 17 countries of origin and a time period covering 1964-88. The authors perform two pooled OLS regressions of the net migration rate on different sets of ad hoc chosen explanatory variables. The explanatory power of these variables is rather weak which may be due to the not very convincing estimation procedure.

1.3.2 Economic Performance

Skills play a dominant role for immigrant performance, whether acquired in formal curriculae as secondary or post-secondary schooling and vocational training, or informally as experience in the labor market, or as manifestation of intrinsic personal traits such

as cognitive ability or motivation. Since the seminal papers of Chiswick (1978) and Borjas (1985) and (1987), several empirical analyses for the case of Germany address the issue of wage performance of the guest workers of the 1960s and 1970s in the German labor market of the 1980s and early 1990s, all using, in principle, the same source of micro data, the *German Socio-Economic Panel (GSOEP)* (see e.g. Dustmann (1993) and Schmidt (1997)).

On balance, these papers demonstrate that in the German labor market formal skills play a decisive role for immigrant wage earnings - for instance, Schmidt (1997) concludes that those immigrants who received their schooling and post-secondary education in Germany achieve earnings parity with native workers, while the typical first-generation migrant from the "guest worker" countries lags some 20 percent behind the average native worker in terms of wages. Dustmann (1993) demonstrates that the distinction of permanent and temporary migrants might be important for the question of earnings dynamics. All in all, it is the tremendous importance of formal skills for labor market success that characterizes all these results.

1.3.3 The Economic Impact of Immigration and the Perception of Foreigners

While relative individual economic performance is a matter of direct comparison of an appropriate outcome measure between the individuals of interest - migrants - and a comparison group - natives, the economic impact of immigration unfolds in an indirect fashion via market reactions, and is therefore much more complex as an object of investigation. The empirical challenge is to isolate immigration induced shifts in labor supply which can be treated as if they were set in an ideal experiment, in other words as exogenous. All these analyses face the common problem of non-experimental research: the extent of additional immigration does not vary randomly across time and space, as in a laboratory experiment, but is rather the outcome of systematic forces.

The literature has proceeded in different directions to address this endogeneity problem. Altonji and Card (1991) and LaLonde and Topel (1991 and 1997), for

instance, pursue the idea of instrumental variable estimation using previous immigrant density as their instrumental variable. CARD (1990) for the so-called Mariel boatlift and HUNT (1992) for the Algeria-France migration of the early 1960s exploit historically unique events in order to create a "natural experiment". Typically, these studies tend to conclude that the crowding out effects of additional immigration on most native workers are of minor importance. For Germany, several empirical studies exist which proceed along similar lines[1]. On balance, these studies tend to display quantitatively minor effects of additional immigration on the economic outcomes of the indigenous population, but considerable controversy remains as to their precise magnitude.

Recently, attitudes towards minorities have become an issue of concern in the economic literature. For the case of United Kingdom, DUSTMANN AND PRESTON (2000A) using several waves of the *British Social Attitude Survey, (BSAS)* analyze the effect of local concentration of ethnic minority groups on the attitudes of native respondents towards these minorities controlling for individual characteristics of the respondents as well as for regional labor market conditions. Their results suggest that a higher concentration of ethnic minorities tends to increase hostility of native respondents towards these groups. DUSTMANN AND PRESTON (2000B), again using the *BSAS* dataset, analyze the relationship between racist attitudes, as well as labor market and welfare considerations on the opinions of native respondents towards future immigration (restrictions) for different immigrant groups in a multi-factor model. One key feature of their paper is the provision of a formal treatment of identification issues in such a framework.

A contribution for the case of Germany is GANG AND RIVERA-BATIZ (1994). Using the *Eurobarometer* survey of 1988, the authors aim at examining the effect of the presence of foreigners on the employment status of native Germans and the attitudes towards foreigners in Germany in relation to different labor market situations of respondents. BAUER, LOFSTROM AND ZIMMERMANN (2000) using the 1995 wave of the *International Social Survey Program* (*ISSP*) provide a cross country comparison with a special focus on the influence of immigration policy on attitudes towards minorities. For the 1996 wave of the *Allgemeine Bevölkerungsumfrage der Sozialwissenschaften* (*ALLBUS*) several

[1]See e.g. BAUER (1998), DENEW AND ZIMMERMANN (1994), HAISKEN-DENEW (1996) and PISCHKE AND VELLING (1997)

empirical studies are collected in ALBA ET AL. (2000). Examples are BERGMANN AND ERB (2000), LÜEDEMANN (2000) and SCHMIDT AND HEYDER (2000). These papers have in common that they all aim at explaining some selected items recorded in the *ALLBUS* by using other opinions towards minorities as explanatory factors, without taking into account the potential endogeneity or simultaneity arising from such an approach. All in all, these studies paint a variegated picture of the perception of minorities by native Germans.

1.4 Open Research Questions and Contributions of the Thesis

This section outlines some of the open research questions which can be derived from the above exposition and clarifies the contributions of this thesis to the received literature. Furthermore, the main results of each chapter as well as the their implications will be summarized. The order of the following exposition deviates from the one above in that it orientates itself on the structure of the succeeding chapters.

1.4.1 Performance and Perception

From this brief overview on economic migration research it should have become transparent that contemporaneous migration research - with its focus on the US experience - almost exclusively rests on supply-side reasoning when explaining in terms of an economic model how immigrant skill composition and economic performance changes over time (see e.g. BORJAS (1991)). The international literature on immigrant performance mainly concerns the still unsolved CHISWICK - BORJAS debate on immigrant quality in the US context. Both the rather different history of immigration to Germany and the certainly distinct nature of the labor markets in both countries suggest that a simple translation of US results to Germany is impossible.

Most of the received literature analyzes the economic performance of *first-generation* migrants only, and immigration to the "classical" immigration countries, the United

States, Canada, and Australia has typically taken center stage in this research. For Germany, the wage performance of the "guest worker" immigrants has been in the focus of empirical research. Yet, the necessity to integrate the growing communities of new immigrants and native-born ethnic minorities – the so-called *second generation* of migrants – into the society and the labor market poses a large number of research questions.

While the educational attainment of this second generation is researched by RIPHAHN (2000), other aspects of this immigrant group remain widely disregarded. Specifically, the degree and determinants of the welfare dependence of immigrants from different generations has been an unsolved issue. Furthermore, the perception of this phenomenon as well as the general attitude towards immigrants and foreigners in Germany by native Germans has not been on the research agenda yet.

Chapter 2 of this thesis, therefore, provides a snapshot portrait of the immigrant population currently residing in Germany, with a special emphasis on the distinction of first- and second-generation migrants. For this purpose a detailed characterization of both immigrant generations by demographic and socio-economic characteristics is provided, together with a detailed review of the received economic literature. Most importantly, it will become transparent that there are considerable differences between both immigrants and natives as well as among the different immigrant generations themselves.

The chapter proceeds to offer its own contribution to the literature, by addressing one of the most contentious issues in the current debate, the welfare dependence of migrants. The findings on the determining factors of the moderate risk of migrants to depend on public assistance payments is contrasted with the perception of immigrants by native Germans using two complementary datasets. Furthermore, some evidence on important correlates of the deviations between facts and perceptions of migrant welfare dependence are derived and it will be discussed which explanatory factors might be responsible for this phenomenon.

It will become transparent that the empirical evidence on the divergence of the perception of immigrants by natives from what we really know suggests that comprehensive education programs and initiatives to ascertain that this evidence is becoming more transparent to the general public may provide the basis for a more realistic perception of what

is a large, albeit heterogeneous population group in Germany.

In **chapter 3** the determinants of the perception of minorities by native Germans are pursued further. This chapter contributes to the received literature by using a structural model to explain the answers on a set of questions regarding the perception of minorities by native Germans. In this model it is assumed that in addition to observable individual characteristics, there exists an underlying unobserved attitude towards minorities which drives the distribution of answers by native respondents. This latent variable in turn is assumed to be shaped by a set of observable socio-economic characteristics of the individuals. It is the direction and magnitude of these effects on the unobservable factor which are the primary objects of interest.

In order to estimate this model it is necessary to impose appropriate identification restrictions. The validity of these assumptions is decisive for the interpretation of the results. However, since these restrictions are non-testable they have to be assumed to hold *a priori*. Naturally, without such identification assumptions a well-structured analysis of the wealth of information provided by opinion surveys is impossible.

This analysis, therefore, assumes that all utilized questions are, in principle, able to "extract" the true opinion of respondents, although to varying degree. To achieve this aim, one has to forego all attempts to extract the level of xenophobia or antisemitism in a population of respondents, though. All attempts at such an analysis in a single-country study must fail.

The estimation results for the structural coefficients derived on the basis of the invoked identification assumptions suggest quite different conclusions on the explanatory power of observable socio-economic characteristics than what one would conclude from the (reduced form) analysis of a single question alone. Essentially, the only variable able to reliably explain the heterogeneity of the unobserved component of the perception of foreigners and Jews among native Germans is the level of individual education. Popular suggestions for an explanation of negative attitudes towards minorities like the labor market situation of a respondent or his/her age turn out to be insignificant as soon as one is willing to analyze *all* relevant questions.

1.4.2 The Determinants of Immigration

Furthermore, there is also only little research on the decision of immigrants to enter Germany. At the present time no individual level study has been conducted, probably due to missing data since a serious empirical study would require micro data at both origin and destination country. Moreover, even on the aggregate level there is only a small number of studies attempting at the explanation of observed migration flows to Germany. Finally, the magnitude of expected immigration to Germany in the course of the upcoming enlargement of the European Union towards Central and Eastern Europe is an under-researched topic as well. **Chapters 4** and **5**, therefore, aim at the identification of the driving forces behind observed migration flows to Germany and at the measurement of their impact on these flows. The ultimate goal of this endeavor is the provision of forecasts of the expected migration potential from Central and Eastern Europe.

In the received literature empirical analyses of international migration typically rest on aggregate data on (gross or net) emigration from a set of origin countries to a single destination. These papers usually formulate a regression model to explain observable migration flows by a set of merely economic variables. Usually, this model specification and the concrete choice of explanatory factors is more or less based on microeconomic considerations relating the individual decision to migrate or not to rational economic behavior in the context of utility or income maximization. However, the way these variables enter the specification is completely ad hoc.

The *counterfactual* question implicitly asked by such an approach is what would have happened to immigration flows from a specific country if one or several of the explanatory factors were different. Unfortunately, one only observes a country at any point in time with a single specific configuration of explanatory variables, making the decision to use a regression model a method of choice. This decision, however, is not innocuous. Any particular specification of this model necessarily invokes a set of *a priori* identification assumptions beyond the (log-) linearity of migration rates, enabling the analyst to construct this unobserved counterfactual situation. These identification assumptions are *assumed* to be true for the purposes of the analysis and their validity is not reflected in the usual measures of sampling variability (Schmidt (1999)). Moreover, more restrictive assump-

tions will generally reduce the remaining uncertainty *within* sample if these assumptions were correct. However, the reduction of uncertainty within sample need *not* necessarily be accompanied by a smaller uncertainty *out-of-sample*.

In **chapter 4** a pooled cross section-time series dataset is utilized to estimate the reduced form of a theoretically derived model of the determinants of aggregate immigration flows to Germany. Within the framework of this model it is possible to distinguish between short-run and long-run determinants of observed migration flows. The estimation results suggest that both short-run as well as long-run factors play a substantial role in explaining immigration to Germany within sample. It turns out that the underlying structure of observed immigration flows is quite accurately reflected by this model. Therefore, the estimated long-run coefficients of the model are used to forecast expected immigration flows from the prospective EU-member countries of Central and Eastern Europe. Under the assumption of structural invariance across time *and* space as well as for a set of different assumptions regarding the development of the economic variables in the model these scenarios predict a moderate increase of immigration to Germany, especially for the first-round accession candidates. The predictions are far too small to justify the large concern expressed in the public, the media or by some politicians.

Chapter 5 pursues this issue further and emphasizes, that the task of assessing migration potential and predicting future migration flows requires strong identification assumptions to hold. This is particularly relevant when following the usual approach of fitting a relatively saturated specification to the observed migration data, typically including a substantial number of economic variables on the right-hand side of the regression. In addition to the necessary assumptions of temporal stability of the behavioral relationships, one has to have a relatively precise notion about the development of these conditioning variables in the future. Unfortunately, economic variables like GDP growth rates or unemployment rates, are notoriously difficult to predict.

Moreover, whenever a new origin region enters the scene, the extrapolation exercise has to extend from predictions out of the sample horizon to predictions out of the *spatial* realm of experience. This requirement is an almost prohibitive challenge to any saturated model of aggregate migration intensity. This chapter, therefore, departs from the received

migration literature – whose emphasis is typically on the *explanation* of migration activity, not its prediction into the future – and pursues a very parsimonious specification of migration rates that is fitted to historical data on the German post-WW II immigration experience. Its formulation explicitly allows for persistent economic and non-economic differences to be captured by a set of country-specific random effects which, together with a time-specific and a white noise component drive the fluctuation of migration rates around its average across time and space. The relative magnitudes of these unobserved orthogonal variance components leads itself naturally to a discussion of the prediction problem raised by EU enlargement.

Most importantly, the approach chosen in this chapter emphasizes the crucial role of demographics for what is primarily a demographic process. It is the size of the population in the origin region, and particularly the size of the young population which is of principal importance for the expected migration flows. Large fluctuations in economic differences would exert little impact on migration activity, if the population in the source regions were to be old, a simple truth that seems to be neglected in many migration forecasts. Thus, in combining the estimates from our parsimoniously specified model for the aggregate migration rate with the projected population size and structure in the prospective EU member countries, in this chapter the fact that demographic circumstances can be predicted relatively precisely into the future is exploited.

It is demonstrated, that prospective net immigration would be of almost negligible magnitude if the new EU members were to display the emigration behavior to Germany that has characterized the typical origin country during the (high–immigration) post-WW II era. If, by contrast, they were to display a substantially more pronounced emigration propensity, future net immigration could be much larger, albeit still relatively moderate when considering the figures circulating in the public debate on this issue.

1.4.3 Immigration Policy

Finally, at the present time, it remains unclear how particularly the most recent cohorts of immigrants to both countries were integrated, how integration success differed from

that experienced by earlier immigrant cohorts, and how this process was influenced by institutional arrangements and explicit integration policy. Moreover, the interaction of policy with observed and unobserved characteristics of the migrant influx remains widely unresearched. In the light of the current political developments in European Union and the ongoing discussion on the future of immigration Germany there is certainly a need for a serious evaluation of immigration and integration policy measures. From the perspective of a country like Germany, serving as a potential destination for people willing to emigrate from their country of origin, a rational regulation of immigration is of central concern for future economic prospects. An ageing society with its consequences for the social security system, an increasing demand for high-skilled labor as well as the prevention of a massive inflow of illegal immigrants will inevitably move the issue of the "best" immigration policy into the center of attention. Unfortunately, economic research on this question has not been able to provide a completely convincing answer.

Chapter 6 outlines a conceptual framework for the assessment of the effect of a specific immigration policy by discussing the necessary elements of such a formal evaluation study. Based on the ideas developed in the literature on the evaluation of active labor market policy, this chapter provides a framework for the evaluation of key elements of immigration policy. To this end, the fundamental ingredients of evaluating policy interventions are explained and the specific case of *immigration* policy is analyzed. It becomes transparent that the evaluation of the effect of immigration policy is a particularly complex task since it requires unusually strong assumptions to hold *a priori*. These assumptions and possible reasons for their failure are discussed in detail. It is clarified that any violation of these assumptions renders the interpretation of the policy effects invalid. Furthermore, these insights are utilized for a critical review of the received literature.

The scarce empirical evidence available at the moment suggests that the regulation of immigration focussing exclusively on the selection of migrants according to a country's current need for specific skills is not sufficient to guarantee that immigrants are successful on the destination countries labor market. Such a policy runs the risk of neglecting important aspects of the long-run determinants of immigrants' economic success, i.e. the ability to cope with a changing economic environment.

The international empirical evidence, furthermore, suggests that a rational and, therefore, foresighted immigration policy should be able to signal reliably that it is in the vital interest of the destination country to admit immigrants with a long-run perspective in the country. It is, therefore, necessary to provide incentives for immigrants to invest into destination-country-specific human capital. In this endeavor it does, for instance, not seem helpful to award work permissions on a temporary basis *a priori*, as it is done for the so-called "green card" migrants in Germany, or to restrict family reunification tightly as it is discussed for the new German immigration law.

Chapter 2

First- and Second-Generation Migrants in Germany – What Do We Know and What Do People Think

Abstract. This paper provides a snapshot of the stock of immigrants in Germany using the 1995 wave of the Mikrozensus, with a particular emphasis on distinguishing first- and second-generation migrants. On the basis of this portrait, we draw attention to the empirically most relevant groups of immigrants and review the received literature on economic migration research in the three principal avenues of migration research. The aspect which we concentrate on in our empirical application, the welfare dependence of immigrants, is a matter of intense debate among economists and policy makers. We contrast the very moderate actual public transfer payment dependence of migrants to Germany with the perception of migrants dependence on public assistance by Germans from various population strata.

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2.1 Introduction

Ten years after German re-unification, and more than fifty years after World War II, German society has transformed its composition to an extent that the founding fathers of post-war Germany could not have anticipated. Certainly, much of this change is a reflection of the international developments, most notably European economic and political integration, the demise of socialism in Eastern Europe, the consequences of post-war baby booms and baby busts, and the ensuing population ageing. Yet, German society in particular has been shaped by the intense and multi-faceted immigration experience, leading to the variegated society we observe today.

The early German post-war migration experience has been dominated by migration streams from Europe's South, with a clear focus on labor migration. However, the ethnic composition of immigration to Germany has changed over time. Europe as a whole, and Germany as its largest immigration country, has become a net receiving region, and the geographic and cultural distances to the immigrants' countries of origin have increased significantly. As a consequence of this continuous influx, German society today not only contains a large immigrant population. Most importantly, second-generation migrants are a sizeable fraction of the German population. It is reasonable to fear that, if their integration is hampered, this will set off a process of transition from immigrant communities to ethnic minorities and such a climate might make it difficult to prevent second-generation immigrants from persistently becoming second-class citizens.

Yet, despite its paramount relevance for all European countries, almost no research has targeted the question of second-generation migrants' integration into society, neither in comparison to the integration of their parents' generation nor to natives of the same age, nor are the potential consequences of different policies regarding the participation of second-generation migrants in the political process fully understood. To help reducing this gap, this paper will contribute to the received literature on immigration to Germany - which tends to concentrate on the labor market performance of first-generation migrants - by providing an overview on the existing research, with an explicit focus on distinguishing results for first- and second-generation immigrants. Moreover, this paper offers empirical evidence regarding a matter of intense current debate among economists

and policy makers, the dependence on social assistance programs by different immigrant generations. To address the issue of integration most cogently, we contrast the empirical facts with the perception of native Germans regarding this social assistance dependence. As a basis for this discussion we draw up a balance sheet of sorts regarding the stock of non-citizens in Germany, distinguishing between foreign-born and German-born non-citizens (first- and second-generation immigrants) using the German *Mikrozensus* 1995 (section 2.2). Specifically, we provide a description of both generations regarding demographic structure, year of immigration, gender and family status, education profile, income and other socio-economic characteristics. This portrait, in combination with the historical background given in section 2.1 enables us to identify the immigrant groups relevant enough to warrant a separate empirical analysis. Following a brief overview on the three principal topics in the area of migration research (section 3.1), we use section 3.2 to as comprehensively as possible answer the question: What do we know about the relevant groups of non-citizens in Germany and clarify which research questions remain open at the time being. In section 4.1 we provide detailed empirical evidence on the actual public transfer payment dependence of migrants, and contrast these findings with the perception of migrants' dependence on public assistance by German natives (sections 4.2 and 4.3). The final section offers some conclusions and outlines further directions of research.

2.2 The Immigrant Population in Germany

This section provides a comprehensive statistical portrait of the population of first- and second-generation immigrants in Germany in 1995. As a first step in this endeavor, we will briefly outline the historical experience of immigration to Germany in more detail. The second sub-section condenses the wealth of individual-level information on both immigrant generations into a set of central demographic and socio-economic characteristics and compares them with that of German natives. Moreover, given this characterization and the historical background of immigration to Germany, we identify the most important - in terms of quantitative importance - immigrant groups currently living in Germany. The following section then surveys the existing evidence in the received literature on Ger-

many, regarding the three principal areas of economic migration research, with emphasis on the distinction of migrants from the first and the second generation.

2.2.1 Historical Background

The history of immigration to Germany after World War II can sensibly be divided into four periods (see SCHMIDT AND ZIMMERMANN (1992)). The years from the end of World War II to the early 1960's were characterized by the post-war migration flows which were triggered by the massive disruption caused by Europe's two world wars. During the first post-war years, until about 1950, these flows consisted mainly of displaced people of German ethnicity originating in Eastern Europe. Thereafter, West Germany was affected by migration of ethnic Germans from Eastern Europe leaving the Soviet occupation zone in the East having arrived there from Eastern Europe, and of Germans originating directly from this eastern part of Germany (see SCHMIDT (1996a)). The second period from 1955 to 1973 was characterized by labor migration within Europe from the Mediterranean to the northern countries and - to a lesser extent - the immigration of labor from overseas. During this time, Germany actively recruited "guest workers" from several selected European countries (Italy, Spain, Greece, Turkey, Portugal and Yugoslavia), as well as from Morocco and Tunisia. The principal idea behind this recruitment effort was to retain the remarkably strong manufacturing-led growth performance of the German economy despite shortages of manual labor. Excess demand for labor emerged during the 1960s and was not compensated by a sufficient increase in female labor force participation which one could observe elsewhere (see e.g. CARLIN (1996)). Thus, in these years immigration to Germany was clearly dominated by demand-oriented migration incentives due to labor shortages, a characteristic necessarily impinging upon the potential of any supply-side oriented model trying to explain extent or composition of immigration flows. This aspect is the more remarkable, as contemporaneous migration research - with its focus on the US experience - almost exclusively rests on supply-side reasoning when explaining in terms of an economic model how immigrant skill composition, observed as well as unobserved, changes over time (see e.g. BORJAS (1991)).

In fact, the conceptually very powerful Roy model has been the workhorse model of

research on migrant performance ever since BORJAS' (1987) article, and has been behind most of the discussion on declining relative immigrant "quality" and "cohort effects" (see also section 3.1 below). A brief look at German immigration history demonstrates how inappropriate a direct translation of this debate would be to the German context: the "guest workers" of the 1960s were deliberately selected to be manual workers, so one should not attribute the low fraction of brain surgeons among them to any sophisticated mechanism of immigrant self-selection.

The middle of the 70's, especially the year 1973, constitutes a fundamental regime switch, a development which was triggered by the first oil crisis and the ensuing economic problems, not only in Germany, but throughout the developed world. For instance, a large literature documents and analyzes the abrupt slowdown in US productivity after 1973 (see e.g. BAUMOL ET AL. (1989)), a phenomenon that was apparently left its trace until the middle of the 1990s. In Germany, one of the major actions to the first oil price shock and the beginning of a recession was that the recruitment of guest workers was stopped and immigration was restrained. Similarly, all across Europe immigration policy was tightened by setting up a broad range of institutional barriers to immigration from outside Europe. Only two major channels of legal immigration to Germany remained: family reunification and applying for asylum. Apparently as a reaction to the suppression of other channels, one could observe a surge in asylum seekers and refugees. On the other hand and in contrast to such outside-barriers the EU and its predecessors fostered internal migration in Europe, e.g. by EU-wide acknowledgment of university diplomas and formal training. The fourth, most current period of immigration to Europe started at the end of the 1980's with the dissolution of socialism and has led to an increased inflow of people from Eastern Europe. In addition, the civil war in Yugoslavia has triggered a new surge of refugees and asylum seekers migrating to Europe.

2.2.2 The Population of Non-Citizens in Germany 1995

The following portrait of immigrants residing in Germany in 1995 is based on the information collected in the 1995 wave of the German *Mikrozensus*. The aim of this sub-section is to describe both immigrant generations by the most interesting socio-economic charac-

teristics and to compare them to native Germans. It becomes transparent through this descriptive evidence that not only natives and immigrants are very different, but there is considerable heterogeneity among the immigrants themselves. We distinguish individual-level characteristics falling into three groups of indicators: (i) demographic indicators, (ii) labor force indicators, and (iii) information on income and income sources[1].

Demographic Indicators

Figure 2.1 displays the age distribution of first- and second-generation immigrants as well as that of native Germans. Clearly, this current age distribution has been shaped by immigration history - variations in the magnitude of immigrant influx and typical age at immigration - and by demographic behavior. Specifically, whether and at what age first-generation immigrants might return to their country of origin has been a matter of intense research (see e.g. DUSTMANN (1996), SCHMIDT (1994), and SCHMIDT (2000a)). The migrants' choice regarding their fertility - with frequency and timing as its principal components - has been researched less intensely. In particular, it is difficult to assess whether migrants' demographic behavior tends to adopt quickly to that of the indigenous population. On average, the second generation of immigrants is considerably younger than the first generation which is in turn younger than the native population. Moreover, the majority of first generation immigrants was in its prime age, i.e. in the age group between 15 and 35 years, at the time of entry to Germany (cf. **Figure 2.2**).

If all immigrants remained in the destination country for their whole lifetimes, the distribution of years of entry in the current migrant population would predominantly reflect fluctuations in aggregate immigration intensity (and, of course, old-age mortality). Yet, due to the large emigration flows which accompanied large-scale immigration throughout the last decades (SCHMIDT (2000a)), recent immigrants tend to dominate the migrant population numerically. **Figure 2.3** displays the year of immigration of the 1995 population of immigrants in Germany. Around 50% of this stock immigrated after 1978 whereas only 40% who were still residing in Germany in 1995 entered the country prior to the recruitment stop in 1973. For this reason it seems appropriate to reject the idea of the migrant population in Germany consisting mainly of workers who arrived as guest

[1]Since all figures and most of the tables are quite large, they are collected all together at the end of this chapter.

workers and decided to stay. Rather, this population is a mixture of former guest workers, their families, and - to a large extent - of more recent immigrants with other motives for immigration and from other origin countries.

The upper panel of **Table 2.1** reports the geographical distribution of first- and second-generation immigrants at the level of the federal states (*Bundesl"ander*). The lower panel reports the distribution of immigrants by citizenship. The majority of first- as well as second-generation immigrants concentrates in the two southern states Baden-W"urttemberg and Bayern as well as the largest state Nordrhein-Westfalen. Both southern states are highly industrialized states and have had lower unemployment rates than the national average. In contrast, the industry structure of Nordrhein-Westfalen has been dominated by the mining and steel industries which were actively recruiting manual labor in the 1960's and the beginning of the 1970's.

By far the largest first-generation immigrant groups are Turks, followed by Yugoslavians and immigrants from the other European guest worker countries (Italy, Greece, Portugal and Spain). For the second-generation, this ranking changes somewhat. Turks are also the largest group, but the other guest worker countries are providing the second largest group. This is apparently due to the increase in refugees from Yugoslavia following the civil wars in the beginning of the 1990's, which may have increased the number of first-generation immigrants from Ex-Yugoslavia considerably.

Labor Force Indicators

Table 2.2 reports the highest schooling degrees and formal training levels of immigrants and natives. At first glance, one would perhaps expect that the relatively low educational endowments of the first generation of immigrants - after all, many of these migrants were recruited as manual workers (SCHMIDT (1997)) - would be mitigated substantially in the second generation. Yet, somewhat surprisingly, the share of second-generation immigrants reporting a higher schooling degree is substantially lower than that of native Germans and that of first-generation migrants. This apparent contradiction of the "natural" convergence hypothesis is interpreted as an indicator of "dissimilation" - to express the opposite of assimilation - between natives and foreigners born in Germany by RIPHAHN (2000). If this were the correct interpretation, the policy implications would be enormous. In-

tegration measures aimed directly and exclusively at the second generation should be implemented with priority over all alternative integration programs or initiatives paid from the public budget.

However, in interpreting this information one should bear in mind that almost all second-generation migrants received their schooling degrees in Germany, whereas typically a substantial part of the first-generation migrants did not. The direct comparability of schooling degrees across countries and the transferability of the implied human capital from one country to another are heavily debated topics in the received literature. Thus, the comparison of reported schooling degrees between natives and first-generation immigrants has to be handled with caution. It seems reasonable to presume that - in terms comparable to the associated German degrees - among first-generation immigrants the highest formal training level is overstated as reported in the lower panel of **Table 2.2**. These measurement problems notwithstanding, a further noticeable feature arguing against the "dissimilation" hypothesis is the remarkably low share of second-generation migrants without any formal training and the relatively high share with a formal vocational training degree - a concentration on years of education seems somewhat misplaced for judging this issue. The treatment or even correction of the measurement problems described above awaits further research - it will be difficult at the conceptual level, though, to separately identify genuine human capital investment abroad and inter-generational tendencies to invest in education.

In line with these observations is the distribution of immigrant groups and natives across selected industry sectors (cf. **Table 2.3**). Here as well we would have expected convergence across natives and the children of migrants. The sectoral distribution as well as the unemployment rate of the second generation indeed resemble much more those of the native Germans than could be observed for those of the first generation. The first generation which was to a large part actively recruited to perform manual work in the German manufacturing industry is predominantly still employed in this sector as well as in the food and beverages sector. Together with the construction sector these two sectors comprise more than one half of the employed first-generation immigrants. For natives as well as second-generation immigrants, however, these three sectors only account for slightly more than one third of the employed, respectively.

Income and Income Sources

The level of household income and its sources are important indicators of the economic well-being and performance of different population strata (see e.g. BIEWEN (2000)). **Figure 2.4** displays the distribution of household income for natives and immigrants. Unfortunately, the *Mikrozensus* contains only categorized income information. However, this income distribution is more right skewed for natives than for second-generation migrants which in turn is more right skewed than that of the first generation.

Table 2.4 reports the primary sources of income for immigrants and natives. A remarkable pattern is the high share of natives for which pensions are the primary income source. A considerable share of first- as well as second-generation immigrants, however, report social assistance payments as main income source. Such a result would seem to vindicate translating to Germany the serious concern with rising immigrant welfare dependence which is raised in the US literature on immigration. Yet, German post-war immigration history was very heterogeneous, and it would be important to know who exactly is disproportionally dependent on social assistance. For instance, if one found that the low-skilled workers recruited for manual labor in the 1960s - or their descendants - are typically in lower social rungs, the relevant comparison would be with native unskilled. Similarly, if welfare dependence was mainly a phenomenon of asylum seekers, this would be a question of legislative design, rather than a reflection of self-selection mechanisms. These issues are taking center stage in the empirical part of this paper. Moreover, a substantially higher share of the immigrant population reports work income. That is, notwithstanding our reservations at taking mean outcomes at face value, the first step of analysis should be the formation of a balanced view displaying more clearly welfare dependence and active labor market contribution by immigrant group.

Relevant Immigrant Groups in Germany

Given this overview of the stylized facts and the historical background provided above, the following immigrant groups in/to Germany should be distinguished for purposes of any deeper empirical analysis: (i) ethnic Germans who immigrated directly after WW II, (ii) recruited guest workers, (iii) immigrated family members of the guest workers, (iv) permanently and temporarily accepted asylum seekers and refugees, (v) ethnic Germans who immigrated after 1990, (vi) migrants from within the EU utilizing the free movement

agreement, (vii) legal temporary workers (e.g. seasonal workers) mainly from Eastern Europe, (viii) illegal migrants, and (ix) children of these immigrant groups being born in Germany (the second generation).

Legal temporary workers (vii) are of quantitative negligible magnitude. Their access is tightly restricted to only some thousand people per year which can be recruited for specific industry sectors on the basis of temporary formal work contracts. A repeated admission of these contract workers is usually not possible (see regulations in 10 *Auslndergesetz*, and several statutory orders concerning work permissions and exceptions from the recruitment stop). For illegal migrants (viii) there are no reliable figures available. The only data source for this group are the apprehensions of German border police. On average these were around 34,000 people per annum between 1995 and 1999. The actual share of illegal immigrants living in Germany might be higher, but an assessment of this number is of highly speculative nature. The other immigrant groups can be identified in available micro data, and can be analyzed separately in empirical studies.

2.3 Economic Migration Research - The State of the Discussion

2.3.1 Migration Research - Three Principal Topics

Economic research concerning migration issues can be conceptualized into three broad fields, each of them interrelated with each other. All these research areas carry important implications for immigration policy, again reflecting an intimate relationship between them. These fields may be described most sensibly by the following set of research questions:

1. Which factors determine the *decision* to migrate, i.e. which are the motives or driving forces behind observed immigration flows ? Naturally, since the decision to migrate is in all likelihood the outcome of a systematic process, the characteristics of those who decide to relocate from their original home to a new destination are hardly a

random sample of the indigenous population of either country. Understanding the composition of migration flows seems therefore to be an important prerequisite for the analysis both of migrant performance and the impact of immigration.

2. Which factors determine the economic *performance* of immigrants in the destination country, i.e. for instance do wages or employment prospects of immigrants converge or diverge as the duration of residence unfolds if compared to that of natives and what are the reasons for these developments? A related aspect is the degree of *discrimination* against immigrants as well as the degree and the consequences of geographical and/or occupational *segregation*, i.e. the clustering of immigrants or specific immigrant groups in certain geographical areas or occupational groups.

3. Which factors determine the economic *impact* of immigration on the population indigenous to the destination country, i.e. does immigration reduce the wages or employment prospects of e.g. low-skilled natives or resident migrants of preceding entry cohorts, and if so, what are the mechanisms at work? A related aspect are the determinants of the *perception* of as well as the *attitudes* towards immigrants by the natives in the destination country.

2.3.2 Evidence for Immigration to Germany

The Decision to Migrate

Evidence for the determinants of immigration to Germany is quite scarce, and if available, only at the aggregate level. Vogler and Rotte (2000) follow the traditional literature on explaining aggregate migration flows (see, e.g. Harris and Todaro (1970) for a seminal study) by differential developments of economic activity (per capita), unemployment rates and other socio-demographic factors, such as geographic distance. Pinning down any stable relationship between the economic factors and immigration activities has been notoriously difficult throughout this literature. This has made the creation of a satisfactory connection between the in parts overwhelmingly sophisticated economic theory of the migration decision (see e.g. Stark (1991) or Berninghaus and Seifert-Vogt (1991)) and the - at best - scarce evidence for the validity of its predictions a very

frustrating endeavor. Vogler and Rotte (2000) escape from this dilemma - which also plagues their study - by altering their focus in an innovative way: Their analysis explicitly addresses the issue whether political oppression in the country of origin fosters the decision of potential emigrants, with particular emphasis on the role that the current state of economic development plays for this process.

With the aim of predicting future immigration activity in case of the enlargement of the EU to the East, Fertig (2001) uses an empirical specification derived from a stripped-down theoretical model of the migration decision. He concludes that economic differences exhibit only a moderate influence on actual migration activity. Finally Fertig and Schmidt (2000a) take a completely different approach at modelling aggregate immigration activity, also with the principal aim of forecasting net immigration into the future. In this study, the crucial role of demographics for migration activity is placed in the focus of the discussion. It has been demonstrated in numerous empirical analyses of migration activity - historical as well as recent - that migrants tend to move from origin to destination at young prime age. **Figure 2.2** exemplifies this phenomenon for the German case. Thus, the relative prevalence of this age group in the population at the origin is necessarily a major determinant of the actual migration potential and, in consequence, activity from this source. On the basis of these considerations, Fertig and Schmidt (2000a) conclude that even if EU enlargement were to lift all legal obstacles for East-West migration, the ensuing migration flows would likely be only of moderate magnitude.

At the present time, there is no study of international migration to Germany at the individual level. The primary reason for this gap is the missing data base, as any serious empirical study would require micro data at both origin and destination.

Performance and Discrimination

Skills play a dominant role for immigrant performance, whether acquired in formal curriculae as secondary or post-secondary schooling and vocational training, or informally as experience in the labor market, or as manifestation of intrinsic personal traits such as cognitive ability or motivation. The modern literature on immigrant performance dates back to Chiswick (1978) who regressed labor earnings, the natural measure of labor market performance - at least in the US context - on years of formal education, immigrant status,

and a polynomial on duration of residence in a cross-sectional census extract comprising native and migrant workers.

His results demonstrate clearly that for the US, ceteris paribus, a comparison of native with immigrant workers reveals earnings differences that vary systematically with duration of residence in the country. While the most recent immigrant workers typically experience a substantial wage disadvantage, this gap is smaller for earlier immigrant cohorts. Chiswick (1978) even found immigrants with a long duration of residence in the US to display an earnings advantage. While this latter result is less robust, an earnings gap that decreases in the duration of residence has been a stable empirical phenomenon in all subsequent cross-sectional studies for the US. The really challenging issue, though, is the interpretation of this pattern. Building on human capital theory, Chiswick (1978) provided a very convincing structural interpretation: in the absence of any noticeable form of discrimination - an absence that seems to be a natural presumption in the context of the American "melting pot" (but see below) - wages directly reflect individual productiveness.

Immigrants acquire productive capacity in their origin country, but only part of this human capital can be transferred to the labor market at the destination. Consequently, the young adults arriving at their new home possess a lower earnings capacity, and - since their labor supply is typically inelastic - relatively low wage earnings. Over their time of residence, they tend to acquire the lacking human capital, such as the language spoken at the destination - their low initial earnings capacity implies that the opportunity cost of their investment are relatively low, making substantial human capital acquisition likely. In addition, Chiswick (1978) attributed the observed overtaking of experienced migrants' over natives' wages to a positive selection in terms of unobserved covariates.

In stark contrast to this positive assessment of immigrant performance, Borjas (1985 and 1987) emphasizes the necessity to account for cohort effects when trying to measure the dynamics of immigrant wage earnings. Specifically, his empirically work demonstrates that earlier cohorts of immigrants to the US display a better economic performance - compared to contemporaneous native workers - throughout their residence than more recent cohorts. In fact, Borjas (1985) attributes most of the cross-sectional earnings

profile in duration of residence to such cohort effects (for a different view see LaLonde and Topel (1992)).

Specifically, most recent cohorts apparently perform very poorly when compared to earlier cohorts at their time of immigration. In his 1987 paper, Borjas motivates this development on the basis of the prototypical Roy model of selection applied to the migration context. Most of the decline in immigrant quality is attributed to the changing country-of-origin mix which has shifted more and more to Latin America and Asia, and away from the traditional countries of origin in Europe. While the importance of the origin composition of immigration flows seems to be undisputed, the literature remains controversial as to the precise interpretation of the negative changes in unobserved residual terms as declining immigrant "quality", or, for instance, as a reflection of a changing distribution of wages - with declining real wages for unskilled workers in the US providing an important background phenomenon (for a more recent contribution see Yuengert (1994)).

Both the rather different history of immigration to Germany and the certainly distinct nature of US and German labor markets suggest that a simple translation of US results to the German context is impossible. Several empirical analyses address the issue of wage performance of the guest workers of the 1960s and 1970s in the German labor market of the 1980s and early 1990s, all using, in principle, the same source of micro data, the *German Socio-Economic Panel* (GSOEP) (see, in particular, Dustmann (1993) and Schmidt (1997)). On balance, these papers demonstrate that in the German labor market formal skills play a decisive role for immigrant wage earnings - for instance, Schmidt (1997) concludes that those immigrants who received their schooling and post-secondary education in Germany achieve earnings parity with native workers, while the typical first-generation migrant from the "guest worker" countries lags some 20 percent behind the average native worker in terms of wages.

Moreover, any evidence regarding the assimilation hypothesis derived from the US literature - migrants starting out with a considerable disadvantage but catching up quickly - is extremely fragile. Dustmann (1993) demonstrates that the distinction of permanent and temporary migrants might be important for the question of earnings dynamics, while

SCHMIDT (1997) pursues a non-parametric specification of duration-of-residence effects that reveals no systematic pattern.

Using the *ALLBUS* (see below) as an alternative data source SCHMIDT (1997) compares migrants from the "guest worker" countries with ethnic German immigrants - concluding that the latter group of immigrants is typically better educated and economically well integrated. Finally, DUSTMANN AND SCHMIDT (2000) is the only paper to address the wage performance of female immigrants. To date, almost the complete migration literature and certainly all studies of the German case have concentrated on the analysis of the economic performance of first-generation male immigrants. In their paper DUSTMANN AND SCHMIDT (2000) place considerable emphasis on the treatment of labor supply issues that plague all analyses of female wage earnings. They conclude that for the relative wages of female immigrants not only their own formal education, but also their family circumstances - most notably the return plans of their family - play an important role.

All these analyses, for Germany as well as in the international context, rest their interpretation on a crucial, and typically completely undiscussed, identification assumption. Wage differences can only be used as a perfect measure of disparities in economic productivity, if the labor market functions without any trace of discrimination and any legal barriers to wage parity, of course. While raising this idea in the context of the US labor market might not stand any chance, and any advance to put only the slightest dent into the American melting pot myth will probably face fiercest opposition, challenging the fundamental identification assumption of no immigrant discrimination seems less daring in the European context.

On the other hand, interpreting any unexplained wage differential as a reflection of discrimination would require an equally strong and hardly more plausible implicit identification assumption - the absence of migrant-native differences in productive capacity once formal characteristics are controlled for. Yet, the two identification assumptions discussed here allow the interpretation of reduced-form wage dynamics in terms of structural ideas, assimilation or discrimination, although all the evidence merely pertains to unexplained migrant-native wage differentials. Borjas cohort argument is an additional variant of the same problem: what is the valid identification assumption ? That is, these assumptions

must remain untestable, and their validity has to be judged on the basis of economic reasoning. While this issue threatens to remain unsettled, it seems safe to argue that an analysis of relative immigrant earnings which exclusively concentrates on discrimination proceeds on very thin ice. Nevertheless, the consideration of rising discrimination might be an interesting addition to the Chiswick-Borjas debate on cohort effects and declining immigrant "quality".

The Economic Impact of Immigration

While relative individual economic performance is a matter of direct comparison of an appropriate outcome measure between the individuals of interest - migrants - and a comparison group - natives, the economic impact of immigration unfolds in an indirect fashion via market reactions, and is therefore much more complex as an object of investigation. Conceptually, additional immigration shifts the relevant labor supply curve outward - with the first problem for any empirical strategy arising as the question what exactly is "relevant", the local labor market, the skill group etc. ? The consequences, in terms of employment and wages for this relevant group, as well as for all other groups of labor - with unskilled native workers being the most prominent case in the public debate - are first of all a matter of the relative own elasticities of demand and supply and of the set of elasticities of complementarity with all other production factors.

Yet, the additional labor supply is only part of the story, since product demand, and thus labor demand (on all other sub-markets) tend to be affected positively. On balance, it might not be the case at all that immigration harms any group of native workers via the crowding out that the constant output reasoning typically applied seems to suggest. In fact, the matter is entirely empirical. Nevertheless, even at the theoretical level many facets relevant for the real world might complicate the analysis, for instance the necessity to account for an increasing variety of products via immigration, or the consequences of institutionalized wage rigidities (see SCHMIDT ET AL. (1994)).

The empirical challenge is to isolate immigration induced shifts in labor supply which can be treated as if they were set in an ideal experiment, in other words as exogenous. Several strategies can be found in the literature regarding the definition of the appropriate sub-market, ranging from time series on aggregate labor markets, over cross-sections of

regional labor markets to longitudinal analysis across region and time. The latter "area approach" is certainly the most prominent strategy. Studies also vary in their strategy at pinning down the numerical impact of additional immigration. Reduced-form studies regress outcomes directly on relative shares of immigrant labor, while structural-form approaches first estimate the relevant elasticities of complementarity before assessing the impact of additional immigration in an out-of-sample prediction.

All these analyses face the common problem of non-experimental research: the extent of additional immigration does not vary randomly across time and space, as in a laboratory experiment, but is rather the outcome of systematic forces. Specifically, more attractive destinations will typically generate a larger influx of immigrants. Comparing the relevant economic outcome measures, native employment rates say, across regions will typically confuse the impact of immigration with the underlying reason making the area particularly attractive. Moreover, the indigenous population may be quite mobile, too. Thus, a lacking impact of immigration could be due to compensatory moves of indigenous workers (Filer (1992)).

The literature has proceeded in different directions to address this endogeneity problem. Altonji and Card (1991) and LaLonde and Topel (1991 and 1997), for instance, pursue the idea of instrumental variable estimation. Using previous immigrant density as their instrumental variable, these estimates invoke the identification assumption that this variable affects immigration but not its impact on regional labor markets. A related idea has been developed by Card (1990) for the so-called Mariel boatlift, an idea also applied by Hunt (1992) to the Algeria-France migration of the early 1960s. These studies exploit historically unique events in order to create a "natural experiment". Typically, these studies tend to conclude that the crowding out effects of additional immigration on most native workers are of minor importance. If at all, it is the direct competitors - in terms of formal and informal skills - which are affected most.

For Germany, several empirical studies exist which proceed along similar lines. Pischke and Velling (1997) follow closely the approach by Altonji and Card (1991) using regional data for Germany, with particular emphasis on demonstrating the fragility of instrumental variable estimates to the underlying identification assumptions. Haisken-

DeNew (1996) and DeNew and Zimmermann (1994) use individual-level data from the *GSOEP*, replacing the emphasis on regional labor markets by an analysis of separate industries. Since this approach is necessarily threatened by severe problems of endogeneity, the idea of instrumental variables is applied as well. In the light of the data material finding a convincing instrument remains a complex task, though. On balance, these studies tend to display quantitatively minor effects of additional immigration on the economic outcomes of the indigenous population, but considerable controversy remains as to their precise magnitude. Bauer (1998), estimates the relevant elasticities of complementarity in a production-function approach using individual-level data, basically confirming those studies who deny a relevant impact of immigration.

Recently, attitudes towards minorities have become an issue of concern in the economic literature (see e.g. Dustmann and Preston (2000)). A brief overview on empirical studies concerning the perception of and the attitudes towards immigrants for the German case is provided in section 4.2.

2.4 The Welfare Dependence of Immigrants - Facts and Perceptions

2.4.1 The Dependence of Immigrants on Public Transfer Payments - What Do We Know

One of the most contentious issues in the context of immigration and immigration policy regards the welfare state. Indeed, Borjas (1999) places the debate on immigration welfare dependence on equal footing with the "classical" topics of immigrants' labor market performance and their labor market impact. The concern over this problem in principle reflects legitimate reservations about the fiscal and political viability of a welfare state potentially acting as a magnet to migrants, yet being underwritten by a native electorate. Even though the US welfare system can hardly be compared in terms of its generosity to the German social safety net, the well documented fact regarding the US (see e.g.

Blau (1984), Borjas and Trejo (1991) and (1993), Borjas and Hilton (1996)) that immigrant households have become important clients of the existing welfare programs led to provisions in the most recent 1996 welfare reform which were directed at curbing immigrants' access to the system.

Neither the empirical results regarding the trends in immigrant welfare nor the institutional arrangements shaping the environment for immigrants' welfare use are easily translated from the US, Canada (see e.g. Baker and Benjamin (1995)) or the UK (see e.g. Blundell et al. (1988)) to the German context. Most of all, the historical developments governing size and composition of immigrant influx to Germany were quite distinct. Consequently, the issue is entirely empirical.

Unfortunately, the empirical literature for Germany is rather scarce, with Riphahn (1998) being one exception. The author, using data from the *GSOEP*, reports distinct patterns of welfare dependence for foreigners and natives. The estimated differences in the dependence on social assistance payments between foreigners and natives suggest a statistically significant and substantially *lower* risk of foreigners to depend on these benefits. However, the differences between the foreigner groups were not statistically significant. Moreover, due to the limited number of observations on second-generation migrants in the *GSOEP*, Riphahn (1998) could not distinguish between the first and the second generation. The *Mikrozensus* provides us with the possibility to provide such a separate analysis.

The German *Mikrozensus* is an annually 1% random sample survey of the population residing in Germany conducted by the Federal Statistical Office (*Statistisches Bundesamt*). The information collected includes standard demographic and labor market variables as well as information on household and individual income and income sources. The public use file of the *Mikrozensus* is a 70% random sample of the original dataset containing more than 500,000 observations. Compared to other micro datasets like the *GSOEP* the *Mikrozensus* thus has the advantage of a large number of highly reliable observations which allow e.g. the identification of a substantial number of second-generation immigrants. On the other hand, the *Mikrozensus* is only a cross-section with income *categories* and no information on "weaker" characteristics, like language ability or attitudes.

Similar to the case of the US it is certainly important to distinguish between the welfare dependence of immigrants to Germany in comparison with those of a typical native household and in comparison with a hypothetical native household with the characteristics of a typical immigrant household. Since the most important socio-economic characteristics are available in our data, we will estimate a model aiming at the explanation of the determining factors of social assistance dependence. The focus of this analysis is on the risk of being dependent on such public transfer payments for non-citizens. Before we proceed with the estimated model, we briefly summarize the German social assistance system and discuss some of the methodological issues in modelling the dependence on welfare payments.

Social assistance is an integral part of the German income support system which is, in principle, based on residency in Germany and not on citizenship. However, since 1994 there have been some exceptions for asylum seekers. The intention of social assistance is to guarantee eligible individuals a minimum income sufficient for living purposes. Social assistance is strictly means-tested and serves as a substitute for other benefit schemes, like unemployment benefits, if the eligibility for those has expired. Financial benefits under the heading of social assistance comprise lump-sum payments for which under regular circumstances no repayment requirement is entailed when the financial situation of the supported individual improves again.

In the received international literature on modelling the dependence on welfare payments, the problem of possible non-take up behavior of eligible individuals is heavily discussed. In our case this problem may be important since the residency regulation reform in 1991 provided authorities with the possibility to expel foreigners without a permanent residence permission, if they claim social assistance (cf. RIPHAHN (1998)). This sample selection problem may lead to a bias in the estimated coefficients. However, since there is no information available on the legal status of foreigners in the *Mikrozensus* we are forced to continue under the proviso that this selection problem is negligible.

In our own analysis we assume that the probability to observe an economically active individual (aged 15 to 65 years) in the state of receiving social assistance payments is determined by the following groups of factors: (i) the *household structure*, such as living

in a single household, the number of children etc.; (ii) *individual characteristics*, like age, sex, education etc.; (iii) the *level of information* on eligibility criteria, the amount and duration of benefits etc., for which (following RIPHAHN (1998)) we introduce two indicator variables: living in a small city and living in a big city; (iv) *foreigner specific characteristics*, like being a first- or second-generation migrant, the duration of residence in Germany etc. Moreover, one would presume that the *duration* of past dependence on social assistance payments may also have an effect on the probability to observe someone in this state since an individual may be caught in what is sometimes called the "welfare trap". Unfortunately, the *Mikrozensus* provides no information on the duration an individual has been receiving social assistance.

We estimate a discrete choice model, specifically a binomial probit model, to explain the probability of observing an individual in a certain state by the set of socio-economic variables described above. The dependent variable takes the value of one if an individual reported social assistance as its primary source of income in the 1995 wave of the *Mikrozensus*, and zero otherwise. All explanatory variables are defined in **Table A.2.1** in the appendix. The focus of our analysis lies on the foreigner-specific variables which comprise dummy variables for different first- and second-generation foreigner groups, information on the duration of residence in Germany for the first generation and interaction variables comprising individual characteristics like age and education for the first and the second generation, respectively. The share of individuals depending on social assistance in our sample is 8.1% for foreigners whereas only 1.4% of German citizens reported social assistance as primary source of income.

Table 2.5 reports some descriptive statistics for the variables in the sample. With our analysis we address the counterfactual question if the risk of non-citizens to depend on public transfer payments is higher than that of comparable natives conditionally on observable characteristics, such as education or age. Since the composition of the migrant population with respect to these attributes is largely a result of German immigration recruitment policy of the 1960's and early 1970's and its aftermath, a comparison that did not condition on these factors would lack respect for the role of history in shaping current circumstances. By contrast, our approach is designed to reveal whether migrants are different from native Germans in terms of intrinsic, unobservable characteristics, as

much of the public debate seems to suggest. Specifically, in our analysis we invoke the identification assumptions that the functional relationship between the risk of dependence and the determining factors is represented by a normal distribution function and that a valid comparison group for foreigners are natives with the same set of socio-economic characteristics.

Estimation Results

Table 2.6 reports the estimated marginal effects of each explanatory variable and its associated t-values for our preferred specification. The marginal effects are the changes of the probability of an individual to be observed in state 1, i.e. receiving social assistance, associated with a unit change in the respective regressors, holding all other regressors constant. These marginal effects are the effect of a unit-change in each variable, one at a time, evaluated at the sample means of all variables. To derive a marginal effect for categorical variables, we consider instead of a change at the sample mean a discrete change from 0 to 1. The preferred specification is the result of a sequence of tests involving linear restrictions on the parameters of the categorical variables, most notably regarding the distinction of variables' effects for first- and second-generation migrants. The null hypotheses that these parameters are equal is rejected at a 1% significance level for all variables, except for the distinction of "first-generation high education" and "second-generation high education" which are combined into the variable "foreigner high education". The same result holds for the variables "first-generation not employed" and "second-generation not employed" which are comprised in the variable "foreigner not employed". Homogeneity restrictions for natives, first-generation and second-generation foreigners are rejected at a 1% significance level (see "Diagnostics" in **Table 2.6**).

Most of the estimated marginal effects are statistically significant at a 1% significance level (the critical value is 2.576). Household and individual characteristics paint a clear and credible picture about the correlates of welfare dependence. While married individuals are substantially less likely than single adults to be on welfare, single adults with children are somewhat more likely to be on the welfare roles. The likelihood also rises unambiguously with the number of children, irrespective of marital status - the cost of raising children has rightfully been a contentious issue in the population economics literature and the public debate throughout the last decades. Interestingly, East Germans

are slightly less likely than West Germans to be on welfare, which is presumably to be a reflection of the different mix of income support programs (early retirement schemes) available in this part of the country.

Regarding personal traits, an inversely u-shaped age profile indicates that welfare dependence is somewhat less prevalent in older age groups. For instance, a one-year increase in age at the sample mean of approximately 42 years implies a decline in the dependence risk of 0.01%. By contrast, for a 30 year old the corresponding marginal effect is a positive 0.06%. The coefficient for the female dummy demonstrates the slightly higher likelihood to receive welfare for women. Education is apparently an important correlate of welfare dependence, as particularly low educated individuals, and those without formal training are found on the welfare roles.

Finally, inhabitants of big cities are more likely to receive welfare, a phenomenon that we attribute in our table to the availability of information on income support schemes and the lower opportunity cost of receiving welfare in big cities. Yet, the full spectrum of underlying reasons for this pattern necessarily remains unexplored.

Our specification also comprises a series of interactions of the substantive variables such as age or education with indicators of first- and second-generation foreigners status, respectively (apart from the two entries "high education" and "not employed", see above). That is, all these marginal effects arise in addition to the effect already displayed in the main section of the table. Thus, for instance, while high education and being not employed both display significant effects on the likelihood to receive welfare, their differential effects for immigrants are negligible - in these respects migrants' and native Germans' reactions are identical.

Regarding the migrants of the first-generation, in a remarkably stable pattern the results demonstrate a slightly lower welfare dependence than for native Germans. Remarkable are also the distinct age patterns, indicating that welfare dependence is particularly unlikely for young adults among the first-generation immigrants. Compared to a 30 year old native, the marginal effect of growing older on the dependence risk more than doubles for first-generation migrants of the same age. The associated marginal effect is 0.14%. The employment situation apparently also exerts a differential impact on immigrants of

the first-generation, as the long-term jobless are disproportionally more likely to be on welfare than long-term jobless natives.

For the US a rising duration of residence is apparently a strong correlate of welfare dependence. Quite in contrast, welfare dependence declines significantly as immigrants' duration of residence in Germany proceeds, albeit with declining annual effects. This pattern is certainly to a considerable degree the reflection of institutional regulations, since receiving a work permit at the time of the survey has typically been a matter of years for refugees and asylum seekers.

For second-generation immigrants residing in Germany, we generally observe a pattern of welfare dependence which is very close to that observed among native Germans. The marginal effects of the citizenship indicators demonstrate that, on average, they are relatively unlikely to be on welfare, although the differences to natives are small if significant at all. The age profile of second-generation migrants resembles that of natives, albeit with a somewhat more pronounced curvature. Among second-generation migrants residing in Germany, it is particularly problematic to command only low human capital endowments, while long-term joblessness has apparently not such a detrimental effect.

On balance, first- and second-generation immigrants display distinct patterns of dependence compared to natives but also compared to each other. The estimated marginal effects of the group indicators for the first generation suggest small but statistically significant *lower* probabilities to be observed as receiving social assistance. For example, being a first-generation Turkish immigrant reduces this probability by 0.82 percentage points all other factors equal. The comparable effects for the second generation are even smaller but for foreigners with Turkish, other guest worker country and other EU country citizenship they are statistically significantly *negative*.

To conclude, given the substantially lower education of foreigners as the major reason for their higher average (unconditional) rate of receiving welfare, their risk of being dependent on social assistance payments is conditional on observables by no means higher than that of comparable natives. If this pattern which our estimates reveal for existing migrants to Germany hold true for all future immigration, the message for immigration policy is clear and unmistakable: pursuing a deliberate and systematic immigration policy

which balances human rights and the country's human capital requirements is the best option to assure that future immigrants will not become clients of the welfare system in any disproportionate fashion.

2.4.2 The Dependence of Immigrants on Public Transfer Payments - What Do People Think

Often it is the case that a clear presentation of the stylized facts or of a convincing body of evidence is not able to prevent the public debate from going astray. The age-old fear that immigrants take jobs away from native workers is a case in point. Despite overwhelming evidence that the negative partial equilibrium effects on the most-affected groups of native workers are - at worst - minor and that they are probably overcompensated by the positive indirect effects, the argument of "native jobs first" is raised again and again by anti-immigrationists in all countries. Unfortunately, since this argument appeals to the strong underlying fear for one's own economic existence, and since it is easy to mask xenophobic attitudes behind such a seemingly well-justified concern, anti-immigrationists are often able to collect support for their - unjustified - claims.

Here, in the case of immigrant welfare dependence, defining an appropriate position is even more difficult, since there is an additional subtlety to consider. On average, it is true that immigrants to Germany are substantially more likely to be on welfare roles. Yet, as the preceding discussion has clearly demonstrated, this is a matter of key socio-economic characteristics, rather than a consequence of underlying unobservable traits. To the contrary, holding observables constant, immigrants are less likely to be on welfare. Thus, existing patterns are largely a result of past immigration policy, and future problems could be prevented by following a deliberate, and more skill-oriented immigration policy.

It seems safe to argue that the typical member of the indigenous German population is far removed from being aware of these subtleties. Thus, it would be extremely important to ascertain what exactly are the perceptions of native Germans regarding this important aspect of immigration and of immigration policy. Thus, after gauging possible gaps between facts and perceptions, and the correlates of such gaps, one could engage into con-

siderations how to systematically remove such disparities. The assessment of perceptions is the topic of this sub-section.

The empirical literature on the perception of immigrants and foreigners as well as the natives' attitudes towards them is quite scarce for Germany. Exceptions are GANG AND RIVERA-BATIZ (1994) using the *Eurobarameter* survey and BAUER ET AL. (2000) performing a cross-country comparison with the 1995 wave of the *ISSP* survey, which for the case of Germany, was conducted as an appendix to the *ALLBUS* (Allgemeine Bev"olkerungsumfrage der Sozialwissenschaften). The latter paper focuses on the link between immigration policy and the perception of migrants. This paper, by contrast, contributes to the received literature by using the detailed information available in the *ALLBUS* to quantify the explanatory power of different *individual* variables for the perception of foreigners in Germany.

The *ALLBUS* is an publicly available opinion survey based on a representative sample of residents in Germany which is conducted biannually with varying focuses on different topics. The sample is drawn out of out of all individuals living in private households who, for the 1996 wave, have been born prior to January, 1^{st} 1978. This wave, conducted between March and June 1996, contains questions on the perception of and attitudes towards immigrants and foreigners as well as standard socio-economic characteristics of the respondents. The majority of the respondents are German natives but there is also a representative share of foreigners in the sample.

Attitudes of native respondents

Overall, the respondents perceive immigrants - foreigners as well as ethnic Germans - and non-citizens living in Germany with a considerable degree of skepticism. Unfortunately, the questions on what is called "foreigner" in the *ALLBUS* are not distinguishing between foreign born and German born non-citizens, preventing us from extending the analysis to differences in the perception of first- and second-generation immigrants. However, some of the questions differentiate among immigrant groups, like Turks, Italians, ethnic Germans, and asylum seekers. The upper panel of **Table 2.7** reports the distribution of agreement of native respondents in East and West Germany with three claims related to the impact of foreigners on the German housing and labor market, as well as on the propensity to

convict crimes. Originally, there were seven categories of possible agreement/disagreement with these claims on an ordered scale reaching form (1) "I do not agree at all" to (7) "I agree completely". These seven possibilities were condensed into three categories: (1) and (2) into "no agreement", (6) and (7) into "agreement" and the other three original categories into "medium".

Table 2.7 reveals that approximately 32% (28%), 20% (43%), and 26% (38%) in West (East) Germany agreed with the respective claim, whereas around 23% (28%), 34% (18%), and 32% (20%) did not. Natives in the western part of the country seem to be more concerned with the housing market impact of immigration than East Germans are, whereas the latter are more concerned with the labor market impact. Presumably as a consequence of this perception, the majority of respondents claimed that immigration should be limited and a substantial fraction even opted for a complete immigration stop. **Table 2.8** reports the respective shares of answers. Somewhat surprising is the high share of respondents in Eastern Germany opting for an immigration stop of workers from EU-countries which is considerably larger than that concerning asylum seekers. One might speculate that this is due to the formulation "workers" in the question. Unfortunately, there is no control question with a more "innocuous" formulation.

The distribution of agreement with the claim "Foreigners should be sent back if unemployment is high" (**Table 2.7**) suggests that labor market worries might play a substantial role in explaining this distribution which are again more pronounced in East Germany. Moreover, the facts that around 30% of respondents in both parts of the country agreed with the claim that foreigners should be prohibited from political activity in Germany, that a substantial share would not agree with a full legal equivalency of different immigrant groups with native Germans, and that more than 43% of the native respondents claimed it would be important that German citizenship is connected to being of German descent (not reported in the tables), suggest that a substantial fraction of the German population is perceiving immigrants mainly as guests which are presumed to live in Germany only for a temporary period. On balance, immigrants from Italy which have on average a longer duration of residency in Germany and ethnic German migrants are perceived much more positively than Turks and especially asylum seekers. This pattern is reflected in the distribution of answers on the questions in the last two panels in **Table**

2.7.

From the perspective of our analysis in the preceding sub-section the distribution of agreement to the claim "Foreigners are a burden for the social security system in Germany" is of special interest. The distribution of agreement in the original seven categories, reported in **Table 2.9** is quite uniform with a considerable share of respondents agreeing with this claim. For an analysis of the determining factors of the propensity to opt for different degrees of agreement we dropped the observations on respondents who refused to answer and condensed the remaining information into the three categories as explained above. This procedure provides us with an ordinal variable containing three categories of agreement which we use as the dependent variable in an ordered probit model in the next sub-section.

2.4.3 Possible Explanations For the Divergence Between Facts and Perceptions

The ordered probit model is a widely used model in a discrete choice framework with ordinal dependent variables. In such models it is assumed that respondents display a certain intensity of opinion which is an unobservable latent variable for the analyst, but can be explained by a set of measurable factors and an unobservable error term. Moreover, it is assumed that this unobservable intensity of opinion is reflected by the observable answers of the respondents, i.e. respondents choose the category which represents most closely their true opinion on the question. In the example at hand we have three categories and assume that the error term is normally distributed. The resulting ordered probit model can be estimated by Maximum Likelihood. The estimated coefficients for the explanatory variables are quite difficult to interpret directly since they are not equal to the marginal effects of the respective variable. However, these marginal effects, i.e. the change in the probability to choose a certain answer in response to a unit change in the regressors can be calculated from the coefficients and interpreted quite straightforwardly for the two extreme categories, albeit not for the middle category (cf. e.g. GREENE (1997)).

Table A.2.2 in the Appendix explains the set of explanatory variables which contains socio-economic individual characteristics (like age, sex, education etc.), three self-classified attitude variables not related to foreigners, information on the respondents' partner and a measure of possible contacts to foreigners. Concerning the latter variable, more than half of the respondents in the 1996 wave of the *ALLBUS* report contact(s) to foreigners in either family, neighborhood, among friends or at work, but the intensity of these contacts remains unclear. Therefore, we decided to use a measure of exposure to foreigners, i.e. the actual share of foreigners living in the region (*Landkreis*) of the respondent to have an indicator for possible contacts to foreigners and, therefore, on the possible information of the respondent concerning foreigners. **Table 2.10** reports some descriptive statistics of the variables in the sample.

Estimation Results

The estimated coefficients, associated t-values and marginal effects of our preferred specification are reported in **Table 2.11**. This specification is the result of several tests on equality restrictions on the parameters of the different categorized explanatory variables. The majority of the estimated coefficients is statistically significant at a 5% significance level. The observable tendency of agreement displays a u-shaped profile in age, due to the disproportionate share of young respondents displaying agreement. German citizens tend to agree much more emphatically with the proposed statement, as do women (a marginal increase of some 20 and 5 percentage points, respectively). Education is apparently a very important determinant of respondents' attitude to the issue, as it is particularly the low educated who agree with the proposed - and as we have seen completely unreflected - statement.

The estimated marginal effects suggest that residing in Eastern Germany increases the probability to agree to the claim by nearly 10 percentage points. Somewhat surprisingly, after controlling for other covariates, the labor market variables "currently unemployed" and "fears loss of employment" have no statistically significant effect on the probability to opt for a certain opinion category. This result also holds if both variables are examined separately for East and West Germany. It has been argued above that voicing fears of job loss might be a vehicle for many to mask underlying, rather xenophobic motives for an anti-imigrationist position. Our results seem to corroborate this argument.

Moreover, classifying oneself as having a right-wing attitude increases this probability by approximately 5 percentage points, whereas the opposite attitude reduces it by around 10 percentage points.

It is to be expected that the contact with immigrants reduces xenophobic misperceptions. Having a partner with a foreign citizenship at birth reduces the probability of agreement by around 10 percentage points. Living in a region with a low foreigner share increases the probability of agreement by more than 5 percentage points, whereas living in a region with a high foreigner share has no statistical significant impact on the chosen answer category. Sensitivity tests concerning the division of regions with a low foreigner share do not display any substantial impact on the estimation results. However, the latter variable has to be interpreted with caution, since it may be endogenous if foreigners decide to live in regions where natives have a more positive perception of them. Usually, the residential choice of individuals is determined by a complex set of factors, including family relations, friends, labor market opportunities and local amenities. It is possible that for foreigners the perception by natives may contribute to the local amenities of candidate locations of residence, but it seems to be only one element out of a set of several factors. Therefore, we would expect that the endogeneity of this variable is not severe.

2.5 Conclusions

This paper provided a snapshot portrait of the immigrant population currently residing in Germany, with a special emphasis on the distinction of first- and second-generation migrants. To this end we provided a detailed characterization of both immigrant generations by demographic and socio-economic characteristics. The paper also an in-depth review of the received economic literature, conceptualizing these analyses along the three principal avenues of migration research. The manuscript thus contributes to our understanding of the current state of knowledge regarding the immigrant population of Germany. Most importantly, it has become transparent that there are considerable differences between both immigrants and natives as well as among the different immigrant generations themselves. Nevertheless, this review also demonstrated that at the current juncture a substantial

number of relevant research questions remains unresolved.

The paper proceeds to offer its own substantive contribution to this research, by addressing one of the most contentious issues in the current debate, the welfare dependence of migrants. We contrasted the findings on the determining factors of the moderate risk of migrants to depend on public assistance payments with the perception of immigrants by native Germans using two complementary datasets. Furthermore, we derived some evidence on important correlates of the deviations between facts and perceptions and discussed which explanatory factors might be responsible for this phenomenon.

The implications of our analyses are twofold. First, our results suggest that for the case of Germany we are still in need of generating more empirical evidence on some of the most important questions of migration research. Researchers will hardly be able to complete this task without access to additional, individual-based data material. In light of this topic's importance for the future of our society, it is hoped that any initiative to collect such data will be funded generously, and that policy makers and administrators alike will support such endeavor.

Furthermore, the empirical evidence on the divergence of the perception of immigrants by natives from what we really know suggests that comprehensive education programs and initiatives to ascertain that this evidence is becoming more transparent to the general public may provide the basis for a more realistic perception of what is a large, albeit heterogeneous population group in Germany. But the success of such activities is far from being guaranteed. To analyze whether and to what extent education is really able to resolve misperceptions and to reduce xenophobic attitudes will be one of the key challenges of this line of research. A comprehensive scientific evaluation of this question as well as the effectiveness of other integration programs is one of the signposts guiding our future directions of research.

Note:

Die in diesem Beitrag benutzten Daten entstammen der "Allgemeinen Bevölkerungsumfrage der Sozialwissenschaften" (ALLBUS). Der ALLBUS 1996 ist eine von Bund und Ländern über die GESIS (Gesellschaft sozialwissenschaftlicher Infrastruktureinrichtungen) finanzierte Umfrage, die vom ZUMA (Zentrum für Umfragen, Methoden und Analysen, Mannheim) und vom Zentralarchiv für Empirische Sozialforschung (Köln) in Zusammenarbeit mit dem ALLBUS-Ausschuß realisiert wurde. Die Dokumentationen und Daten sind beim Zentralarchiv für Empirische Sozialforschung (Köln) erhältlich. Die vorgenannten Institutionen und Personen tragen keine Verantwortung für die Verwendung der Daten in diesem Beitrag.

Figure 2.1: The Age Distribution of Immigrants and Natives - Mikrozensus 1995

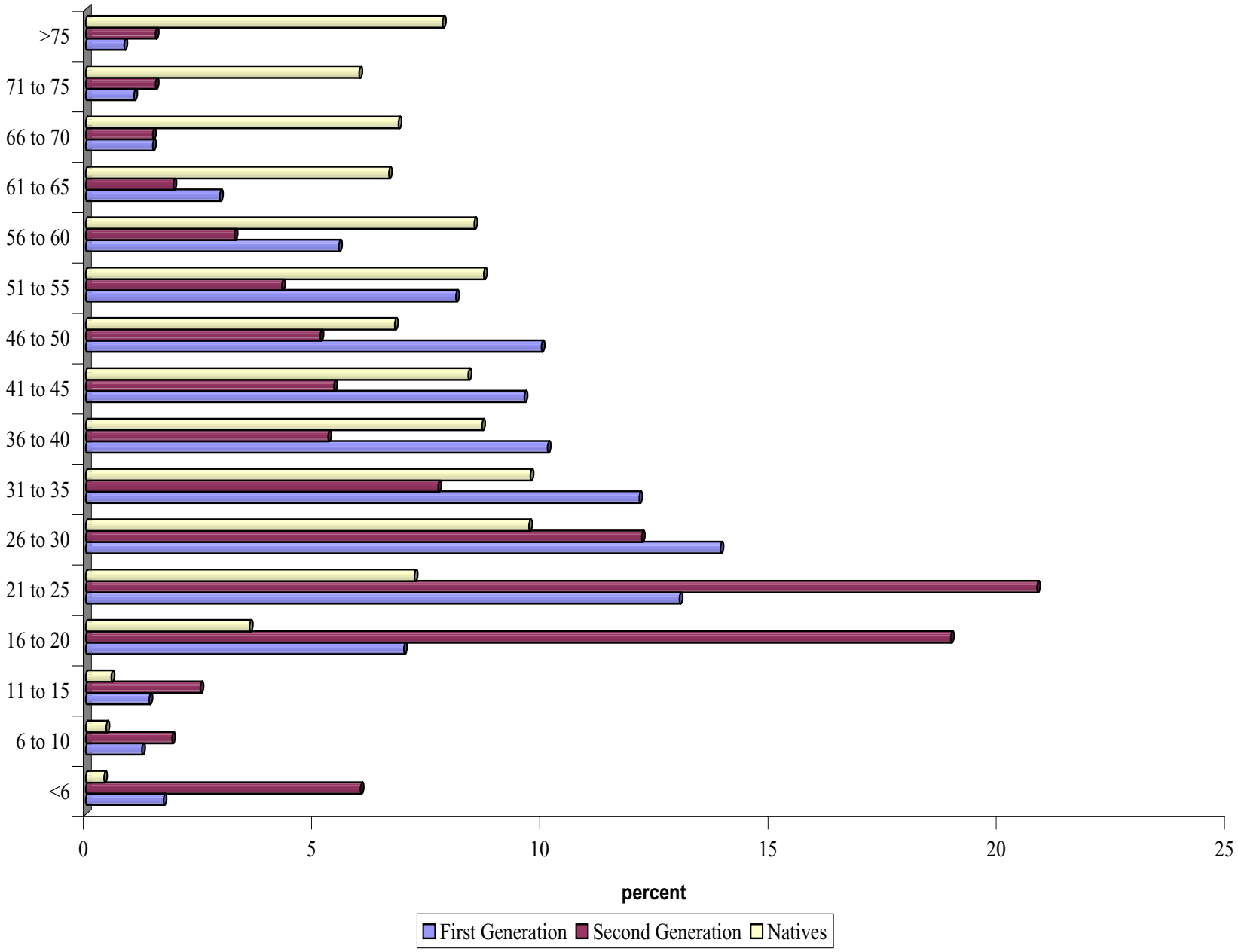

Figure 2.2: Age at Immigration to Germany - Mikrozensus 1995

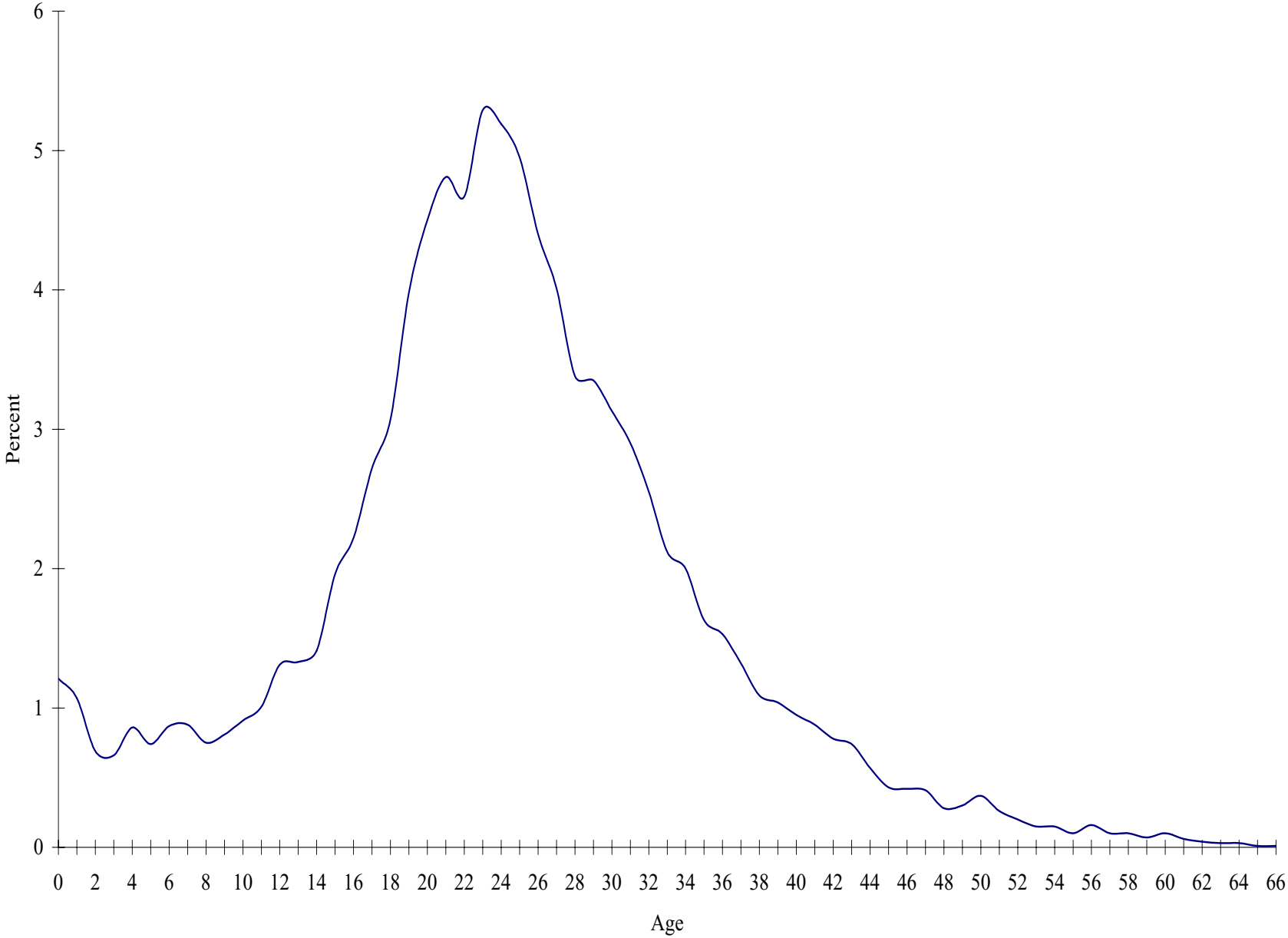

Figure 2.3: Year of Immigration of 1995 Stock of First-Generation Immigrants - Mikrozensus 1995 55

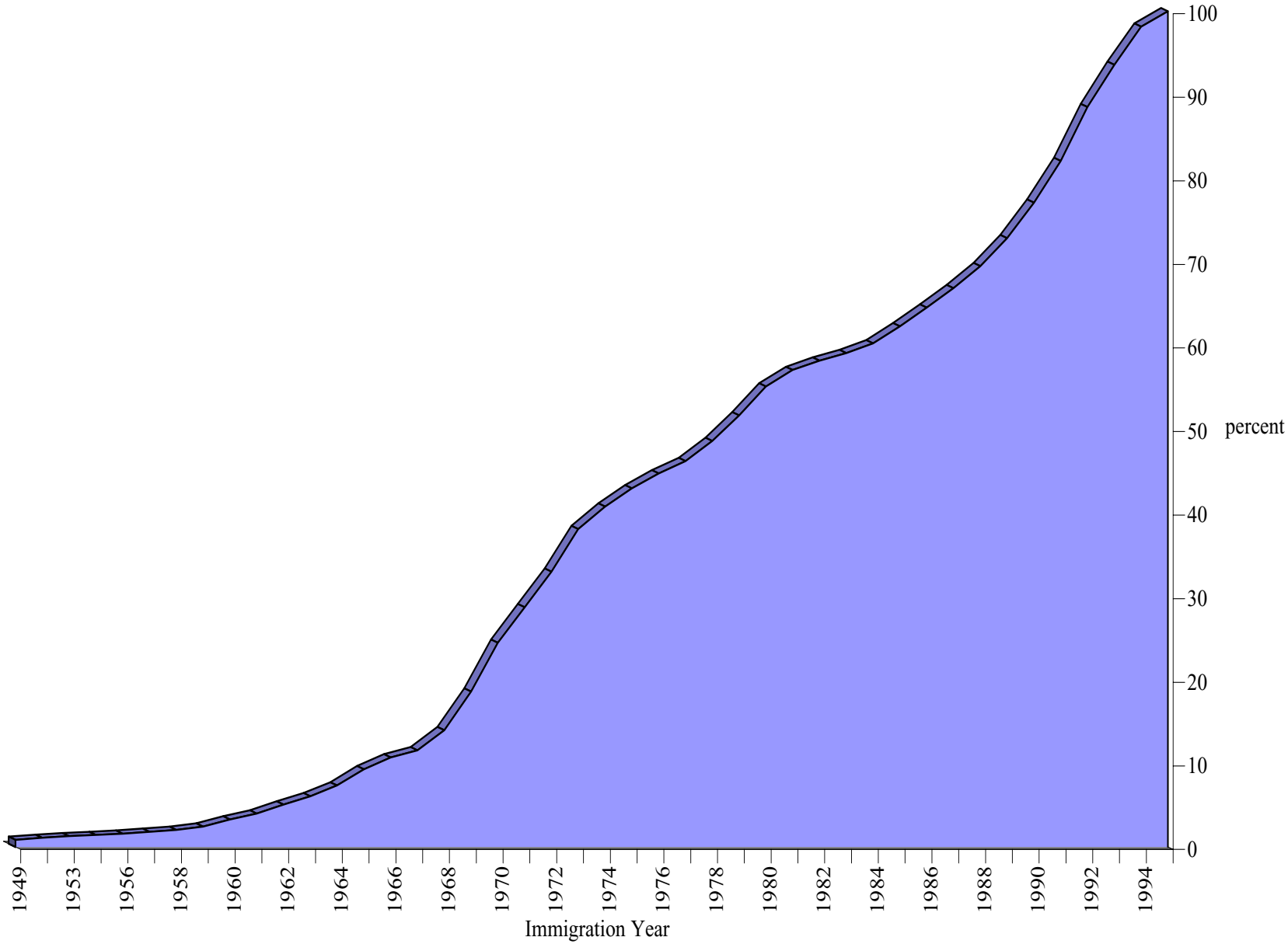

Figure 2.4: Household Income - Immigrants vs. Natives (Mikrozensus 1995)

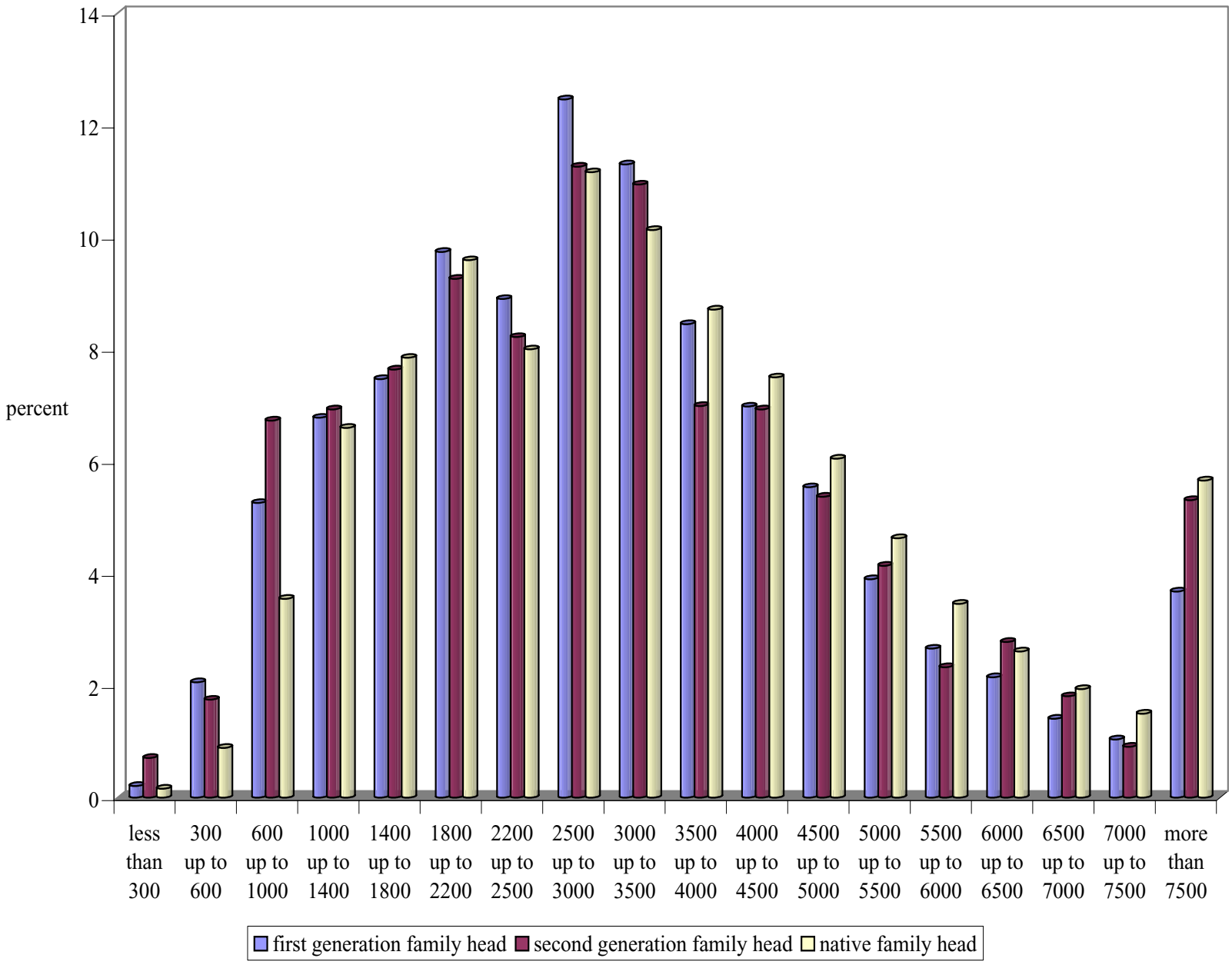

Table 2.1: The Distribution of Immigrants and Natives by Federal State and Citizenship

Distribution of Immigrants and Natives in Mikrozensus 1995	First Generation	Second Generation	Natives
By Federal State (Bundesland):			
West Germany			
Baden-Württemberg	22.40%	23.51%	11.99%
NRW	21.29%	22.89%	20.69%
Bayern	18.24%	14.39%	15.14%
Hessen	10.51%	9.83%	7.11%
Niedersachsen	7.09%	9.02%	9.22%
Berlin	6.59%	6.19%	4.17%
Rheinland-Pfalz	5.01%	4.33%	5.06%
Hamburg	3.29%	4.66%	2.08%
Bremen	1.25%	1.99%	0.81%
Schleswig-Holstein	1.95%	1.07%	3.56%
Saarland	1.15%	1.53%	1.36%
East Germany			
Sachsen	0.53%	0.20%	6.09%
Thüringen	0.18%	0.20%	3.38%
Brandenburg	0.22%	0.07%	3.38%
Sachsen-Anhalt	0.22%	0.03%	3.62%
Mecklenburg-Vorpommern	0.10%	0.10%	2.37%
By Citizenship of:			
Turkey	28.56%	31.20%	-
Former Yugoslavia	19.25%	15.21%	-
Other Guest Worker Countries	19.16%	21.49%	-
EU without Guest Worker Countries	10.39%	14.33%	-
CIS and CEEC	7.62%	4.85%	-
India, Pakistan and Middle East	3.77%	3.03%	-
East Asia	3.60%	2.44%	-
African Countries	2.67%	1.76%	-
USA and Rest of America	2.58%	2.18%	-
Rest of Western Europe	1.11%	1.82%	-
Others/No Citizenship	1.28%	1.69%	-

Notes: Data source is the German *Mikrozensus* of 1995. CEEC denotes Central and Eastern European States, CIS for Community of Independent States.

Table 2.2: The Education of Immigrants and Natives

Education Levels	First Generation	Second Generation	Native Germans
Highest Schooling Degree:			
Other	21.22%	22.10%	5.73%
Elementary Schooling	49.00%	47.04%	49.80%
Advanced Schooling	12.71%	16.87%	27.20%
Higher Schooling	17.06%	13.99%	17.27%
Formal Training level:			
Other	8.26%	16.95%	5.54%
None	45.68%	35.31%	19.22%
(Technical) University Degree	8.42%	5.76%	10.87%
Vocational Training	34.65%	39.30%	55.48%
Advanced Vocational Training	2.99%	2.68%	8.88%

Notes: Data source is the German *Mikrozensus* of 1995. The highest schooling degree is reported for all individuals older than 15 years. The highest formal training level is reported for all individuals older than 18 years.

Table 2.3: Sectoral Distribution of Immigrants and Natives

	First Generation	Second Generation	Natives
Unemployment Rate	11.09%	7.65%	6.09%
Size of Labor Force (sample)	19,566	4,613	329,112
Share of Population in Germany	4.38%	1.89%	93.73%
Share of Labor Force in Selected Sectors:			
Manufacturing	30.18%	21.24%	23.37%
Construction Sector	8.17%	5.79%	8.38%
Food and Beverages	7.16%	4.96%	2.22%
Banking and Insurance	0.91%	1.34%	3.18%
Total:	46.42%	33.34%	37.15%
Share of All Employed in Selected Sectors:			
Manufacturing	33.94%	23.00%	24.89%
Construction Sector	9.19%	6.27%	8.92%
Food and Beverages	8.05%	5.38%	2.36%
Banking and Insurance	1.03%	1.46%	3.38%
Total:	52.21%	36.10%	39.56%

Notes: Data source is the German *Mikrozensus* of 1995. The labor force comprises all individuals aged 15 to 65 years in the sample.

Table 2.4: Primary Sources of Income for Living

Primary Income Source	**First Generation**	**Second Generation**	**Native Germans**
Work Income	64.84%	62.42%	55.89%
Unemployment Benefit and Assistance	7.05%	5.31%	4.11%
Pensions	7.41%	7.13%	28.56%
Support by Parents or Spouse	7.31%	9.93%	6.84%
Other (Non-Work) Income	0.38%	0.42%	0.43%
Social Assistance Program	11.36%	12.8%	1.76%
Other Benefits (Student Grants etc.)	1.66%	1.99%	2.40%

Notes: Data source is the German *Mikrozensus* of 1995. Reported figures apply to *all* age groups.

Table 2.5: Summary Statistics - Mikrozensus 1995

	Mean	Standarderror
Dependence on Social Assistance	0.018	0.134
Household Characteristics:		
Married	0.680	0.466
Single with Child(ren)	0.068	0.253
Number of Children	0.496	0.850
Residing in East Germany	0.182	0.386
Individual Characteristics:		
Age	42.531	12.741
Female	0.503	0.500
High Education	0.172	0.377
Low Education	0.538	0.499
(Technical) University Degree	0.115	0.320
No Formal Training	0.229	0.420
Part-Time Work	0.107	0.310
Temporary Work Contract	0.049	0.216
Employed in Public Sector	0.199	0.400
Minor Employment	0.028	0.165
Not Employed	0.072	0.259
Not Employed For More Than Six Months	0.060	0.237
Information Level Indicators:		
Inhabitant of a Small City (less than 20,000)	0.421	0.494
Inhabitant of a Big City (more than 100,000)	0.298	0.458
First-Generation Characteristics:		
Turkish Nationality	0.019	0.135
Yugoslavian Nationality	0.011	0.103
Other Guest Worker Country Nationality	0.011	0.102
OtherEU-Country Nationality	0.005	0.070
CIS or CEEC Nationality	0.005	0.068
Other Nationality	0.009	0.093
Age	2.245	9.476
High Education	0.009	0.094
Low Education	0.042	0.202
Not Employed	0.007	0.083
Not Employed For More Than Six Months	0.005	0.073
High Education in Origin Country	0.005	0.070
Low Education in Origin Country	0.036	0.186
Duration of Residence in Germany	0.892	4.360

Table 2.5 continued: Summary Statistics - Mikrozensus 1995

	Mean	Standarderror
Second-Generation Characteristics:		
Turkish Nationality	0.003	0.056
Yugoslavian Nationality	0.001	0.038
Other Guest Worker Country Nationality	0.002	0.047
Other EU-Country Nationality	0.001	0.037
CIS or CEEC Nationality	0.001	0.022
Other Nationality	0.001	0.037
Age	0.331	3.525
High Education	0.001	0.035
Low Education	0.007	0.085
Not Employed	0.001	0.033
Not Employed For More Than Six Months	0.001	0.026

Notes: Means and standard errors are for the complete sample. Number of observations: 305,962. See Table A.2.1 and the text for a description of the variables.

Table 2.6: Estimation Results of Probit Model - Mikrozensus 1995

	Marginal Effect	t-Value
Household Characteristics:		
Married	-0.1081	-36.37
Single with Child(ren)	0.0102	25.25
Number of Children	0.0026	27.65
Residing in East Germany	-0.0033	-14.21
Individual Characteristics:		
Age and Age Squared	-0.0001	-10.45
Female	0.0008	4.72
High Education	-0.0018	-4.73
Low Education	0.0026	10.72
(Technical) University Degree	0.0012	2.23
No Formal Training	0.0114	38.18
Part-Time Work	-0.0038	-13.50
Temporary Work Contract	-0.0041	-13.79
Employed in Public Sector	-0.0026	-11.14
Minor Employment	0.0049	6.03
Not Employed	0.0161	24.34
Not Employed For More Than Six Months	0.0060	11.91
Information Level Indicators:		
Inhabitant of a Small City (less than 20,000)	-0.0013	-6.40
Inhabitant of a Big City (more than 100,000)	0.0018	8.04
Foreigner Characteristics:		
High Education	0.0003	0.32
Not Employed	-0.0005	-0.81
First-Generation Characteristics:		
Turkish Nationality	-0.0082	-19.04
Yugoslavian Nationality	-0.0060	-18.18
Other Guest Worker Country Nationality	-0.0062	-19.55
Other EU-Country Nationality	-0.0049	-19.43
CIS or CEEC Nationality	-0.0048	-18.29
Other Nationality	-0.0056	-18.34
Age and Age Squared	-0.0004	-3.28
Low Education	0.0005	0.42
Not Employed For More Than Six Months	0.0019	2.13
Low Education in Origin Country	-0.0023	-3.23
Duration of Residence in Germany and Duration of Residence in Germany Squared	-0.0016	-17.77

Table 2.6 continued: Estimation Results of Probit Model - Mikrozensus 1995

	Marginal Effect	**t-Value**
Second-Generation Characteristics:		
Turkish Nationality	-0.0040	-2.75
Yugoslavian Nationality	-0.0018	-0.49
Other Guest Worker Country Nationality	-0.0040	-3.62
Other EU-Country Nationality	-0.0040	-3.51
CIS or CEEC Nationality	-0.0019	-0.49
Other Nationality	0.0024	0.40
Age and Age Squared	0.0005	1.91
Low Education	0.0152	4.33
Not Employed For More Than Six Months	-0.0034	-4.26
Diagnostics:		
Homogeneity of First-Generation Foreigner Groups	256.98 (15.09)	
Homogeneity of Sec.-Generation Foreigner Groups	234.57 (15.09)	
Homogeneity of First- and Second-Generation	298.98 (16.81)	
Homogeneity of Natives and First-Generation	678.49 (16.81)	
Homogeneity of Natives and Second-Generation	241.61 (16.81)	

Notes: Number of observations 305,962. Numbers in parentheses are the critical values of the $\chi^2(5)$ and $\chi^2(6)$ distribution at the 1% confidence level, respectively.

Table 2.7: Attitudes Towards Foreigners - ALLBUS 1996

Claim or Question	**No Agreement**		**Medium**		**Agreement**	
	West	**East**	**West**	**East**	**West**	**East**
Foreigners are a burden for the housing market.	23.04%	27.97%	44.84%	43.78%	32.12%	28.25%
Foreigners take jobs away.	34.34%	18.28%	45.67%	38.55%	19.99%	43.17%
Foreigners commit more crimes.	31.70%	19.71%	42.32%	42.60%	25.89%	37.69%
Foreigners should be sent back if unemployment is high.	42.04%	26.18%	40.52%	42.75%	17.43%	31.07%
Foreigners should be prohibited from political activity in Germany.	35.61%	33.30%	36.48%	37.11%	27.90%	29.58%
Full Legal Equivalency to Native Germans For:						
Italians	16.14%	17.83%	44.03%	48.33%	39.83%	33.85%
Ethnic Germans	14.43%	16.21%	41.40%	47.19%	44.17%	36.59%
Asylum Seekers	52.40%	42.66%	36.85%	42.93%	10.75%	14.40%
Turks	31.10%	29.56%	46.01%	46.24%	22.89%	24.21%
Would You Appreciate Living in the Neighborhood of ... ?	**Not Appreciate**		**Medium**		**Appreciate**	
Italians	2.38%	7.15%	61.44%	74.75%	36.18%	18.10%
Ethnic Germans	7.12%	9.33%	68.44%	74.37%	24.44%	16.30%
Asylum Seekers	31.69%	31.16%	58.93%	63.68%	9.37%	5.16%
Turks	17.15%	27.26%	68.00%	65.67%	14.86%	7.07%
Would You Appreciate it if a ... Marries a Member of Your Family ?	**Not Appreciate**		**Medium**		**Appreciate**	
Italian	7.89%	17.98%	67.37%	71.21%	24.74%	10.81%
Ethnic German	12.72%	18.26%	69.79%	73.02%	17.49%	8.72%
Asylum Seeker	45.59%	42.91%	47.70%	53.45%	6.71%	3.64%
Turks	37.56%	42.09%	53.31%	54.09%	9.14%	3.82%

Notes: All figures are the respective shares of total valid answers of German citizens, i.e. without respondents who did not answer. The share of valid answers varies between 95.1% and 99.9%

Table 2.8: Attitudes Towards Immigrants - ALLBUS 1996

Immigration of Different Groups	Unlimited Access		Limited Access		No Access	
	West	East	West	East	West	East
Ethnic German Migrants	14.69%	13.33%	73.73%	68.93%	11.58%	17.74%
Asylum Seekers	12.68%	11.55%	65.74%	67.47%	21.58%	20.98%
Workers From EU Countries	32.98%	11.11%	54.95%	50.98%	12.07%	37.91%
Workers From Non-EU Countries	8.34%	4.27%	59.26%	46.25%	32.40%	49.48%

Notes: All figures are the respective shares of total valid answers. The share of valid answers varies between 95% and 99.9%.

Table 2.9: Distribution of Agreement - ALLBUS 1996

Foreigners are a Burden for the Social Security System	All Respondents	Native Respondents Only
No agreement at all	13.43%	12.14%
Disagreement	11.75%	11.41%
Mild disagreement	12.35%	12.17%
Indifference	20.78%	20.65%
Mild agreement	14.23%	14.90%
Agreement	11.55%	12.10%
Full agreement	15.92%	16.64%

Notes: All figures are unweighted shares of total valid answers. The share of valid answers is 99.5%.

Table 2.10: Summary Statistics - ALLBUS 1996

Variable	Mean	Standarderror
Dependent Variable (coded: 0;1;2)	1.023	0.725
Individual Characteristics:		
Age	46.070	16.765
German Citizen	0.940	0.238
Residing in East Germany	0.317	0.465
Female	0.506	0.500
Living in a Single Household	0.160	0.367
High Degree of Schooling	0.217	0.413
Middle Degree of Schooling	0.296	0.456
Currently Unemployed	0.029	0.169
Employed in Public Sector	0.123	0.328
Currently in School	0.007	0.083
Self-Classified Variables:		
Right Wing	0.093	0.291
Left Wing	0.171	0.377
Fears Loss of Employment	0.113	0.317
Partner-Specific Variables:		
Partner is German Citizen	0.597	0.491
Partner has been Non-Citizen at Birth	0.019	0.136
Proximity Measure:		
Low Share of Foreigners	0.617	0.486
High Share of Foreigners	0.043	0.203

Notes: Number of Observations is 3,499. All figures are unweighted sample means and standarderrors, respectively.

Table 2.11: Estimation Results of Ordered Probit Model - ALLBUS 1996

Statement: "Foreigners are a burden for the social security system."	**Coefficient**	**t-Value**	**Marginal Effects Pr(Y=0) No agreement**	**Pr(Y=2) agreement**
Individual Characteristics:				
Age x 100	-0.078	-2.14	0.020	-0.030
Age Squared x 100	0.007	4.49	-	-
German Citizen	0.645	7.29	-0.198	0.208
Residing in East Germany	0.303	5.91	-0.093	0.098
Female	0.160	4.11	-0.049	0.052
Living in a Single Household	0.034	0.50	-0.010	0.011
High Schooling Degree	-0.439	-8.03	0.135	-0.142
Medium Schooling Degree	-0.187	-3.94	0.057	-0.060
Currently Unemployed	-0.024	-0.22	0.007	-0.008
Employed in Public Sector	-0.200	-3.26	0.061	-0.065
Currently in School	-0.323	-0.90	0.100	-0.104
Self-Classified Variables:				
Right Wing	0.153	2.36	-0.047	0.049
Left Wing	-0.304	-5.99	0.093	-0.098
Fears Loss of Employment	0.097	1.55	-0.030	0.031
Partner-Specific Variables:				
Partner is German Citizen	0.013	0.25	-0.004	0.004
Partner has been				
Non-Citizen at Birth	-0.320	-2.10	0.100	-0.103
Proximity Measure:				
Low Share of Foreigners	0.159	3.25	-0.049	0.051
High Share of Foreigners	-0.058	-0.54	0.018	0.019

Notes: Number of observations is 3,499. The estimation equation included a constant. Marginal effects for the middle category Pr(Y=1) are not reported. For definition of the variables see Table A.2.2.

Table A.2.1: Variable Description - Mikrozensus 1995

Variablename	Description
Dependent Variable	1 if individual reports social assistance payments as main source of income for living; 0 otherwise
Household Characteristics:	
Married	1 if individual is married; 0 otherwise
Single with Child(ren)	1 if household head is single with one or more children; 0 otherwise
Number of Children	Absolute number of children in household
Residing in East Germany	1 if household resides in East Germany; 0 otherwise
Individual Characteristics:	
Age	Age of the individual in years (15 - 65 years)
Female	1 if the individual is female; 0 otherwise
High Education	1 if the individual has a high schooling degree (Hochschul- or Fachhochschulreife); 0 otherwise
Low Education	1 if the individual has no or a low (Hauptschule) schooling degree; 0 otherwise
(Technical) University Degree	1 if the individual has a (technical) university degree; 0 otherwise
No Formal Training	1 if the individual has no formal training; 0 otherwise
Part-Time Work	Equals 1 if the individual works part-time; 0 otherwise
Temporary Work Contract	1 if the individual has a temporary work contract; 0 otherwise
Employed in Public Sector	1 if the individual is employed in the public sector; 0 otherwise
Minor Employment	Equals 1 if the individual is employed with not more than 630 German Marks monthly earnings; 0 otherwise
Not Employed	Equals 1 if the individual is not employed; 0 otherwise
Not Employed For More Than Six Months	1 if the individual has been not employed for more than six months; 0 otherwise
Information Level Indicators:	
Inhabitant of a Small City	1 if the individual lives in a city with less than 20,000 inhabitants; 0 otherwise
Inhabitant of a Big City	1 if the individual lives in a city with more than 100,000; 0 otherwise

Table A.2.1 continued: Variable Description - Mikrozensus 1995

Variablename	Description
First-Generation and Second-Generation Characteristics:	*All migrant characteristics are divided into first- and second-generation groups if not mentioned otherwise.*
Turkish Nationality	1 if the individual owns the citizenship of Turkey; 0 otherwise
Yugoslavian Nationality	1 if the individual owns the citizenship of former Yugoslavia; 0 otherwise
Other (European) Guest Worker Country Nationality	1 if the individual owns the citizenship of Greece, Italy, Portugal or Spain; 0 otherwise
Other EU Country Nationality	1 if the individual owns the citizenship of any other EU country; 0 otherwise
CIS or CEEC Nationality	1 if the individual owns the citizenship of a GUS or CEEC country; 0 otherwise
Other Nationality	1 if the individual owns the citizenship of any other country; 0 otherwise
Age	Interaction term between foreign nationality and age
High Education	Interaction term between foreign nationality and high education
Low Education	Interaction term between foreign nationality and low education
Not Employed	Interaction term between foreign nationality and not employed
Not Employed For More Than Six Months	Interaction term between foreign nationality and not employed for more than six months
High Education in Origin Country	*1 if a first-generation migrant was older than 25 years at immigration and has a high schooling degree*
Low Education in Origin Country	*1 if a first-generation migrant was older than 14 years at immigration and has a low schooling degree*
Duration of Stay in Germany	*Duration of Stay in Germany in years for first-generation migrants*

Notes: Data source is the 1995 wave of the Mikrozensus. See also text for a description of the variables.

Table A.2.2: Variable Description - ALLBUS 1996

Variablename	Description
Dependent Variable	Degree of agreement on the claim "Foreigners are a burden for the social security system". Coded 0: no agreement, 1: medium, 2: agreement
Individual Characteristics:	
Age	Age of the respondent in years
German Citizen	1 if the respondent has a German citizenship; 0 otherwise
Residing in East Germany	1 if the respondents lives in Eastern Germany; 0 otherwise
Female	1 if the respondent is female; 0 otherwise
Living in a Single Household	1 if the respondents lives in a single household; 0 otherwise
High Schooling Degree	1 if the respondents holds a high schooling degree (Hochschul- or Fachhochschulreife); 0 otherwise
Medium Schooling Degree	1 if the respondents holds a medium schooling degree (Mittlere Reife); 0 otherwise
Currently Unemployed	1 if the respondents was unemployed at the time of the interview; 0 otherwise
Employed in Public Sector	1 if the respondents was employed in the public sector at the time of the interview; 0 otherwise
Currently in School	1 if the respondents was in school at the time of the interview; 0 otherwise
Self-Classified Variables:	
Right Wing	1 if the respondent classified himself or herself as having a right wing attitude; 0 otherwise
Left Wing	1 if the respondent classified himself or herself as having a left wing attitude; 0 otherwise
Fears Loss of Employment	1 if the respondent reported to be afraid of loosing his job; 0 otherwise
Partner-Specific Variables:	
Partner is German Citizen	1 if the partner of the respondent holds the German citizenship; 0 otherwise
Partner has been Non-Citizen at Birth	1 if the partner of the respondent has had another citizenship at birth; 0 otherwise
Proximity Measure:	
Low Share of Foreigners	1 if the actual share of foreigners residing in the region (Landkreis) of the respondent was lower than 8%; 0 otherwise.
High Share of Foreigners	1 if the actual share of foreigners residing in the region (Landkreis) of the respondent was equal or higher than 16%; 0 otherwise.

Notes: Originally, there were seven possible categories for the self-classified variables "Right Wing" and "Left Wing". These two variables combine the two extreme categories at each end of the scale.

Chapter 3

The Perception of Foreigners and Jews in Germany - A Structural Analysis of a Large Opinion Survey

Abstract. The ultimate aim of opinion surveys is the provision of information on the distribution of preferences and perceptions at the individual level. Yet, eliciting this information from the data is typically difficult. This paper uses a structural model to explain the answers on a set of questions regarding the perception of foreigners and Jews by native Germans. In this model it is assumed that in addition to observable individual characteristics there exists an underlying unobserved attitude towards minorities which drives the distribution of answers by native respondents. This latent variable in turn is assumed to be influenced by a set of observable socio-economic characteristics of the individuals. In order to estimate this model it is necessary to impose strong identification restrictions. Estimation results show that education is the key correlate of the perception of foreigners and Jews in Germany.

3.1 Introduction

To any student of German history it does not come as a surprise that the possible existence of xenophobic or antisemitic tendencies in the German society is a continuing topic of the public debate and a frequent subject of empirical analysis. Indeed, numerous articles in well-respected periodicals are regularly concerned with this issue. Typically, the statistical investigation documents considerable heterogeneity in attitudinal responses throughout the population. Most of these articles then relate these tendencies monocausally to a specific observable factor, like education or age, and provide detailed structural explanations for this suspected relationship despite the obvious conceptual limitations of such an approach.

A case in point is the debate regularly set off by an opinion survey conducted among young people in Germany on behalf of the company *Shell* (the so-called *Shell-Jugendstudie*, cf. Fischer et al. (2000)). In this study, the opinions expressed by young respondents are presented on a semi-aggregated level, differentiated one by one by sex, age groups, personal future expectations and other characteristics. Unfortunately, this presentation does not provide an attempt at explaining the observed patterns more deeply, although structural explanations are suggested: most importantly, the authors not only claim that serious xenophobic attitudes among young people in Germany persist, but even more speculatively that these attitudes are mainly the result of the dull economic prospects of the respondents. They propose, therefore, that an adequate counter-strategy must be a program aiming at the enhancement of the education and formal training possibilities of German youth.

Drawing such strong conclusions on the basis of such cursory evidence, however, must be problematic. The conceptual problems facing the empirical analysis of xenophobic tendencies are indeed substantial. The first problem arises from the definitional question of what has to be understood as a xenophobic or antisemitic attitude, and to what degree such attitudes are measurable. Since both concepts reflect fundamental issues of individual opinion neither is *directly* measurable. On a superficial level, one may define xenophobia and antisemitism as especially negative individual attitudes towards foreigners and Jews, respectively. Yet, it is not a question of relatively (compared to the population average)

xenophobia which is typically at issue, but rather a statement about an absolute level of racism or xenophobia which is sought.

Since racist ideas are typically emotional, subjective, and frequently distorted interpretation of observable facts, a possible conceptualization of xenophobia and antisemitism could depart from a notion of mistaken perceptions. Such attitudes have certainly almost always nothing to do with the "true" characteristics of the relevant groups. They are rather the result of subjective perceptions of an individual which is projecting real or imaginary characteristics of some individuals onto a complete group of individuals. Therefore, a broad definition of xenophobia and antisemitism would qualify every individual which is willing to generalize negative individual-specific characteristics to a group of individuals to which he/she does not belong himself/herself as xenophobic or antisemitic.

In addition to providing such a general definition, we can characterize these concepts further. Specifically, both concepts are by their very nature *relative*, i.e. there is no scale to measure them *absolutely* (all attempts to do so in the literature are completely arbitrary). For instance, an individual may have a significantly more negative attitude towards a minority group than the *average* individual in a given society and may therefore be termed (relatively) xenophobic or antisemitic. However, the same individual living in an, on average, foreigner-friendly society will be easier regarded as xenophobic than the same individual being citizen of an, on average, less foreigner-friendly society.

Finally, *a priori* it is not clear if xenophobia and antisemitism are different concepts or if they are intimately related. Adorno et al. (1950), for instance, argue that antisemitism is not an isolated phenomenon but rather part of a much broader ideological system. Nevertheless, this paper examines opinions towards foreigners and Jews separately in order to investigate if the determining factors of attitudes towards both minority groups are driven by different explanatory factors. This analysis will provide us with some indications that the determining factors of both are at least in part different.

For the purposes of scientific analysis of underlying preferences and perceptions, any opinion survey without detailed background information on the respondents themselves would be quite useless. Fortunately, in Germany there exists a dataset regularly collected by the *GESIS* (*Gesellschaft sozialwissenschaftlicher Struktureinrichtungen*), the so-called

ALLBUS (*Allgemeine Bevölkerungsumfrage der Sozialwissenschaften*), which is comparable to the *General Social Survey* in the United States. This opinion and attitude survey is publicly available and conducted biennially with varying focuses on different topics (for more details see section 4). The 1996 wave contains a large set of questions[1] on the perception of immigrants, foreigners and other minorities as well as standard socio-economic characteristics. Several empirical studies investigate this 1996 wave information, albeit not in the direction taken by this contribution (for more details see section 2). In our own empirical application we utilize this dataset as well. Specifically, we aim at the identification and explanation of unobservable underlying factors driving those opinions towards minorities which are expressed by native respondents in the survey.

Conceptually, this paper contributes to the received literature by using a structural model to explain the answers on a set of questions regarding the perception of minorities by native Germans. In this model it is assumed that in addition to observable individual characteristics, there exists an underlying unobserved attitude towards minorities which drives the distribution of answers by native respondents. This latent variable in turn is assumed to be shaped by a set of observable socio-economic characteristics of the individuals. It is the direction and magnitude of these effects on the unobservable factor which are the primary objects of our interest. In order to estimate this model it is necessary to impose appropriate identification restrictions. The restrictions employed in our empirical application are discussed in detail below. The validity of these assumptions is decisive for the interpretation of the results. However, since these restrictions are non-testable they have to be assumed to hold *a priori*. Naturally, without such identification assumptions a well-structured analysis of the wealth of information provided by opinion surveys like the *ALLBUS* is impossible.

The paper is organized as follows. The next section provides a brief survey of the received literature on the perception of foreigners. In section 3 the utilized structural model, its reduced-form counterpart as well as the employed identification strategy are explained. Section 4 contains our empirical application for Germany and, finally, section

[1] Precisely, the *ALLBUS* records items in the form of direct standardized *questions* to which respondents are supposed to give an answer and in the form of *claims* for which respondents should state their degree of agreement/disagreement. For the sake of exposition we will unequivocally call them items or questions in what follows.

5 offers some conclusions.

3.2 Attitudes - Survey of Literature

The literature in sociology and (social-) psychology as well as historical research (e.g. Benz (1992 ff)) is the primary source of theoretical work on the determinants of xenophobic or antisemitic attitudes. Prominent (but mainly) theoretical approaches are the authoritarian (e.g. Adorno et al. (1950)), the ethnocentristic (e.g. Sumner (1906)) and the rational choice (e.g. Fishbein and Aijzen (1975)) approach. Empirical evidence for these approaches is rather slim, though. Most of the empirical studies present purely descriptive results, making it difficult to disentangle the various structural interpretations.

One early and rather prominent study on attitudes towards minorities is Adorno et al. (1950) conducted in the United States in the 1940's. This study aims at investigating the potential for anti-democratic or fascist influences in the US-american society during and directly after World War II and is motivated by the idea that individual attitudes are manifestations of the individual character structure. This character structure is assumed to be formed by influences emanating from the individual's environment. This environment has the most thorough impact the earlier in life the influence works. This means that the education of a child and his or her parental, economic as well as social, background is the most influential tool in building the character structure which in turn serves as the foundation of individual attitudes. Adorno et al. (1950) conducted more than 2,000 interviews and some clinical trials to provide support for their main hypotheses. One of the most interesting features of this study is the so-called F(ascism)-scale. This scale aims at measuring the individual fascist potential *indirectly*, i.e. by a set of questions addressing a variety of individual opinions which are *not* directly related to political attitudes towards democracy or fascism. The study tried to establish the individual fascist potential by investigating the individual degree of conventionalism, authoritarian aggression, superstition, cynicism etc. as indications for fascist tendencies.

For the case of United Kingdom Dustmann and Preston (2000a), using several

waves of the *British Social Attitude Survey, (BSAS)* analyze the effect of local concentration of ethnic minority groups on the attitudes of native respondents towards these minorities controlling for individual characteristics of the respondents as well as for regional labor market conditions. Their results suggest that a higher concentration of ethnic minorities tends to increase hostitility of native respondents towards these groups. Dustmann and Preston (2000b), again using the *BSAS* data, analyze the relationship between racist attitudes, as well as labor market and welfare considerations with the opinions of native respondents towards future immigration (restrictions) for different immigrant groups. Thereby, they base their formal analysis on a multi-factor model. One key feature of their paper is the provision of a formal treatment of identification issues in such a framework.

Most importantly, the authors aim at explaining the determining factors of individuals' opinions towards future immigration (restrictions) for different potential immigrant groups. For this purpose they utilize a set of questions on the perception of foreigners by native respondents in the *BSAS*, regarding different aspects. They devide these questions into three categories: (i) questions related to race, (ii) questions related to the labor market impact of foreigners, and (iii) questions related to the impact of foreigners on the economy's welfare. In order to disentangle the influence of these three categories on the opinion of respondents, Dustmann and Preston (2000b) invoke the identification assumptions that each of the three latent factors manifests itself in a set of four corresponding questions, respectively. The three factors, thus identified, then explain jointly the answers on a large set of attitudinal questions on future immigration. In this second step, the three factors compete for the leading explanatory role regarding these opinions.

Their results suggest that opposition to future immigration is primarily driven by racist attitudes whereas labor market or welfare considerations are less important determining factors. This relationship is particularly strong for future immigration of ethnically different immigrant groups, such as people from the West-Indies, whereas it is negligible for ethnically similar groups, such as from Australia or New Zealand. In sum, while the chosen identification strategy is powerful enough to extract sensible results on the effect of the latent factors, this strategy is necessarily restrictive. The present contribution takes a somewhat different perspective, since we concentrate on a single latent factor only, but are

mainly interested in the question which forces underlie its formation rather than merely gauging its impact.

A contribution for the case of Germany is GANG AND RIVERA-BATIZ (1994). Using the *Eurobarometer* survey of 1988, the authors, among others, aim at examining the attitudes towards foreigners in Germany in relation to different labor market situations of native respondents. They conclude that students have the most positive attitude towards foreigners and retirees the most negative. Concerning employment status, negative attitudes by unemployed Germans are more prevalent if the analyzed questions explicitly address specific foreigner groups. BAUER, LOFSTROM AND ZIMMERMANN (2000) using the 1995 wave of the *International Social Survey Program* (*ISSP*) provide a cross country comparison with a special focus on the influence of immigration policy on attitudes towards minorities. Their main conclusion is that in countries with a more skill-based immigration policy (e.g. Canada) respondents tend to have a more positive attitude towards immigrants and other minorities than countries which pursue another immigration policy.

Finally, FERTIG AND SCHMIDT (2001) using the 1996 wave of the *ALLBUS* provide an analysis of the perception of the welfare dependence of immigrants by native Germans in an ordered probit framework and confront this perception with the actual welfare dependence of immigrants using the 1995 wave of the *Mikrozensus*. They conclude that the level of education of the respondents as well as their place of residence are the main driving forces behind the distribution of agreement with the (not really compatible with observable facts) claim that foreigners are a burden for the social security system in Germany. Furthermore, respondents living in regions with a below-average share of foreigners have a considerably higher probability to agree with this claim, whereas living in a region with a high share of foreigners has no statistically significant impact.

For the 1996 wave of the *ALLBUS* several empirical studies are collected in ALBA ET AL. (2000). Examples are BERGMANN AND ERB (2000), LÜDEMANN (2000) and SCHMIDT AND HEYDER (2000). These papers analyze the attitudes of German respondents towards minorities in the *ALLBUS* 1996 embedded in the theoretical concepts of authoritarism, ethnocentrism and rational choice. They all share the empirical strat-

egy of explaining some selected items recorded in the *ALLBUS* by using other opinions towards foreigners or Jews as explanatory factors, without taking into account the potential endogeneity or simultaneity arising from such an approach. Moreover, some of these studies also construct indices of antisemitism or xenophobia without taking into account the ordinal nature of the opinion scale. Similarly, some of these studies try to classify respondents as xenophobic or antisemitic by rather arbitrary classification rules, e.g. two or more negative answers to a given set of questions regarding Jews qualifies an individual as having an antisemitic attitude. In our own approach, described in detail in the next section, we explicitly aim at avoiding such conceptually problematic *ad hoc* decisions.

3.3 The Framework of Analysis

In our analysis on the attitudes towards minorities in Germany we aim at utilizing the wealth of information on attitudes expressed in the *ALLBUS* 1996 wave to generate a comprehensive picture of the perception of immigrants and foreigners in Germany. For this purpose, we develop a structural simultaneous equation model to explain the distribution of answers to each relevant item. The 1996 wave of the *ALLBUS* contains several items on the perception of different minority groups in Germany. From this menu we choose 35 questions concerning immigrants/foreigners and seven questions concerning Jews (see Appendix for a description of the relevant questions) covering a variety of aspects of daily life as well as fundamental issues of opinion. Only those items were left out of the analysis where a clear distinction between a positive and a negative attitude was not possible. Although all questions offered the possibility to withhold the answer, the response rate to all of them was very high, yielding a sample of 2,834 native respondents (1,844 in West and 990 in East Germany). From the 3,290 native individuals in the dataset, we deleted all observations with an incomplete record of all 42 utilized questions.

Central to our approach is the maintained assumption of the presence of an underlying, unobservable or latent, overall opinion towards minorities, which drives the distribution of answers by respondents and which we would like to extract from the observable data. Respondents' answers are, therefore, regarded as the manifestation of this latent opinion and this manifestation may vary from question to question since the degree with which

a respondent's opinion is sifted out by a specific question may vary from one question to another. Moreover, we allow for a separate impact of exogenous socio-economic factors explaining the distribution of answers to each question beyond the influence of the overall factor. These socio-economic characteristics also comprise the determining factors of the underlying overall opinion. Their influence on the latent factor is the central object of our interest.

As already pointed out in the introduction, it is tempting to regard this underlying latent variable as xenophobia or antisemitism. However, this may be misleading due to two reasons. Firstly, it is an *assumption* that there exists only *one* latent variable driving the opinions of respondents. From a psychological point of view one may e.g. argue that there exist two (or even more) factors having an influence on respondents' perception of foreigners. Since the labelling of latent factor can proceed without any restriction whatsoever, one could call these two factors "xenophobia" and "misanthropy", for instance. Therefore, restricting the analysis to only one factor does not render the results invalid as long as the underlying factors all operate in the same direction, but it renders the name of the latent variable inappropriate. Secondly, comparable to the classical approaches like principal component, latent factor or latent class analysis, giving names to unobservable factors is a rather arbitrary endeavor. Our analysis as well as competing alternatives only allow to assess whether an assumed latent variable does have an influence on observed opinions. It does not, however, reveal the nature or the name of this influence.

Formally, in our application we model the opinions expressed by native respondents in the *ALLBUS* in a simultaneous equations framework containing one unobservable latent factor and several observables as explanatory variables. The next section, therefore, formalizes our structural model and derives its reduced-form counterpart. Then, we derive our identification strategy to disentangle the different determining factors of the latent attitude.

3.3.1 The Structural Model

Our dataset contains $i = 1, ..., N$ individuals (henceforth individual subscripts are suppressed for the purpose of exposition) for which we observe a set of J answers x_j $(j = 1, ..., J)$ to questions on minorities in Germany. For all of them, there are three ordered answer categories, that is for each i we have $x_j \in \{0, 1, 2\}$. Moreover, for each individual we observe K socio-economic characteristics Z_k $(k = 1, ..., K)$. Unobservable are for each individual i the latent variables x_j^* and Y^*. The variable x_j^* may take values on the entire real line and denotes the "true", but unobservable opinion on question j with large values representing strong agreement for each individual. The variable Y^* denotes the unobservable overall opinion towards minorities which is assumed to be driving the distribution of answers to each question for each individual.

These two latent variables differ in the fact that we have an observable counterpart x_j for x_j^* but no comparable variable for Y^*. This variable might only be revealed through the answers (that is through the x_j as well) in connection with a specific structural model. Finding this model is the key element of the discussion offered here. Therefore, we have the structural form

$$\begin{aligned} x_1^* &= \delta_0^1 + \delta_1^1 Y^* + \beta_1^1 z_1 + \beta_2^1 z_2 + ... + \beta_K^1 z_K + \epsilon^1 \\ x_2^* &= \delta_0^2 + \delta_1^2 Y^* + \beta_1^2 z_1 + \beta_2^2 z_2 + ... + \beta_K^2 z_K + \epsilon^2 \\ &\vdots \\ x_J^* &= \delta_0^J + \delta_1^J Y^* + \beta_1^J z_1 + \beta_2^J z_2 + ... + \beta_K^J z_K + \epsilon^J, \end{aligned} \tag{3.1}$$

where the mean-zero random disturbances $\epsilon^j \sim N(0, \sigma_j^2)$ $(j = 1, ..., J)$. The correlation structure between questions is block-diagonal across individuals, but left unspecified for any individual. For the latent variable Y^*, we assume that it can be explained partially by a set of observable socio-economic characteristics Z_k $(k = 1, ..., K)$. For each individual there is, in addition, a mean-zero random disturbance η in this equation, such that ϵ and η are orthogonal, i.e. $Cov(\epsilon^j, \eta) = 0$ $(\forall\ j = 1, ..., J)$. Therefore,

$$Y^* = \gamma_1 z_1 + \gamma_2 z_2 + ... + \gamma_K z_K + \eta. \tag{3.2}$$

Both equations are written in deviations form, i.e. $z_k := Z_k - \overline{Z}_k \ \forall \ k = 1, ..., K$. Thus, if we would observe all latent variables directly, then Y^* would be defined in a way that emphasized deviations from the typical individual in the population. Respondents with average characteristics $Z_k = \overline{Z}_k$ will, on average, display a latent factor Y^* equal to zero, with deviations driven exclusively by the random factor η. If an observable characteristic Z_k tends to increase the latent factor Y^*, that is $\gamma_k > 0$, then individuals displaying a high Z_k will also display a high Y^*. Perfect collinearity between Y^* and the Z_k $(k = 1, ..., K)$ is ruled out by the presence of the disturbance term η, though. In expression (1), the average "true" opinion x_j^* for a typical individual $(Z_K = \overline{Z}_k)$ is reflected by the respective constant term δ_0^j, as $E(\eta) = E(\epsilon^j) = 0$. For all individuals the "true" opinion x_j^* is influenced by their Z_k, but also by Y^*. The impact of Y^* is captured by a coefficient δ_1^j which may be positive or negative.

Clearly, since there is no observable counterpart for the latent variable Y^*, direct estimation of the structural model is impossible. However, it is possible to derive an estimable reduced-form model and to identify the parameters of the structural model by invoking suitable assumptions. These identification assumptions are discussed in the next section.

3.3.2 The Reduced Form

By substituting equation (2) into equation (1) one obtains the reduced-form equation system

$$\begin{aligned} x_1^* &= \theta_0^1 + \theta_1^1 z_1 + \theta_2^1 z_2 + ... + \theta_K^1 z_K + \nu_1 \\ x_2^* &= \theta_0^2 + \theta_1^2 z_1 + \theta_2^2 z_2 + ... + \theta_K^2 z_K + \nu_2 \\ &\vdots \\ x_J^* &= \theta_0^J + \theta_1^J z_1 + \theta_2^J z_2 + ... + \theta_K^J z_K + \nu_J, \end{aligned} \tag{3.3}$$

where

$$\theta_0 = \begin{pmatrix} \delta_0^1 \\ \delta_0^2 \\ \vdots \\ \delta_0^J \end{pmatrix}; \ \theta_1 = \begin{pmatrix} \delta_1^1\gamma_1 + \beta_1^1 \\ \delta_1^2\gamma_1 + \beta_1^2 \\ \vdots \\ \delta_1^J\gamma_1 + \beta_1^J \end{pmatrix}; \ \theta_2 = \begin{pmatrix} \delta_1^1\gamma_2 + \beta_2^1 \\ \delta_1^2\gamma_2 + \beta_2^2 \\ \vdots \\ \delta_1^J\gamma_2 + \beta_2^J \end{pmatrix}; ...;$$

$$\theta_K = \begin{pmatrix} \delta_1^1\gamma_K + \beta_K^1 \\ \delta_1^2\gamma_K + \beta_K^2 \\ \vdots \\ \delta_1^J\gamma_K + \beta_K^J \end{pmatrix}; \ \nu = \begin{pmatrix} \delta_1^1\eta + \epsilon^1 \\ \delta_1^2\eta + \epsilon^2 \\ \vdots \\ \delta_1^J\eta + \epsilon^J \end{pmatrix}.$$

This reduced-form equation system can be estimated by applying independent ordered probits to all J equations separately. This yields consistent, though inefficient estimates $\hat{\theta}_k$ for θ_k $(k = 1, .., K)$, since the information on the dependence of these equations contained in the error term ν is ignored by such a procedure.

Ordered probit analysis is a single-equation technique which assumes that there is an unobservable latent variable x^* which linearly depends on a set of exogenous variables denoted by z and an unobservable error term ν. One does not observe x^* directly but x, where x is defined as

$$\begin{aligned} x &= 0 \quad if \quad & & x^* \leq 0, \\ x &= 1 \quad if \quad 0 \quad \leq \quad & & x^* \leq \mu_1, \\ x &= 2 \quad if \quad \mu_1 \quad \leq \quad & & x^* \leq \mu_2, \\ &\vdots \\ x &= L \quad if \quad \mu_{L-1} \quad \leq \quad & & x^*. \end{aligned} \tag{3.4}$$

The μ's are unknown parameters to be estimated and can be regarded as threshold values. The idea behind this model formulation is that there exists a certain intensity of opinion which is an unobservable latent variable for the analyst, but can be explained by a set of

measurable factors and an unobservable error term. The only difference to the modelling idea behind (1) is that the latent factor Y^* has been purged from the right-hand side.

Moreover, it is assumed that this unobservable intensity of opinion is reflected by the observable categories, i.e. whenever a certain threshold value μ_j is exceeded one observes an individual in category $j+1$. This means that respondents choose the category which represents most closely their true opinion on the question. In the example at hand, we have three categories, i.e. $L = 2$. We have coded all variables such that zero denotes a positive attitude, two denotes a negative attitude and one is the medium category. Finally, we assume that the error term is normally distributed, i.e. $\nu \sim N(0,1)$ and all elements of ν are uncorrelated across respondents. This implies that η and ϵ are normally distributed as well, since ϵ was assumed to be normally distributed.

3.3.3 Identification of Structural Parameters

The parameters of interest are the γ_k $(k = 1, ..., K)$, determining the impact of measurable socio-economic characteristics on the unobserved overall attitude towards minorities. However, these parameters are not identifiable from the estimated reduced form parameters without further restrictions. Unfortunately, the (Cowles-Commission-type) classical literature on simultaneous equation systems does not offer much guidance since exclusion restrictions are very arbitrary in the case at hand.

Naturally, all identification strategies depend on a set different assumptions which have to be assumed to hold *a priori*. Unfortunately, no possibility exists to discriminate empirically between the appropriateness of these different assumptions. They have to be judged upon economic reasoning alone. Thus, we have to concentrate on what we want to achieve. Our ultimate aim is to identify the impact of the measurable socio-economic characteristics on the unobserved component Y^* which itself drives the perception of foreigners and Jews by native Germans. Intuitively, the idea of our identification strategy in this particular case adheres to the following considerations.

In the structural model we assumed that there are two categories of explanatory factors at work to explain the distribution of answers on the questions in the *ALLBUS*. The first

variable, the unobservable component Y^*, exhibits a direct influence via the parameter δ_1^j $(j = 1, ..., J)$. The observable socio-economic variables Z_k $(k = 1, ..., K)$, however, impinge upon the answers directly and indirectly. Their direct influence is captured by the parameters β_k^j whereas the indirect impact works through the parameters γ_k. In order to identify the latter parameters we assume that the direct impact of a specific socio-economic variable over *all* questions is on average zero.

This assumption retains the idea that the direct impact of a specific Z_k on respondents' answers varies from question to question, just as in the original model (1). Yet, to the extent that this influence of Z_k is the same on all questions, this influence is fully captured by the latent factor Y^*. In other words, the variable Z_k can not influence the tendency on all questions in the same fashion in any other way than by shifting Y^*.

Formally, we assume that

$$\frac{1}{J}\sum_{j=1}^{J}\beta_k^j = 0 \quad \forall\ k = 1, .., K \tag{3.5}$$

which yields

$$\overline{\theta}_k = \frac{1}{J}\sum_{j=1}^{J}\theta_k^j = \frac{1}{J}\gamma_k\sum_{j=1}^{J}\delta_1^j \quad \forall\ k = 1, .., K. \tag{3.6}$$

Furthermore, we need a way to disentangle the influence of Z_k on x_j^* via Y^* (that is, γ_k) from the influence of Y^* itself on the x_j (that is, the δ_1^j). Clearly, the same set of θ_k^j's can result from high γ_k's corresponding with low δ_1^j's and vice versa. If the x_j^* were metric variables, and thus the θ_k^j were directly interpretable we would be hesitant to impose any normalization. Here, however, we can proceed directly and assume that the direct impact of the unobserved component measured by δ_1^j over *all* questions averages one. Formally, we assume that

$$\frac{1}{J}\sum_{j=1}^{J}\delta_1^j = 1 \tag{3.7}$$

That is, if the latent factor is important for the answers, that is, for x_j^*, then this will be reflected in γ_k's which are large. In consequence, we finally have

$$\gamma_k = \overline{\theta}_k \quad \forall\ k = 1, .., K. \tag{3.8}$$

Due to the latent nature of x_j^*, and to our normalization in (7), we can interpret the estimated γ_k only in relative terms, that is compare the impact of Z_k on Y^* relative to

that of Z_l on Y^*. That is, since the level impact of Z_k operates exclusively through Y^*, the average reduced-form impact of Z_k captures its influence on Y^* via γ_k. More important Z_k will exert their influence through higher coefficients γ_k, on average.

This setup allows those structural equations with low variances in the disturbances to exert a more substantial influence on the estimate of γ_k. High disturbances in the structural-form equations lead to high variances in the corresponding reduced-form equations, i.e. to high $\sigma^2_{\nu_j}$. The normalization inherent in ordered probit analysis in turn leads to small reduced-form parameter estimates. Therefore, the estimated reduced-form coefficients of equations with low explanatory power receive a low weight in the calculation of the structural parameters γ_k.

Since these structural parameters are linear functions of the estimated reduced form parameters, their standard errors can be constructed straightforwardly from the covariances of the different reduced-form estimators. However, since we perform the estimation of these reduced-form parameters independently, we need a strategy to assess the cross-equation correlations of the parameter estimates. This is done by bootstrapping the variances and covariances of the different reduced-form coefficients over all questions. We then estimated the standard error of γ_k as the positive square root of the estimated variance of γ_k. Specifically, from equations (3.6) and (3.8) we have for each $k = 1, ..., K$

$$\widehat{Var}(\hat{\gamma_k}) = \widehat{Var}\left(\hat{\overline{\theta}_k}\right) \tag{3.9}$$

where

$$\widehat{Var}(\hat{\overline{\theta}_k}) = \widehat{Var}\left(\frac{1}{J}\sum_{j=1}^{J}\hat{\theta}_k^j\right) = \frac{1}{J^2}\widehat{Var}\left(\sum_{j=1}^{J}\hat{\theta}_k^j\right) \tag{3.10}$$

and

$$\widehat{Var}\left(\sum_{j=1}^{J}\hat{\theta}_k^j\right) = \sum_{j=1}^{J}\widehat{Var}(\hat{\theta}_k^j) + 2\cdot\left[\sum_{j=1}^{J}\sum_{l=1}^{J-1}\widehat{Cov}(\hat{\theta_k^j}, \hat{\theta_k^l})\right]. \tag{3.11}$$

Collecting terms yields for the variance of the structural parameter γ_k

$$\widehat{Var}(\hat{\gamma_k}) = \frac{1}{J^2}\left\{\sum_{j=1}^{J}\widehat{Var}(\hat{\theta}_k^j) + 2\cdot\left[\sum_{j=1}^{J}\sum_{l=1}^{J-1}\widehat{Cov}(\hat{\theta_k^j}, \hat{\theta_k^l})\right]\right\}. \tag{3.12}$$

Thus, the estimated variance of the structural parameter γ_k identified by our strategy is a linear function of the estimated variances of all reduced form parameters γ_k^j and the estimated cross-equation covariances.

3.4 Empirical Evidence

In this section we employ our approach to data available in the 1996 wave of the *ALLBUS*. The *ALLBUS* is a publicly available, biennially conducted opinion and attitude survey with varying focuses on different topics. The sample is drawn out of all individuals living in private households who, for the 1996 wave, have been born prior to January, 1st 1978. This wave, conducted between March and June 1996, contains questions on the perception of and attitudes towards immigrants, foreigners and Jews as well as standard socio-economic characteristics of the respondents. The majority of the respondents are native Germans but there is also a representative share of foreigners in the sample. Overall, native respondents perceive foreigners and Jews with a considerable degree of skepticism (for more details on the perception of foreigners see FERTIG AND SCHMIDT (2001)). Unfortunately, most of the items recorded in the *ALLBUS* do not differentiate between different minority groups. Only some of the questions explicitly address attitudes towards specific immigrant groups, like Turks, Italians, ethnic Germans, and asylum seekers. However, there is a set of questions which explicitly addresses the perception of Jews (for a description of these items cf. Appendix **Table A.3.1** and **Table A.3.2**).

Originally, for most of the items utilized in this paper there were seven categories of possible agreement/disagreement with the claims expressed on an ordered scale reaching from (1) "I do not agree at all" to (7) "I agree completely". These seven possibilities were condensed into three categories: (1) and (2) into "no agreement", (6) and (7) into "agreement" and the other three original categories into "medium" (this scale is denoted by CODING A). Only a small number of questions were originally coded on a three answer possibilities scale (see **Table A.3.1**). For these questions we preserved the original scale. Furthermore, we checked the sensitivity of the results regarding the coding of the dependent variable by introducing a second scale denoted by CODING B. In this alternative we combined all agreement categories, i.e. (5), (6) and (7), into "agreement" and all disagreement categories, i.e. (1), (2) and (3), into "no agreement". Therefore, only the original category (4) is now "medium". These answer categories are the dependent variables in our estimation approach.

3.4.1 Background – Germany in 1996

It seems natural to suppose that answers to opinion surveys can not be regarded as independent from the overall situation in which the questions are asked. Political actions and campaigns, opinions expressed in the media or other developments within society probably have an influence on respondents answers. Unfortunately, large opinion surveys like the *ALLBUS* are not conducted with an identical setup several years in a row. However, we think it is illustrative for the interpretation of the results to have at least some knowledge on the historical background before which the questions were asked. Therefore, we will briefly sketch the situation in Germany in 1996 with a focus on the developments regarding minorities.

In 1996 the total population in Germany amounted to around 82 million people, of which approximately 7.5 million were non-citizens and around 70,000 were Jews. The biggest non-citizen groups were Turks with approximately 2 million members, followed by roughly 1.2 million people from former Yugoslavia and around 600,000 Italians (Federal Statistical Office (1997)). On the federal level Germany had been governed by a parliamentary coalition of the Christian Democratic Union (*CDU*), the Christian Social Union (*CSU*), and the Free Democratic Party (*FDP*) since 1982.

In the course of the year, political debates arose around high social welfare cost, the restriction of worker rights (especially sickness payments), excessive tax rates and the adequate fiscal policy to meet the Maastricht criteria for access to the European Monetary Union. The real GDP growth rate declined to 1.4 per cent compared to 1.8 per cent in 1995 and the unemployment rate climbed to around 11 per cent on the federal level. Unemployment figures for the eastern part of Germany were much higher, though. In 1996 the mark of 4 million people registered as unemployed had been exceeded for the first time since 1929.

The right to apply for asylum guaranteed by the German constitution (*Grundgesetz*) had been tightened in 1993 and applications had decreased dramatically since then. In 1996 there were 116,367 applications compared to 127,937 in 1995 and even 438,191 in the peak year 1992. The biggest group of applicants in that year came from former Yugoslavia,

followed by Turkey. The number of ethnic Germans from eastern Europe (*Aussiedler*) decreased as well, to 177,751 people compared to 217,898 in 1995 and around 400,000 in the peak year 1990.

During 1996 a number of changes to foreigner-related laws passed the parliament. The most important reform was concerned with a quicker expulsion of foreigners who committed crimes, whereas the law regulating German citizenship, which originated from the year 1913, remained unchanged. Furthermore, the German government signed a refugee repatriation agreement with Yugoslavia (Serbia and Montenegro) and the repatriation of the Bosnian civil war refugees began. The German interior minister, Manfred Kanther, declared that the repatriation endeavors underscore the fact that Germany is not an immigration country.

The Federal Office for the Protection of the Constitution (*Bundesamt für Verfassungschutz*, BfV) reported 8,730 far-right offences (cf. BFV (1997)), of which more than 2,200 were against foreigners and more than 800 had an antisemitic background. Overall, registered offences increased compared to 1994 and 1995, whereas offences with an antisemitic background decreased compared to these years. The most severe incident was the arson attack in Lübeck on January, 18th against a house in which asylum seekers lived and ten lifes were lost. The perpetrators of this attack are still unknown.

In the public debate a series of violent crimes against German tourists and foreigners in Mecklenburg-Vorpommern during the summer months and the dispute on the role of Swiss banks in the second World War received lots of attention. The publication of the book *Ordinary Germans: Hitler's Willing Executioners* by DANIEL J. GOLDHAGEN in April 1996 set off a heavy debate on the role of the German population in the mass murder of European Jews. In a report to German embassies in the former Soviet Union, the federal office warned of unlimited immigration of Jews to Germany talking about some hundred thousand people planning to apply for immigration to Germany. The minister for economic co-operation and development, Carl-Dieter Spranger (CSU), claimed that 800,000 Jews were willing to emigrate and that this would cause the German pension system to collapse (cf. JPR (1997)).

3.4.2 Distribution of Attitudes and Descriptive Statistics

Means and standard deviations of the above described answer categories are reported in **Table 3.1**. The shares of answers falling into each category are reported in **Table A.3.3** in the appendix. The presentation distinguishes between West and East Germany, to reflect apparent heterogeneity, but also since East Germany is oversampled in the 1996 wave of the *ALLBUS*.

A closer look at the descriptive statistics as well as the distribution of answers reveals that there is considerable variation in respondents' attitudes across the different questions. Questions *Q1* to *Q35* concern attitudes towards immigrants and foreigners, whereas questions *Q36* to *Q42* explicitly aim at the perception of Jews. If one does not presume that this variation is simply noise, but that there is at least some information contained in it, then it is inevitable to analyze the complete set of questions and not only some of them, e.g. the "classical prejudice" questions, like it is done in many other studies using this dataset. The means of the answers are close to the medium category but there is a statistically significant difference from it in almost all cases.

CODING A and CODING B denote the two constructed answer categories described in the preceding section. The questions *Q1* to *Q4* are the items for which the original answer categories were on a three-possibilities scale. Therefore, the mean and standard deviation of these questions remain unaffected by the change in coding. For the remaining questions *Q5* to *Q42* the alternative coding system *B* increases the standard deviations of the answers. However, the mean answers change in an upward as well as a downward direction. For 18 questions the means go up, for 19 they go down and for one question it stays constant.

Table 3.1: Descriptive Statistics of Attitudes towards Foreigners and Jews

Question	Coding A		Coding B	
	Mean	Std. Dev.	Mean	Std. Dev.
Q1	1.999	0.522	1.999	0.522
Q2	2.087	0.573	2.087	0.573
Q3	1.964	0.678	1.964	0.678
Q4	2.309	0.591	2.309	0.591
Q5	2.306	0.691	2.366	0.834
Q6	1.854	0.755	1.810	0.876
Q7	1.933	0.793	1.899	0.902
Q8	1.592	0.758	1.572	0.825
Q9	2.052	0.721	2.074	0.891
Q10	2.053	0.741	2.095	0.893
Q11	1.988	0.756	1.978	0.899
Q12	2.019	0.764	2.050	0.886
Q13	1.891	0.704	1.799	0.874
Q14	2.061	0.713	2.047	0.884
Q15	1.997	0.724	1.959	0.872
Q16	2.178	0.805	2.224	0.910
Q17	2.316	0.725	2.382	0.837
Q18	1.312	0.563	1.270	0.610
Q19	2.756	0.528	2.800	0.555
Q20	2.599	0.622	2.688	0.649
Q21	2.223	0.829	2.206	0.917
Q22	1.864	0.766	1.857	0.891
Q23	2.125	0.818	2.125	0.920
Q24	1.731	0.527	1.608	0.636
Q25	1.862	0.533	1.799	0.716
Q26	2.239	0.585	2.339	0.718
Q27	2.084	0.572	2.123	0.765
Q28	1.905	0.555	1.860	0.738
Q29	2.001	0.542	2.005	0.742
Q30	2.392	0.593	2.502	0.669
Q31	2.313	0.603	2.424	0.706
Q32	1.781	0.710	1.741	0.863
Q33	1.733	0.705	1.699	0.854
Q34	2.364	0.688	2.442	0.799
Q35	2.059	0.730	2.081	0.891
Q36	1.791	0.544	1.721	0.648
Q37	2.011	0.572	2.023	0.712
Q38	1.618	0.706	1.587	0.807
Q39	1.681	0.701	1.670	0.822
Q40	1.387	0.637	1.324	0.674
Q41	2.060	0.745	2.104	0.878
Q42	1.488	0.650	1.483	0.754

For a description of the questions see **Table A3.1** in the appendix.
Total number of Observations: 2834; 1844 in West Germany
and 990 in East Germany.

Table 3.2 reports descriptive statistics for the utilized explanatory variables for East and West German respondents. All variables are categorical[2], except the variable *Age*. The explanatory variable *Fears Loss of Employment* is a dummy variable taking the value of one if the individual reported to be afraid of losing his or her job and zero otherwise. **Table 3.2** reveals that slightly more than 11% of respondents in 1996 were indeed afraid of a job loss. However, this fear was considerably higher in the eastern part of Germany (nearly 18%) than in the western part (around 8%). This variable is the only explanatory variable in our analysis which reflects an opinion or personal expectation, all other variables are measured socio-economic characteristics. Its inclusion aims at capturing the unique situation of more than 4 million people registered as unemployed in 1996.

Table 3.2: Descriptive Statistics of Socio-Economic Variables

Explanatory	East		West	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Female	0.511	0.500	0.488	0.500
High Education	0.177	0.382	0.254	0.436
Medium Education	0.400	0.490	0.251	0.434
Academic	0.129	0.336	0.131	0.337
No Formal Training	0.079	0.270	0.155	0.362
Fears Loss of Employment	0.176	0.381	0.079	0.270
Not Employed	0.056	0.229	0.014	0.118
Married	0.667	0.472	0.623	0.485
Low Share of Foreigners	0.937	0.242	0.082	0.274
Age	47.39	16.48	45.490	16.73
Number of observations	990		1,844	

Table 3.2 shows that respondents residing in East Germany on average report an slightly higher education level (the share of respondents reporting a low education level is around 43% in East and around 50% in West Germany) and a considerably lower share of East Germans report to have no formal training. On the other hand, a substantially higher share of East Germans are not employed. Moreover, a very high share of East German respondents live in a region with a below-average foreigner share.

We introduced the variable *Low Share of Foreigners* as a measure of possible contacts to foreigners. There exists a question on contacts with foreigners in the *ALLBUS* and

[2]For a description of the explanatory variables see **Table A.3.4** in the appendix.

more than half of the respondents in the 1996 wave report to have them in either family, neighborhood, among friends or at work. However, the intensity of these contacts remains unclear. Therefore, we decided to use a measure of exposure to foreigners, i.e. the actual share of foreigners living in the region (*Landkreis*) of the respondent as a natural indicator for possible contacts to foreigners. We would presume that this indication reflects the possible information of the respondent concerning foreigners. This variable takes the value of one if the respondent lives in a region with less that 8% foreigner share (the nation-wide foreigner share) and zero otherwise.

We would expect that the contact with immigrants reduces xenophobic misperceptions and would, therefore, expect a more positive attitude towards foreigners for those individuals not living in a region with a low foreigner share. However, this variable may be endogenous if foreigners decide to live in regions where natives have a more positive perception of them. Usually, the residential choice of individuals is determined by a complex set of factors, including family relations, friends, labor market opportunities and local amenities. It is possible that for foreigners the perception by natives may contribute to the local amenities of candidate locations of residence, but it seems to be only one element out of a set of several factors. Therefore, we would expect that the endogeneity of this variable is not severe. Specifically, new immigrants will probably display a low likelihood to move to rural East Germany for reasons of economic opportunity alone.

As already mentioned in section 2, there is a possibly severe endogeneity problem of many of the variables typically used as explanatory factors in empirical studies on attitudes towards minority groups. It seems quite natural to suspect that the perception of foreigners or Jews is not independent from individual opinions towards e.g. politics, religion or the role of the family. However, *a priori* the direction of causality is completely unclear. We would presume that opinions towards several aspects of society are indeed interrelated. The simultaneity of opinion forming, however, does prevent us from using expressed opinions towards e.g. politics as explanatory variables.

In addition to the possible endogeneity or simultaneity of opinions, the possibility of unobserved heterogeneity may bias estimation results as well. For instance, the unobservable ability to reflect about one's own way of living may be correlated with the expressed

attitudes towards minorities but it may also be correlated with the decision on the level of education. The usual approach to handle problems like this one is to instrument the correlated variable. In the case at hand, however, we have good reason to abstain from such an approach. First, in the current context – all variables on the left-hand side are latent – any valid instrumental variable will have a difficult time unfolding its potential. Second, even in the absence of the conceptual problems characterizing the extraction of latent factors from categorical observables a valid instrument is difficult to find. Thus, we proceed under the maintained assumption of exogeneity of the right-hand side variables.

3.4.3 Reduced Form Results

As a first step we perform an independent ordered probit analysis for each of the 35 questions on the perception of foreigners and each of the seven questions on the perception of Jews, summarized in the last subsection and described in more detail in the appendix. For this purpose, we utilized the explanatory variables described in **Table 3.2** and **Table A.3.4** with one exception. Since only a small fraction of respondents reported not to be employed we combined the variables *Not Employed* and *Fears Loss of Employment* together in the variable *Labor Market*. Therefore, this new variable takes the value of 1 if the individual reported either to be not employed *or* to be afraid of loosing her or his job, and zero otherwise.

Estimation results of the reduced-form parameters exhibit noticeably stable results. These results are summarized[3] in **Table 3.3** for the questions on the perception of foreigners and in **Table 3.4** for the attitudes towards Jews. Since the estimated coefficients of an ordered probit model are not interpretable straightforwardly, because they do not concur with the marginal effects of the explanatory variables, we report only the direction of influence and its statistical significance. Since the coding of the dependent variables is *"0"* for a positive attitude and *"2"* for a negative attitude, a "+" denotes a statistically significant positive impact, i.e. a more *negative* attitude. Consequently, a "-" denotes a statistically significant negative impact, i.e. a more *positive* attitude.

On balance, East German respondents tend to display a slightly more negative attitude

[3] A complete list of reduced form results is available by the author upon request.

towards foreigners. Individuals with medium or even high education clearly tend to answer more favorably (our maintained hypothesis is that this reflects a genuine difference in preferences and perceptions, not a strategic way to answer to the questions), as do academics. On the other hand, respondents with no formal training tend to answer in a more negative fashion, as do, more moderately, those respondents who experience employment problems. Interestingly, a low foreigner share is often associated with a more negative attitude. No clear tendency emerges for the distinction between male and female respondents and for marital status, while there seems to be some, albeit minor, heterogeneity across different age groups.

Table 3.3: Reduced-Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A											
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
East Germany	+	0	+	+	0	+	0	0	+	-	+	+
Female	0	0	0	0	0	0	0	0	+	0	+	0
High Education	-	-	-	-	-	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-	-	-	-	-	0
No Formal Training	0	+	+	+	0	+	0	+	0	0	+	0
Academic	0	0	-	-	0	0	-	-	-	-	0	0
Labor Market	0	0	0	+	0	+	0	0	0	0	+	0
Married	0	0	0	0	+	0	0	0	0	0	0	0
Low Foreigner Share	0	+	0	0	+	0	0	+	+	0	+	0
Age	+	+	0	+	+	0	0	+	0	0	0	0
Age Squared	-	0	0	-	0	0	0	0	0	0	+	0
Explanatory Variable	**Dependent Variable; Coding B**											
East Germany	+	0	+	+	0	+	0	+	+	-	+	+
Female	0	0	+	0	0	0	0	0	+	+	+	0
High Education	-	-	-	-	-	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-	-	-	-	-	0
No Formal Training	0	+	+	+	+	+	+	+	0	0	0	0
Academic	0	0	-	-	0	-	-	-	0	-	0	0
Labor Market	0	0	0	+	0	0	0	0	0	+	+	0
Married	0	0	0	0	+	0	0	-	0	0	0	0
Low Foreigner Share	0	+	0	0	0	0	0	+	0	0	+	0
Age	+	+	0	+	0	0	0	+	0	0	0	0
Age Squared	-	0	0	-	0	0	0	0	0	0	0	0

On a 95% significance level: "+" denotes a statistically significant positive,
"-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q5* to *Q12* are: The variable *Low Foreigner Share* becomes insignificant in *Q5* and *Q9*, the variable *Labor Market* becomes significantly positive in *Q10*, the variable *No Formal Training* becomes significantly positive in *Q5* and *Q7*, but insignificant in *Q11* and the variable *East Germany* becomes significantly positive in *Q8*.

Table 3.3 continued: Reduced Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A											
	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
East Germany	0	0	0	0	0	-	+	0	0	0	-	+
Female	-	0	0	0	+	0	0	0	-	0	-	-
High Education	-	-	-	-	-	-	0	-	-	-	-	-
Medium Education	0	-	-	-	-	0	0	-	-	0	-	0
No Formal Training	-	0	0	+	0	0	0	0	0	0	0	+
Academic	0	-	-	0	0	0	-	-	-	0	-	0
Labor Market	+	+	0	0	+	0	0	0	+	0	0	+
Married	0	0	0	0	0	0	+	0	0	0	0	-
Low Foreigner Share	0	+	+	+	0	+	0	0	+	0	+	0
Age	0	0	-	0	0	0	0	0	0	0	0	0
Age Squared	0	0	+	+	0	0	0	0	0	+	0	0
Explanatory Variable	Dependent Variable; Coding B											
East Germany	0	0	0	0	-	-	0	0	0	0	-	+
Female	-	0	0	0	+	0	0	0	-	0	-	0
High Education	-	-	-	-	-	-	0	-	-	-	-	0
Medium Education	0	-	-	-	-	0	0	-	-	0	-	0
No Formal Training	0	0	0	0	0	0	0	0	0	0	0	+
Academic	-	-	-	0	0	0	0	-	-	0	-	0
Labor Market	+	0	0	0	+	0	0	0	+	0	0	0
Married	0	0	0	0	0	0	0	0	0	0	0	-
Low Foreigner Share	0	+	+	0	0	+	0	0	+	0	+	0
Age	0	0	-	0	0	0	0	0	0	0	0	0
Age Squared	0	0	+	+	0	0	0	0	0	+	0	0

On a 95% significance level: "+" denotes a statistically significant positive,
"-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q13* to *Q24* are: The variable *East Germany* becomes significantly negative in *Q17*, but insignificant in *Q19*. The variable *No Formal Training* becomes insignificant in *Q13* and *Q16*, whereas *Academic* becomes insignificant in *Q19*, but significantly negative in *Q13*. The variables *Labor Market* and *Low Foreigner Share* become insignificant in *Q14* / *Q24* and *Q16*, respectively. Please note that in the coding system *B no* explanatory variable has a statistically significant impact on the distribution of answers in *Q19*.

Table 3.3 continued: Reduced-Form Results on Intensity of Negative Attitude – Questions on Foreigners

Explanatory Variable	Dependent Variable; Coding A										
	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35
East Germany	+	+	+	+	+	0	+	0	+	-	-
Female	-	-	0	-	0	-	0	0	0	-	0
High Education	-	-	-	-	-	-	-	-	-	-	-
Medium Education	0	0	-	-	-	-	-	0	-	-	-
No Formal Training	0	+	+	+	+	0	+	+	0	0	0
Academic	-	0	0	0	-	0	0	0	0	0	0
Labor Market	0	0	0	+	0	0	+	0	0	0	0
Married	-	0	0	0	0	0	0	0	0	0	0
Low Foreigner Share	-	-	0	+	0	0	0	0	0	0	+
Age	0	0	0	0	+	+	0	0	0	0	0
Age Squared	0	0	0	0	0	0	0	0	0	0	0
Explanatory Variable	**Dependent Variable; Coding B**										
East Germany	+	+	+	+	+	0	0	0	+	-	0
Female	-	-	0	-	-	-	0	0	0	-	0
High Education	-	-	-	-	-	-	-	-	-	-	-
Medium Education	0	0	-	-	0	0	0	-	-	0	-
No Formal Training	0	0	+	+	+	+	+	0	0	0	0
Academic	0	-	0	-	0	0	0	0	0	0	0
Labor Market	0	0	0	+	0	0	0	0	0	0	+
Married	-	0	0	0	0	0	0	0	0	0	0
Low Foreigner Share	-	-	0	0	0	0	0	0	0	0	0
Age	0	0	0	0	+	0	0	0	0	0	0
Age Squared	0	0	+	0	-	0	0	0	0	0	0

On a 95% significance level: "+" denotes a statistically significant positive,
"-" a statistically significant negative, and "0" a statistically insignificant impact.

The most important changes due to the alternative coding system for *Q25* to *Q35* are: The variables *East Germany*, *Medium Education* and *Low Foreigner Share* become insignificant in *Q31/Q35*, *Q29/Q30/Q31/Q34* and *Q28/Q35*, respectively. The variable *No Formal Training* becomes significantly positive in *Q30*, but insignificant in *Q26* and *Q32*. Finally, the variable *Academic* becomes significantly negative in *Q26* and *Q28*, but insignificant in *Q25* and *Q29*.

All in all, there is no dramatical change due to the coding system. For almost all questions, irrespective of the coding system of the dependent variables, respondents with a high or medium education display a statistically significant more positive attitude,

whereas respondents with no formal training tend to have a statistically significant more negative attitude towards foreigners. Respondents with an academic background also tend to have a more positive attitude, whereas the evidence for the effect of the respondents' geographical residence as well as his or her age and gender is mixed. The effect of a low foreigner share in the region in which the respondent lives is also mixed, although it tends towards a more negative attitude. Finally, the influence of the labor market variable tends towards a more negative attitude as well, although this variable is often statistically insignificant.

Table 3.4: Reduced-Form Results on Intensity of Negative Attitude – Questions on Jews

Explanatory Variable	Dependent Variable; Coding A						
	Q36	Q37	Q38	Q39	Q40	Q41	Q42
East Germany	+	+	0	0	-	-	0
Female	-	-	0	-	-	-	0
High Education	-	-	-	-	-	-	-
Medium Education	-	-	-	-	-	-	-
No Formal Training	+	+	+	0	0	0	+
Academic	0	0	0	0	-	-	0
Labor Market	+	0	0	0	0	0	0
Married	0	0	0	0	0	0	0
Low Foreigner Share	0	0	0	0	0	0	0
Age	0	+	0	+	0	+	+
Age Squared	0	0	0	0	0	0	0
Explanatory Variable	Dependent Variable; Coding B						
East Germany	0	+	+	0	0	-	0
Female	0	-	-	0	-	-	0
High Education	-	-	-	-	0	-	-
Medium Education	-	-	-	-	0	-	-
No Formal Training	+	0	+	0	0	0	+
Academic	0	0	0	0	-	-	0
Labor Market	0	0	0	0	0	0	0
Married	0	0	0	0	0	0	0
Low Foreigner Share	0	0	0	0	0	0	0
Age	+	0	0	0	0	+	+
Age Squared	0	0	0	0	0	0	-

On a 95% significance level: "+" denotes a statistically significant positive, "-" a statistically significant negative, and "0" a statistically insignificant impact.

Table 3.4 reports the impact of the estimated reduced form coefficients on the seven questions on the the perception of Jews. For these questions the picture concerning the

education and training variables remains unchanged. However, the share of foreigners as well as the labor market variable display no statistically significant effect. Females tend to have a more positive attitude towards Jews than do men, whereas the evidence for the impact of living in East Germany is completely mixed.

In both the analysis of the perception of foreigners and of Jews the reduced-form results are widely consistent, yet quite heterogenous. Therefore, no further interpretation is possible without imposing more structure on the results. Thus, in order to receive a more comprehensive picture on the determinants of the perception of foreigners and Jews we present the results of the structural parameters.

3.4.4 The Structural Parameters

The structural parameters γ_k $(k = 1, ..., K)$ are identified by our empirical strategy outlined in section 3.3, retaining a separation between the two principal sets of questions. Estimation results are presented in **Table 3.5a** for the foreigner-related questions and in **Table 3.5b** for the questions on the perception of Jews.

Table 3.5a: Structural Parameters – Questions on Foreigners

Explanatory Variable	Coding A		Coding B	
	coefficient	t-value	coefficient	t-value
East Germany	0.13507	1.00	0.11557	0.83
Female	-0.01771	0.39	-0.01677	0.36
High Education	-0.38493	5.10	-0.36638	4.70
Medium Education	-0.16436	2.92	-0.14984	2.56
No Formal Training	0.10983	1.55	0.09324	1.29
Academic	-0.16202	1.88	-0.15603	1.74
Labor Market	0.10126	1.50	0.09146	1.32
Married	0.02804	0.54	0.01782	0.33
Low Foreigner Share	0.06272	0.73	0.07088	0.80
Age	0.00529	0.62	0.00396	0.45
Age Squared	0.00004	0.00	0.00004	0.00

The estimated coefficients suggest that only the education categories exhibit a statistically significant impact on the distribution of agreement/disagreement by native respondents. Individuals with a high education degree have a significantly more positive

attitude towards foreigners than people with a low education level. This variable exhibits the strongest impact on the answers of respondents. The labor market variable as well as our proximity measure to model possible contacts to foreigners do not display a statistically significant impact on the usual 95% significance level. These results are different from what one would conclude from an analysis of single or selected questions alone and they are independent of the coding of the answer categories.

Table 3.5b: Structural Parameters – Questions on Jews

Explanatory Variable	Coding A		Coding B	
	coefficient	t-value	coefficient	t-value
East Germany	-0.02700	0.30	-0.03432	0.40
Female	-0.11859	2.61	-0.11801	2.57
High Education	-0.42447	5.36	-0.37465	4.70
Medium Education	-0.18029	3.32	-0.15810	2.84
No Formal Training	0.10454	1.53	0.07339	1.02
Academic	-0.13720	1.54	-0.13925	1.49
Labor Market	0.06509	0.94	0.05571	0.82
Married	-0.04505	0.88	-0.03532	0.66
Low Foreigner Share	-0.06168	0.70	-0.06165	0.75
Age	0.01266	1.47	0.01357	1.57
Age Squared	-0.00007	0.81	-0.00009	1.05

This picture does not change very much if the attitudes towards Jews in Germany are concerned. In contrast to the results for the perception of foreigners the gender of respondents plays a decisive role in explaining the unobserved component of the perception of Jews. Women tend to have a statistically significant more positive attitude than men. Again the education of the respondents has the largest impact on their answers. All other explanatory variables are far away from being statistically significant.

Therefore, if the information contained in the distribution of answers to a variety of related opinion questions is utilized, the decisive factor driving the common unobserved component of the perception of foreigners and Jews is education. This has important implications for the design of possible interventions aiming at a more positive perception of minorities. Our results suggest that more education on average would change preferences and perceptions positively. However, in such an altered environment a higher average level of education would manifest itself again in the constants of each reduced-form equation,

i.e. in the δ_0^j's. This means that for the part of the population with more education the average δ_0^j would decrease, retaining the original differential between the low and the high educated. Any other change in coefficients would require that the structure is altered altogether. Therefore, no change in structural coefficients arises from an increase in education, since we are only able to measure the effect of the latent variable relative to its own average.

3.5 Conclusions

This paper offered a comprehensive analysis of the opinions collected by the 1996 wave of a large German opinion survey, the *ALLBUS*. To this end, we developed a model explaining the answers of native respondents on a large set of questions in an interdependent framework. In this framework it is assumed that all questions utilized are able to "extract" the true, but unobservable overall perception of foreigners and that this unobservable overall perception can in turn be explained by a set of observable socio-economic characteristics. This analysis, therefore, assumes that all utilized questions are, in principle, able to "extract" the true opinion of respondents, although to varying degree. To achieve this aim, we have to forego all attempts to extract the level of xenophobia or antisemitism in a population of respondents, though. All attempts at such an analysis in a single-country study must fail.

In order to identify the structural parameters of the model we invoked a set of identification assumptions which are non-testable and which have to be assumed to hold true *a priori*. The estimation results for the structural coefficients derived on the basis of our identification assumptions suggest quite different conclusions on the explanatory power of observable socio-economic characteristics than what one would conclude from the (reduced form) analysis of a single question alone. Essentially, the only variable able to reliably explain the heterogeneity of the unobserved component of the perception of foreigners and Jews among native Germans is the level of individual education. Popular suggestions for an explanation of negative attitudes towards minorities like the labor market situation of a respondent or his/her age turn out to be insignificant as soon as one is willing to analyze *all* relevant questions.

The implications of these results are twofold. Firstly, one may hypothesize that the reason for this finding is the incoherent opinion of respondents towards minorities. That is, it might be possible that individual respondents do not answer in a coherent way to *all* the questions in the *ALLBUS*. Secondly, if one is willing to put confidence in our framework of analysis and the identification assumptions invoked then one would conclude that misconceptions of minorities as well as a negative perception of such groups can be reduced by comprehensive education programs and initiatives.

Clearly, for the success of an immigration policy aiming at the attraction of high-skilled migrants from all over the world, it is important to employ measures that are able to enhance the perception of foreigners in Germany. Therefore, such education programs and initiatives could be helpful. However, the success of such activities is far from being guaranteed. To analyze whether and to what extent education is really able to resolve misperceptions and to reduce negative attitudes will be one of the key challenges of this line of research. A comprehensive scientific evaluation of this question as well as the effectiveness of other integration measures is one of the central issues of future research in this field.

Table A.3.1: Description of ALLBUS Questions on Attitudes Towards Minorities

VARIABLE	DESCRIPTION
	Unlimited, limited or no immigration of
Q1	Ethnic Germans
Q2	Asylum seekers
Q3	Workers from EU-countries
Q4	Workers from Non-EU-countries
	Should foreigners in Germany
Q5	Assimilate more to the German way of life?
Q6	Be sent back if unemployment is high?
Q7	Prohibited from political activity in Germany?
Q8	Marry among themselves?
	Foreigners in Germany
Q9	Are a burden for the social security system.
Q10	Are a burden for the housing market.
Q11	Take jobs away.
Q12	Commit more crimes.
Q13	Do the awkward jobs Germans would not do.
Q14	Contribute to the variety of culture in Germany.
Q15	Contribute to the pension system.
	Important criterions for German citizenship should be
Q16	German descent.
Q17	Assimilation to the German way of life.
Q18	Membership in a Christian church.
Q19	Non-commitment of crimes.
Q20	Ability to earn one's own living.
Q21	Would you agree to the possibility to hold a double citizenship?
	Should foreigners in Germany
Q22	Receive the same amount of social security benefits?
Q23	Receive the right to vote on the local/municipal level?
	Would you appreciate living in the neighborhood of ...?
Q24	Italians
Q25	Ethnic Germans
Q26	Asylum seekers
Q27	Turks
	Would you appreciate it if a ... marries a member of your family?
Q28	Italian
Q29	Ethnic German
Q30	Asylum seeker
Q31	Turk
	Should ... receive the same rights as native Germans?
Q32	Italians
Q33	Ethnic Germans
Q34	Asylum seekers
Q35	Turks

Q1 to Q4 were originally coded on a three answer possibilities scale.
All other questions on a seven answer possibilities sale. See also text.

Table A.3.2: Description of ALLBUS Questions on Attitudes Towards Jews

VARIABLE	DESCRIPTION
Q36	Would you appreciate living in the neighborhood of a Jew?
Q37	Would you appreciate it if a Jew marries a member of your family?
Q38	Should Jews receive the same rights as native Germans?
Q39	Jews have too much influence in the world.
Q40	I feel ashamed of the atrocities Germans committed on Jews.
Q41	Jews exploit German history.
Q42	Jews are not completely innocent of their persecution.

Table A.3.3: Distribution of Answers – West vs. East Germany

Question & Region		Coding A			Coding B		
		positive	medium	negative	positive	medium	negative
Q1	West	13.99%	74.89%	11.12%	13.99%	74.89%	11.12%
	East	12.93%	68.89%	18.18%	12.93%	68.89%	18.18%
Q2	West	12.91%	66.27%	20.82%	12.91%	66.27%	20.82%
	East	11.52%	66.77%	21.72%	11.52%	66.77%	21.72%
Q3	West	32.27%	55.80%	11.93%	32.27%	55.80%	11.93%
	East	10.91%	50.51%	38.59%	10.91%	50.51%	38.59%
Q4	West	8.19%	60.74%	31.07%	8.19%	60.74%	31.07%
	East	4.24%	45.76%	50.00%	4.24%	45.76%	50.00%
Q5	West	13.99%	44.14%	41.87%	24.19%	17.41%	58.41%
	East	11.82%	40.81%	47.37%	21.21%	16.46%	62.32%
Q6	West	42.84%	40.24%	16.92%	56.18%	19.36%	24.46%
	East	25.56%	42.32%	32.12%	37.47%	20.30%	42.22%
Q7	West	36.39%	36.33%	27.28%	48.16%	16.81%	35.03%
	East	32.42%	37.27%	30.30%	42.53%	19.29%	38.18%
Q8	West	62.47%	23.81%	13.72%	69.52%	12.15%	18.33%
	East	48.18%	29.70%	22.12%	55.35%	16.36%	28.28%
Q9	West	27.71%	48.54%	23.75%	41.87%	20.07%	38.07%
	East	15.76%	46.16%	38.08%	25.86%	20.10%	54.04%
Q10	West	23.21%	45.28%	31.51%	33.79%	19.36%	46.85%
	East	28.18%	44.04%	27.78%	38.79%	19.70%	41.52%
Q11	West	35.30%	45.07%	19.63%	48.70%	21.10%	30.21%
	East	17.78%	38.59%	43.64%	28.18%	15.35%	56.46%
Q12	West	32.86%	41.59%	25.54%	42.41%	20.93%	36.66%
	East	19.60%	41.62%	38.79%	26.57%	21.82%	51.62%
Q13	West	30.80%	51.74%	17.46%	50.98%	19.96%	29.07%
	East	30.91%	44.55%	24.55%	48.89%	18.79%	32.32%
Q14	West	24.13%	48.64%	27.22%	38.39%	21.58%	40.02%
	East	19.60%	48.99%	31.41%	33.84%	22.02%	44.14%
Q15	West	28.09%	50.65%	21.26%	42.84%	25.05%	32.10%
	East	23.03%	42.12%	34.85%	35.15%	21.52%	43.33%
Q16	West	26.74%	32.70%	40.56%	34.60%	12.04%	53.36%
	East	22.02%	30.71%	47.27%	29.19%	12.53%	58.28%
Q17	West	14.26%	37.58%	48.16%	21.53%	15.46%	63.02%
	East	17.68%	37.27%	45.05%	26.26%	15.25%	58.48%
Q18	West	70.17%	24.19%	5.64%	79.18%	10.74%	10.09%
	East	80.81%	15.05%	4.14%	86.67%	7.07%	6.26%
Q19	West	4.72%	17.30%	77.98%	7.54%	6.13%	86.33%
	East	4.65%	10.71%	84.65%	7.17%	3.33%	89.49%
Q20	West	7.75%	25.87%	66.38%	10.85%	10.57%	78.58%
	East	6.46%	24.85%	68.69%	9.39%	10.40%	80.20%
Q21	West	28.47%	26.84%	44.69%	37.80%	11.06%	51.14%
	East	20.61%	25.05%	54.34%	26.36%	13.03%	60.61%

Table A.3.3 continued: Distribution of Answers – West vs. East Germany

Question & Region		Coding A			Coding B		
		positive	medium	negative	positive	medium	negative
Q22	West	38.39%	38.88%	22.72%	49.24%	17.57%	33.19%
	East	34.65%	40.51%	24.85%	45.25%	20.40%	34.34%
Q23	West	27.01%	32.70%	40.29%	35.41%	14.05%	50.54%
	East	29.80%	29.39%	40.81%	39.49%	13.33%	47.17%
Q24	West	37.64%	59.92%	2.44%	54.34%	39.80%	5.86%
	East	18.48%	74.44%	7.07%	34.75%	52.32%	12.93%
Q25	West	24.62%	67.73%	7.65%	41.38%	41.76%	16.87%
	East	17.27%	73.33%	9.39%	30.91%	50.20%	18.89%
Q26	West	9.44%	58.79%	31.78%	16.43%	35.20%	48.37%
	East	5.35%	62.53%	32.12%	11.11%	40.20%	48.69%
Q27	West	15.35%	67.35%	17.30%	28.63%	39.05%	32.32%
	East	7.27%	65.15%	27.58%	15.05%	41.62%	43.33%
Q28	West	25.98%	66.43%	7.59%	41.65%	42.35%	16.00%
	East	10.61%	71.72%	17.68%	23.13%	45.96%	30.91%
Q29	West	17.52%	69.63%	12.85%	31.02%	44.03%	24.95%
	East	9.19%	72.63%	18.18%	20.30%	46.77%	32.93%
Q30	West	6.78%	47.89%	45.34%	11.17%	28.36%	60.47%
	East	3.64%	52.32%	44.04%	7.37%	33.33%	59.29%
Q31	West	9.38%	53.74%	36.88%	15.62%	30.97%	53.42%
	East	3.74%	54.04%	42.22%	7.17%	34.55%	58.28%
Q32	West	41.00%	43.11%	15.89%	55.97%	17.46%	26.57%
	East	33.94%	48.08%	17.98%	49.09%	21.31%	29.60%
Q33	West	44.31%	41.49%	14.21%	58.62%	16.49%	24.89%
	East	36.97%	46.46%	16.57%	51.21%	20.91%	27.88%
Q34	West	10.95%	37.47%	51.57%	18.06%	15.78%	66.16%
	East	14.24%	42.93%	42.83%	22.32%	18.48%	59.19%
Q35	West	23.75%	46.64%	29.61%	36.44%	19.47%	44.09%
	East	24.04%	45.96%	30.00%	35.05%	20.91%	44.04%
Q36	West	29.61%	64.80%	5.59%	41.16%	48.81%	10.03%
	East	23.43%	68.28%	8.28%	34.44%	52.93%	12.63%
Q37	West	18.33%	66.11%	15.56%	27.01%	47.61%	25.38%
	East	11.11%	69.60%	19.29%	18.99%	52.42%	28.59%
Q38	West	50.76%	35.57%	13.67%	62.09%	17.25%	20.66%
	East	52.22%	35.76%	12.02%	60.91%	19.19%	19.90%
Q39	West	44.20%	39.64%	16.16%	54.12%	19.09%	26.79%
	East	48.08%	42.83%	9.09%	58.79%	25.96%	15.25%
Q40	West	66.21%	23.54%	10.25%	76.68%	9.49%	13.83%
	East	76.26%	18.69%	5.05%	84.55%	7.47%	7.98%
Q41	West	23.16%	41.59%	35.25%	31.62%	19.41%	48.97%
	East	28.28%	48.89%	22.83%	38.08%	26.46%	35.45%
Q42	West	59.11%	31.24%	9.65%	66.92%	15.78%	17.30%
	East	61.01%	32.32%	6.67%	68.89%	17.78%	13.33%

For a description of the questions see Table A3.1 in the appendix. Total number of Observations: 2,834; 1,844 in West-Germany and 990 in East-Germany.

Table A.3.4: Description of Explanatory Variables

VARIABLE	DESCRIPTION
East Germany	1 if the respondent resides in East Germany; 0 otherwise
Female	1 if the respondent is female; 0 otherwise
High Education	1 if the respondent holds a high schooling degree (i.e. *Hochschul- or Fachhochschulreife*); 0 otherwise
Medium Education	1 if the respondent holds a medium schooling degree (i.e. *Mittlere Reife*); 0 otherwise
No formal Training	1 if the respondent reports no formal training; 0 otherwise
Academic	1 if the respondent reports an academic degree; 0 otherwise
Fears Loss of Employment	1 if the respondent reports to be afraid of loosing his or her job; 0 otherwise
Not Employed	1 if the respondent is not employed; 0 otherwise
Married	1 if the respondent is married; 0 otherwise
Low Share of Foreigners	1 if the respondent resides in a region with less than 8% foreigner share; 0 otherwise
Age	Age of respondent in years at time of the interview

Chapter 4

The Economic Impact of EU-Enlargement: Assessing the Migration Potential

Abstract. This paper analyzes the determinants of immigration flows to Germany in a time series-cross section framework. The reduced form of a well established theoretical model is estimated for a sample of 17 sending countries and a period covering 1960 to 1994. The estimates are then used to perform out-of-sample forecasts to assess the immigration potential from the Eastern European accession candidates to Germany. These scenarios predict a moderate increase in immigration to Germany, especially for the first round accession candidates.

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4.1 Introduction

In the course of the upcoming enlargement of the European Union towards Central and Eastern Europe, free movement of labor will sooner or later be extended to include the new members. The implications of this regulation are subject of controversial discussions in the public as well as among politicians. Many people are afraid of mass immigration to Europe, being, at least in part, supported by articles in well-respected periodicals talking about a migration potential of several million people in Eastern Europe only waiting for the starting signal to launch their march into the EU. It is difficult, though, to find any serious attempt at assessing this migration potential in the scientific literature.

Therefore, the central aim of this paper is to identify the driving forces behind past immigration flows to Europe in order to asses the expected magnitude of inflow to the EU after enlargement to Eastern Europe. The most important obstacle in achieving this goal is that due to data limitations the regional coverage of this work is not comprehensive. Specifically, the empirical investigation is confined to immigration to Germany alone, because the other member countries of the EU do not report immigration figures regularly, at least not for a sufficient time period. However, Germany which experienced an accumulated net migration of roughly 2.6 million people in the 15 years from 1980 to 1994 has been the favorite destination for migrants to Europe in general and especially for those from Eastern Europe. Therefore, the German experience may serve as a benchmark for immigration to the other EU member countries[1].

The literature on empirical investigations of aggregate immigration flows to Germany is rather thin. Katseli and Glytsos (1986) analyze immigration from Greece to Germany from 1961 to 1983. The authors regress the gross emigration rate from Greece to Germany on a set of plausible but ad hoc chosen explanatory variables, including real income in both countries, as separate regressors as well as the difference of these variables, the German and Greek employment rate and the lagged migration rate. The evidence from their OLS estimation for the whole sample period and selected sub-periods is rather mixed. Overall, the employment rates in both countries are statistically significant in

[1]For descriptive papers analyzing immigration to Europe see e.g. Tapinos (1993), Fassmann and Münz (1992).

almost all regressions, whereas for the most part the real income variables and the lagged dependent variable are not.

A more comprehensive attempt at analyzing aggregate migration to Germany is Franz (1991). The author investigates immigration from and remigration to Italy, Turkey, Spain, Greece and Yugoslavia for the periods 1961-73 and 1974-88. He estimates separate equations for each country as well as for immigration and remigration using different sets of explanatory variables. Since the author mainly reports estimation results of the statistically significant variables the interpretation of his results is rather difficult. All in all the author finds a statistically significant impact of the lagged migration rate and the unemployment rates in both countries, whereas the income difference between Germany and the other countries is statistically insignificant in almost all cases.

An approach similiar in certain respects to that used in this paper is the study by Karras and Chiswick (1999). The authors also utilize pooled cross section-time series data[2] to analyze aggregate migration flows to Germany for a sample of 17 countries of origin and a time period covering 1964-88. The authors perform two pooled OLS regressions of the net migration rate on different sets of ad hoc chosen explanatory variables, one regression with a common constant and one with country specific dummy variables. The different sets of explanatory variables include the lagged migration rate, the per capita income ratio between Germany and the considered countries as well as the growth rates of per capita income and lags of these variables with different lag lengths, a measure of mean schooling in the sending country, a dummy variable for EU membership and different interaction terms of this dummy variable with all other variables. The sample was split into two sub-periods 1964-73 and 1974-88. The fixed effects specification was rejected and the results of the specification with a common intercept indicate no statistically significant effect of the income ratio and the schooling measure for the first sub-sample. This finding may be due to neglecting the influence of employment prospects in both countries since the relevant income measure for migration would rather be expected income, i.e. income times the probability of finding a job (Harris and Todaro, 1970). The lagged net

[2]A somewhat different attempt using pooled cross section-time series data is the investigation of Vogler and Rotte (1998). These authors focus on the relationship between the development status of a country and aggregate immigration flows to Germany by analyzing a dataset of refugees and asylum seekers from African and Asian countries.

migration rate and the income growth rate in Germany were statistically significant in both sub-samples.

This paper also uses pooled cross section-time series data to investigate the determinants of immigration to Germany based on a well-established model. This model allows to distinguish between short-term and long-term factors impacting on observed migration flows and to derive long-run coefficients for these factors, which are finally used to perform forecasts of the immigration potential from Eastern Europe. Furthermore, the chosen estimation procedure for this model imposes less restrictions than pooled OLS.

The rest of this paper is organized as follows. In the next section the main features characterizing the theoretical model are outlined. The reduced form of this model is then estimated in section 4.3 which also describes the empirical specification and the utilized dataset. In section 4.4 the estimation results are used to simulate the immigration potential from the Eastern European accession candidates to Germany. Finally, this section also offers some concluding remarks.

4.2 The Model

The theoretical framework of this paper rests on a model developed by Hatton (1995) to investigate UK emigration; this time series model is adapted to reflect the particular nature of the time series - cross section data used in this paper. The model is formulated in the context of individual utility maximization following the hypothesis of migration as an investment in human capital (Sjaastad 1962). The probability of migration for individual i depends on the difference d in expected utility streams in the country of origin (h) and in Germany (g) minus the costs of migration denoted by z_i. The utility streams in each country are assumed to depend on the (log of) expected income, i.e. the real wage rate w_i times the individual probability of employment.

Two important aspects characterize this specific model, both having a direct impact on the dynamic structure of the resulting reduced form. First, it explicitly accounts for uncertainty in the migration decision by assuming a binomial distribution for the employment rate in Germany which approximates the individual probability of finding

a job in the host country. As a consequence for the migration decision, the uncertainty about the employment prospects in Germany leads to a greater weight on the employment rate in Germany than in the risk-neutral Harris-Todaro model.

Second, it contains an explicit assumption about the formation of expectations regarding the future income of an individual deciding whether to migrate or not. In the context of migration as an investment in human capital the relevant income measure for the migration decision is the net present value of expected future income streams. Thus, the decision to migrate does not only depend on the difference in utility streams of the current period t, but also on all expected future values of this difference. Furthermore, although for some migrants the current difference might be negative, the net present value of migrating might become positive, if these migrants were to wait for an additional year. This "option" to wait might be an explanation for the frequently observed relationship between short-run economic fluctuations and observed migration flows.

Denote by d^*_{it} the net present value of utility streams from *t+1* on, viewed at time t. Then the net present value of moving today is $d^*_{it} + d_{it}$, where d_{it} denotes the difference in in expected utility streams for individual i at time t. Consequently, the individual probability of migrating at time t (denoted by $m_{it} = 1$) is

$$Pr(m_{it} = 1) = Pr(d^*_{it} + d_{it} > 0 \wedge d_{it} > 0). \tag{4.1}$$

Now assume that the formation of expectations of future utility streams follows a geometric series of past values of d. This implies that in forming their expectations, migrants give the most recent past the greatest weight and that this weight declines with time.[3] Hence,

$$d^*_t = \lambda d_t + \lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \lambda^4 d_{t-3} + ..., \quad 0 < \lambda < 1$$

or (4.2)

$$d^*_t = \lambda d_t + \lambda d^*_{t-1}$$

[3]If d follows an AR(1) process this assumption implies rational expectations, see HATTON (1995), p. 410.

Finally, to make this individual probability concept feasible it is approximated by M_t, denoting the aggregate migration rate from country h to Germany in year t. This requires the assumption that the relative aggregate migration rate reflects the average probability of migration of all individuals of country h and obtain

$$M_t = \beta(d_t^* + \alpha d_t) = \beta d_t^* + \beta\alpha d_t, \quad \alpha > 1. \tag{4.2}$$

The parameter β measures the impact of the difference in expected utility streams on the aggregate migration rate and, assuming that potential migrants could choose to wait an additional year if d_{it} is negative, the parameter α reflects the extra weight given to current conditions. Collecting terms yields

$$\begin{aligned} M \;=\; & \beta(\alpha+\lambda)[ln(w_g)_t + \tfrac{3}{2}ln(e_g)_t - ln(w_h)_t - \gamma ln(e_h)_t + \overline{z}_t] \\ & -\lambda\beta\alpha[ln(w_g)_{t-1} + \tfrac{3}{2}ln(e_g)_{t-1} - ln(w_h)_{t-1} - \gamma ln(e_h)_{t-1} + \overline{z}_{t-1}] \\ & +\lambda M_{t-1} \end{aligned} \tag{4.3}$$

where $\overline{z}$ denotes the mean of z_i over all i. Assume that this mean is determined by the stock of previous immigrants from h to Germany such that $\overline{z}_t = \varepsilon_0 + \varepsilon_1 MST_t$, where MST_t denotes the stock of migrants from h in Germany at the beginning of t. This stock decreases by $1-\delta$ due to deaths and remigration and increases due to new immigrants[4], i.e. $MST_t = \delta MST_{t-1} + M_{t-1}$. The stock of migrants variable is certainly not an ideal measure of the costs of migration. Nevertheless, due to data limitations and a lack of convincing alternatives this specification is chosen for the empirical application. Substituting these formulations into (4.4) and rearranging yields

$$\begin{aligned} \Delta M_t \;=\; & \beta(\alpha+\lambda-\lambda\alpha)\varepsilon_0 \\ & + \beta(\alpha+\lambda)\Delta ln(w_g/w_h)_t \\ & + \beta(\alpha+\lambda)\tfrac{3}{2}\Delta ln(e_g)_t \\ & - \beta(\alpha+\lambda)\gamma\Delta ln(e_h) \\ & + \beta(\alpha+\lambda-\lambda\alpha)ln(w_g/w_h)_{t-1} \\ & + \beta(\alpha+\lambda-\lambda\alpha)\tfrac{3}{2}ln(e_g)_{t-1} \\ & - \beta(\alpha+\lambda-\lambda\alpha)\gamma ln(e_h)_{t-1} \\ & + [\beta(\alpha+\lambda)\varepsilon_1 - \tfrac{\lambda\beta\alpha}{\delta}\varepsilon_1]MST_t \\ & + [\lambda + \tfrac{\lambda\beta\alpha}{\delta}\varepsilon_1 - 1]M_{t-1} \end{aligned} \tag{4.4}$$

[4]This formulation introduces a minor inconsistency into the model since M_t is defined as the migration *rate*, i.e. migration relative to the population in country h.

Equation (4.5) is the estimation equation for time series - cross section data of immigration to Germany. There are three things to note about this model. First, both the changes and the levels of the explanatory variables concerning economic conditions in Germany and the home country enter the estimation equation separately. This provides us with the possibility to distinguish between short-run and long-run determinants of the migration decision. Second, all variables concerning economic conditions in Germany have positive signs, whereas variables reflecting economic prospects in the home country take negative signs. This is a consequence of the use of the employment rate instead of the unemployment rate to describe labor market conditions in both countries. Finally, the lagged net migration rate and the stock of migrants in Germany enter the equation separately, too. From a theoretical point of view the signs of these two explanatory variables are not determined. Regarding the lagged net migration rate, this *level* variable is expected to have a negative impact on the *change* of the net migration rate as dependent variable in order to prevent net migration to Germany to be ever increasing in the future.

Eventually, the long run steady state relationship implied by this model (derived by setting all Δ's to zero) is

$$\begin{aligned} \overline{M} = \quad & \tfrac{\beta(\alpha+\lambda-\lambda\alpha)}{\eta}[ln(w_g/w_h) + \tfrac{3}{2}ln(e_g) - \tfrac{\gamma}{2}ln(e_h) + \varepsilon_0] \\ & + \tfrac{\beta(\alpha+\lambda)\varepsilon_1 - \varepsilon_1\lambda\beta\alpha/\delta}{\eta} MST \end{aligned} \tag{4.5}$$

where

$$\eta = 1 - \lambda - \frac{\lambda\beta\alpha}{\delta}\varepsilon_1$$

In the next section this model is applied to data on immigration to Germany. Afterwards, the derived long-run coefficients are used for simulations of the magnitude of immigration from the CEEC's to Germany in section 4.4.

4.3 Empirical Specification and Estimation Results

The sample of countries for the estimation of equation (4.5) consists of 17 origin countries for which time series observations for a period covering 1960 to 1994[5] are available. The Eastern and Central European countries are excluded from the sample since migration

[5]The sample covers the bulk of immigration to Germany during these years especially in the period from 1960 to the end of the 1980's. See notes of **Table 4.1** for country list.

from these countries prior to the 1990's were certainly driven by different factors than the economic determinants establishing the model used in this paper.

The dependent variable is the change in *net* migration *rates*, i.e. we divide net migration (inflows minus outflows) from country j to Germany by the population stock of country j (following e.g. HATTON (1995) and BENTOLILA AND DOLADO (1991)) and consider the change in this rate between t and $t-1$. Net rather than gross migration figures are used since there were substantial remigration flows over the sample period and we are mainly interested in long-run migration to Germany for the purpose of forecasting future migration streams.

The migration data comes from the German Federal Statistical Office (*Statistisches Bundesamt*) and contains country specific figures on immigration to and emigration from the territory of the former Federal Republic of Germany. These migration figures embrace migrants with a permanent status of residence only, and since migration from Eastern Europe is excluded from the sample the inflows of ethnic Germans (*Aussiedler*) are not taken into account. The same source also provides information on the stock of migrants from different countries living in Germany in year t.

Due to a lack of real wage information for the sample of origin countries, w_g and w_h are approximated by the per capita income of Germany and the origin country, respectively; per capita income data in *purchasing power parities* provided by MADDISON (1995) is used to account for differences in living costs between Germany and the origin countries. This variable is certainly not a perfect substitute for the real wage rate since per-capita income also contains among others the population size and the (un-)employment rate. Ignoring participation issues the employment rates e_g and e_h are equal to $(1-u_g)$ and $(1-u_h)$, where u_g and u_h are the unemployment rate of the respective country, as published by the OECD and the national yearbooks.

Furthermore, the model is extended by two dummy variables. The first dummy variable accounts for the free movement agreement within the EU. This dummy variable equals *one* for years where a free movement agreement between Germany and country j existed, and *zero* otherwise. The second dummy variable accounts for the fact that there existed formal guest worker treaties between Germany and some of the home

countries during a specific time period. This dummy variable equals *one* for years in which such a treaty existed between Germany and country j, and *zero* otherwise. **Table 4.1** provides some summary statistics of the most relevant variables in the dataset.

Table 4.1: Descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION
Net Migration Rate $\times 10,000$	3.111	0.121
Log of Per Capita Income Ratio	0.302	0.467
Log of German Employment Rate	4.565	0.031
Log of Employment Rate of Origin Countries	4.545	0.049
Stock of Migrants / 100,000	1.733	3.041
"Free Movement" Dummy	0.292	0.455
"Guest Worker" Dummy	0.104	0.305

Sample countries: Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Greece, Italy, Yugoslavia, Netherlands, Norway, Portugal, Sweden, Turkey, UK, USA. Period: 1960-1994. Number of observations: 578.

Finally, regarding the specification search there are two things worth mentioning. First, the model is specified using a set of country specific intercepts[6] to account for country-specific fixed effects, like differences in the political system or the climate of the different origin countries. However, the slope parameters of the equations are assumed to be the same for all home countries. This is a prerequisite for conducting out-of-sample forecasting.

Second, different types of constraints are imposed across equations by varying the covariance structure of the disturbances matrix. In a stepwise process the assumption of homoscedasticity and no correlation across cross-sectional units (i.e. the 17 origin countries) is relaxed which eventually yields a groupwise heteroscedastic and correlated model. The economic intuition behind this assumptions is that the variance of each time series for each sending country is different from that of another country but within each time series the variance remains constant over time. This leads to groupwise heteroscedasticity. The computed LM-Test statistic for the hypothesis of homoscedasticity for Model 1 and Model 2 in **Table 4.2** is 777.40 and 722.03, respectively. The 5 % critical value of the $\chi^2(16)$ distribution is 26.30.

[6]The hypothesis of a common intercept is rejected on the basis of a Wald test. The computed test statistic for the two models in **Table 4.2** are 55.20 and 57.94, respectively. The 5 % critical value of the $\chi^2(16)$ distribution is 26.30.

Furthermore, groupwise or cross-sectional correlation means that there are unobserved shocks which affect net immigration from different countries to varying degrees. These shocks, however, also impact on immigration flows from some of the sending countries to a similiar degree[7]. An example for this may be the intensified efforts in Germany to increase return migration mainly to Yugoslavia and Turkey by a "return promotion law" in the beginning of the 1980's. Therefore, the disturbances across the origin countries are allowed to be contemporaneously correlated. The computed LR-Test statistic against the groupwise correlation for Model 1 and Model 2 in **Table 4.2** is 544.94 and 509.47, respectively. The 5 % critical value of the $\chi^2(136)$ distribution is 164.22.

The estimation procedure for these models is Maximum Likelihood by iterated GLS (Oberhofer and Kmenta, 1974) instead of FGLS (two-step-GLS). Both procedures yield consistent and asymptotically efficient estimators for the unknown parameters. Iterated GLS was chosen to enable us to perform likelihood ratio tests for the groupwise correlation assumption. Note that both of these procedures are stepwise, always starting with OLS. Therefore, it is impossible to obtain consistent estimators in the first step for models with lagged dependent variables as regressors *and* autocorrelated residuals. This would, eventually, render the complete estimation procedure invalid. Hence, if the assumption of no correlation over time, which is maintained throughout what follows, is violated, one would not obtain consistent estimates. In order to reduce the probability of autocorrelated errors, the model controls for adjustment over time by the inclusion of the lagged dependent variable. Furthermore, the specific institutional regulations regarding immigration to Germany are modeled by the dummy variables for the guest worker system and the free movement agreement within the EU.

Estimation results of the groupwise heteroscedastic and correlated model with country specific intercepts are presented in **Table 4.2**. Model 1 imposes the additional restrictions of equal coefficients for the per capita income ratio and the German employment rate implied by the theoretical model.

[7]The implications of correlated shocks between host and sending countries is a topic analyzed in the literature on return migration, see e.g. Dustmann (1997).

Table 4.2: Estimation Results – Dependent Variable ΔM_t

Explanatory Variables	Model 1		Model 2	
	Coefficient	t-value	Coefficient	t-value
Country Specific Effects: $\times 10,000$				
Austria	7.39	3.38	4.33	1.49
Belgium	4.53	2.47	1.53	0.58
Switzerland	5.31	2.88	2.39	0.90
Denmark	4.82	2.64	1.85	0.70
Spain	4.59	2.26	1.36	0.48
Finland	4.79	2.61	1.79	0.68
France	4.66	2.54	1.63	0.62
Greece	6.33	1.48	3.04	0.64
Italy	5.64	2.61	2.17	0.71
Yugoslavia	9.52	2.47	6.04	1.38
Netherlands	5.13	2.77	2.08	0.78
Norway	4.64	2.54	1.67	0.64
Portugal	5.63	2.43	2.51	0.84
Sweden	4.68	2.57	1.73	0.66
Turkey	9.03	3.15	5.02	1.36
United Kingdom	4.63	2.52	1.61	0.61
USA	4.65	2.58	1.66	0.63
Changes: $\times 10,000$				
Per-Capita-Income Ratio			1.68	2.77
Employment Rate Germany	3.17	9.83	9.52	7.27
Employment Rate Origin Country	-0.18	-0.25	-3.25	-2.52
Lagged Levels:				
Per-Capita-Income Ratio × 10,000			0.45	2.43
Employ. Germany × 10,000	0.36	2.14	1.00	2.40
Employ. Rate Origin × 10,000	-1.51	-3.91	-1.82	-3.94
Net Migration Rate	-0.37	-12.71	-0.37	-12.70
Inherent Dynamics:				
Stock of Migrants × 100,000,000	-2.16	-6.03	-1.25	-1.80
"Guest Worker" × 10,000	0.06	0.97	0.15	0.26
"Free Movement" × 10,000	0.13	2.96	0.14	3.13
Diagnostics:				
LM-Test for homoscedasticity:		777.40		722.03
LR-Test against groupwise correlation:		544.94		509.47
Wald test for common intercept:		55.20		57.94
Wald test for parameter restrictions:				20.75

The estimates show that almost all variables appear, where statistically significant, with the expected sign. The only exception is the stock of migrants from the different countries in Germany, which enters with a statistically significant negative sign. This indicates that during our sample period the stock of migrants does not capture the "friends and relatives" effect commonly referred to in the theoretical literature, but may suggest an effect like "decreasing returns to migration". The more immigrants there are in the

host country, the harder the competition on the labor market, especially in a country like Germany where labor markets exhibit low dynamics and foreign workers are concentrated in a small number of industries (see e.g. SCHMIDT (1997).

The significant negative impact of the lagged net migration rate on the changes of this variable between different time periods suggests that immigration to Germany is varying around a stable level, i.e. there is no reason to expect immigration to Germany to ever increase in the future. This view is confirmed by estimates of the model with *levels* of the net migration rate as dependent variable, which yields a statistically significant *positive* coefficient for the lagged net migration rate and, therefore, reveals the considerable inertia in the observed migration flows.

The positive and highly significant coefficient of the change in the combined PCI-ratio and German employment rate indicates that short-term economic fluctuations in Germany play a substantial role in explaining immigration flows, whereas short-term fluctuations in home employment prospects seem to be unimportant. Finally, the free movement agreement accompanying EU-membership also had a statistically significant impact on migration flows, indicating that, though smaller in absolute terms than the country fixed effects, this variable could not be neglected. Regulations reducing the institutional barriers to migration obviously lead to higher migration flows.

In a next step the restrictions implied by the theoretical model are tested. In equation (5) the PCI-ratio between Germany and the home country and the German employment rate appear with equal coefficients. These parameter restrictions were rejected on the basis of a Wald test[8]. Estimates of the unrestricted model are given in the second column of **Table 4.2** (Model 2). The estimated coefficients of Model 2 basically exhibit the same picture as the estimates of the restricted Model 1. The only exception are the coefficients for the country specific intercepts and the stock of migrants, which become statistically insignificant, whereas the change in employment rates of the origin countries is statistically significant with the expected negative sign. The reason for this change in significance between the intercepts and the employment rates may be the low variation in the latter variable. Thus, the separate inclusion of the employment variable removes

[8]The computed test statistic for these restrictions was 20.75. The 5 % critical value of the $\chi^2(2)$ table is 5.99.

the explanatory power from the individual constants.

In a second step the estimation results for the country specific effects of Model 2 are analyzed. The aim of this endeavor is to provide us with the possibility to include these country specific effects into the forecasting scenarios. Adopting a common method in the empirical literature on industry differentials (see e.g. DICKENS AND KATZ, 1987), the coefficients of the country dummy variables of Model 2 are regressed on a set of variables which are either time invariant or which can be sensibly assumed not to change dramatically over time. Specifically, we use the distance between the economic capitals of country j and that of Germany and the Human Development Index published by the UN for 1990. This index, which encompasses information on social variables like e.g. life expectancy or school attainment as well as the economic variable real per capita income accounts for the impact of differences in the development status of the different sending countries. The results of this regression are presented in **Table 4.3**.

Table 4.3: Analysis of Country Specific Intercepts

EXPLANATORY VARIABLES	COEFFICIENT	T-VALUE
Constant	0.0013	4.53
Human Development Index	-0.0011	-3.73
Distance x 10,000	-0.0845	-0.46

Notes: Adjusted $R^2 = 0.44$; F(2,13) = 6.98; Number of Observations = 16 (Yugoslavia was skipped due to missing observations for HDI).

The estimates show that the higher the overall development status of the home country, the smaller is the country-specific effect, whereas the distance between the home country and Germany has no significant effect on observed migration flows. This is certainly not surprising, since the geographic distance can only be a very poor approximation to the relevant but unobservable distance concepts, like cultural or economic distance. The results of this regression do not change considerably if the United States which could be viewed as an outlier regarding the distance is deleted from the sample. The distance measure remains far from being statistically significant.

In the next step the sensitivity of the estimates as well as the stability of the reported results are tested by varying the specification of Model 2. A closer inspection of the residuals of this model reveals that Yugoslavia contributes to a large part of the remaining variation. Therefore, in a first step the model is re-estimated using the time series data

only up to 1990 to investigate the impact of the civil war years on the estimation results and as a second test a dummy variable is introduced which equals one for these years, and zero otherwise. Neither of these changes in the specification of the model has a substantial quantitative or qualitative impact on the estimation results. Eventually, dropping the statistically insignificant "guest worker" dummy variable does not have a substantial effect either.

Finally, to test the predictive power of the model within sample, the absolute number of predicted immigrants to Germany is calculated for the last sample year (i.e. 1994) and compared to the actual immigration numbers for this year. The model predicts an aggregate inflow of 46,434 people from the sample countries[9] compared to an actual immigration number of 42,437 people in 1994. This amounts to an forecasting error of roughly 4,000 people or around 10 % of actual immigration.

Table 4.4: Long-Run Coefficients[10] of Model 2

Explanatory Variable	Long-Run Coefficient	t-value
Per Capita Income Ratio	0.00012	2.43
German Employment Rate	0.00027	2.39
Employment Rate of Home Countries	-0.00049	-3.94
Stock of Migrants × 1,000,000	-0.00034	-1.80
"Free Movement" Dummy	0.00038	3.12

Table 4.4 gives the long-run coefficients and their t-values derived from the estimation results of the unrestricted model (Model 2). Since these coefficients are a ratio of two random variables, the associated standard errors have to be approximated by the Delta-Method (cf. e.g. Greene (1997), p. 278). These coefficients will be used for simulation purposes in the next section because they do not include the impact of short-term economic fluctuations on migration flows.

[9] Yugoslavia was excluded from this calculation, because there was a significant drop in net immigration from this country to Germany in 1994 from on average 91,833 people in the 5 years from 1989 to 1993 to 1,011 people in 1994. Therefore, we considered this observation as an outlier and deleted it from the predictions.

[10] The long run coefficient of the guest worker dummy is omitted from this table, since there is no guest worker system between Germany and the CEEC's and it is assumed for the forecasts that there will be none in the future.

4.4 Assessing the Potential for Immigration to Germany from the Accession Candidates

In this section the estimated long-run coefficients are used to assess the immigration potential from the ten Central and Eastern European (*CEEC-10*) accession candidates[11]. Obviously, since these ten countries are excluded from the sample of countries used for estimation purposes, this forecast is a double extrapolation problem and therefore requires a number of assumptions to hold. These assumptions are crucial for the quality and validity of the forecasting results. Any violation of these assumptions may result in a serious loss of forecasting quality and may eventually render the predicted immigration flows completely invalid.

The most important assumption required to conduct these (double) out-of-sample forecasts is that the underlying structure of the observed migration flows which is reflected quite accurately by the estimated model remains stable. Moreover, this structure must also adequately describe the behavior of future migration flows from Central and Eastern Europe, which means that the migration decision of individuals from the CEEC-10, at least in the long-run, must be determined by the same factors as the migration decision of individuals in our sample countries.

Additionally, a number of assumptions is necessary for the development of the exogenous variables in equation (4.6). In a first scenario, per-capita income in Germany is assumed to grow at a constant real rate of 2% per annum. The income gap between the CEEC-10 and Germany is calculated on the basis of GNP per capita in purchasing power parities provided by the World Bank. This difference is assumed to decline at a rate of 2% per annum (medium convergence scenario).

The development of population size in the CEEC-10 countries is difficult to predict since these countries experienced a remarkable decline in birth rates in the early 1990's. Based on projections of the World Bank a partial recovery of birth rates is assumed. The unemployment rate in Germany has been put at an 8-year average of 8.6% per annum. The rate of unemployment in CEEC-10 countries has been assumed to stay constant at

[11]The ten countries are Bulgaria, Czech Republic, Slovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia.

the level of 1995. The geographical distance is measured in miles between the capital of the respective country and Berlin. The Human Development Index is assumed to stay constant at the level of 1996. Finally, we accumulated the immigration flows of each projection year to predict the migrant stocks in Germany. This assumes that the parameter $\delta = 1$, which means that fertility and mortality rates are equal to each other since the model is estimated with *net* migration rates as the dependent variable.

The results of different scenarios are reported in **Table 4.5**. The first and the second column of **Table 4.5** show the predicted immigration flows from the CEEC-10 to Germany for the period 1996-2015 in the medium convergence scenario. The forecasts start from an accumulated stock of 535,899 people from these countries living in Germany in 1995. Due to the assumed convergence in per-capita-income the predicted immigration flows from these countries to Germany decrease slowly over time. They amount to an average immigration number of roughly 67,101 immigrants per annum if the extension of the free movement of labor regulation is assumed[12]. This leads to an accumulated increase in the stock of migrants from these countries in Germany by 1,409,119 persons within this time period. Not allowing for free movement from the accession candidates, as it is proposed by several politicians, would reduce this average immigration figure slightly to 66,740 yielding an accumulated increase of 1,334,807 residents until 2015.

The fourth and fifth column of **Table 4.5** shows predicted immigration figures of the medium convergence scenario for the first round-candidates[13]. During the time period from 1995 to 2015 we would expect the stock of migrants from these four countries in Germany to rise by 691,036 people from 371,665 in 1995 to 1,062,701 in 2015 which amounts to an average immigration flow of 32,906 people per annum if the free movement agreement is extended to these countries. Without free movement the average immigration flow would decrease to 32,361 people per annum.

[12]This means that the long-run coefficient of the "free movement" dummy variable is considered for these predictions, whereas it is not in the scenarios labeled "without free movement".

[13]These are Czech Republic, Estonia, Hungary and Poland. In 1995 the stock of residents in Germany from these countries was 371,665 people.

Table 4.5: The Migration Potential from the CEEC-10 to Germany

Year	CEEC-10			First-Round Candidates		
	Medium convergence **without** free movement	Medium convergence **with** free movement	**No** convergence with free movement	Medium convergence **without** free movement	Medium convergence **with** free movement	**No** convergence with free movement
1996	72,827	76,770	78,430	35,804	38,150	39,138
1997	71,931	75,846	77,493	35,251	37,576	38,554
1998	71,283	75,173	77,020	34,890	37,199	38,283
1999	70,636	74,502	76,545	34,533	36,826	38,013
2000	69,995	73,837	76,069	34,178	36,455	37,742
2001	69,361	73,179	75,596	33,827	36,087	37,472
2002	68,736	72,530	75,127	33,479	35,723	37,203
2003	68,118	71,890	74,662	33,135	35,363	36,936
2004	67,509	71,257	74,200	32,795	35,007	36,670
2005	66,907	70,632	73,741	32,459	34,655	36,405
2006	66,312	70,014	73,285	32,126	34,307	36,141
2007	65,725	69,403	72,831	31,797	33,962	35,879
2008	65,144	68,800	72,381	31,472	33,622	35,618
2009	64,571	68,204	71,933	31,150	33,284	35,359
2010	64,004	67,614	71,488	30,832	32,950	35,100
2011	63,444	67,032	71,046	30,517	32,620	34,843
2012	62,890	66,456	70,607	30,206	32,293	34,588
2013	62,343	65,887	70,170	29,898	31,970	34,333
2014	61,803	65,324	69,737	29,593	31,650	34,080
2015	61,269	64,768	69,306	29,291	31,334	33,828

Notes: CEEC-10 covers the following countries: Bulgaria, Czech Republic, Slovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia. The first-round candidates are Czech Republic, Estonia, Hungary and Poland. For assumptions see text.

The results for an alternative set of assumptions regarding the development of economic variables are reported in the third column of **Table 4.5** for the CEEC-10 and the seventh column for the first round candidates. In this scenario no convergence of per capita income between Germany and the CEEC's is assumed and the German unemployment rate is set to 5% per annum. Furthermore, it is assumed that the free movement agreement is extended towards the CEEC's. This would increase the average inflows from the CEEC-10 to around 73,583 people p.a. within the same period, increasing the stock in Germany by 1,471,666 over the whole period. For the first round candidates these assumptions would result in an average inflow of 36,309 p.a. and an accumulated increase of 726,186 residents.

4.5 Conclusions

This paper utilizes a pooled cross section-time series dataset to estimate the reduced form of a well-established model of the determinants of aggregate immigration flows to Germany. Within the framework of this model it is possible to distinguish between short-run and long-run determinants of observed migration flows. The estimation results suggest that both short-run as well as long-run factors play a substantial role in explaining immigration to Germany within sample. Overall the underlying structure of observed immigration flows is quite accurately reflected by this model.

Therefore, the estimated long-run coefficients of the model are used to forecast expected immigration flows from the prospective EU-member countries of Central and Eastern Europe. Under the assumption of structural invariance across time *and* space as well as for a set of different assumptions regarding the development of the economic variables in the model these scenarios predict a moderate increase of immigration to Germany, especially for the first round accession candidates. The predictions are far too small to justify the large concern expressed in the media. They reflect the experience of the EU-enlargement to Spain, Portugal and Greece in the middle of the 1980's. Furthermore, the results of the different scenarios are apparently in line with what the potential migrants would say themselves. In the words of a Polish official in the negotiations of EU enlargement[14] : "The idea of a mass exodus of Poles is nonsense. Some of us actually enjoy living at home."

[14] The Economist, July 31st 1999.

Chapter 5

Aggregate-Level Migration Studies As a Tool for Forecasting Future Migration Streams

Abstract. Assessing the migration potential and predicting future migration streams are among the most relevant, yet least well understood topics of migration research. The usual approach taken to address aggregate-level prediction problems is to fit ad hoc specifications to historical data, and to extrapolate from these estimates on the basis of conditioning information that is assumed to be known with certainty. In this context, this strategy faces formidable problems that exceed the usual difficulties arising for the prediction of economic variables. This paper addresses this extrapolation problem formally, with an application to the case of EU-enlargement and the ensuing migration streams to be expected from Eastern Europe.

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5.1 Introduction

From the vantage point of economic policy, assessing migration potential and predicting future migration streams are among the most relevant, yet least well understood topics of migration research. Most theoretical models and a large range of econometric studies successfully address heterogeneity at the individual level, with an emphasis on the detection of demographic and socio-economic determinants of the individual migration decision, or on the identification of the appropriate decision unit. In the aggregate, though, many important explanatory factors are shared within the regions of origin and destination, rendering the individual-level results inappropriate as a predictive tool, and necessitating an analysis over time and space. The usual approach taken to address aggregate-level prediction problems is to fit ad hoc specifications to historical data, and to extrapolate from these estimates on the basis of conditioning information that is assumed to be known with certainty[1].

This strategy faces formidable problems that exceed the usual difficulties in predicting economic variables. One reason for these deficiencies is the paucity of the data material, making precise estimation of historical relationships both between demographic and economic determinants and the resulting migration streams, and the univariate prediction of those economic variables very difficult. This concern is already relevant for demographic variables, although one might reasonably well predict future population size and age structure. It applies even more to the prediction of economic developments, such as changes in wages, income and employment. Typically, forecasts in the literature do not address this problem of precision systematically.

The second, and conceptually more severe problem is the identification problem that has to be solved satisfactorily for any valid extrapolation, irrespective of the available data points. In the particular case at hand, it is not only the usual temporal invariance that would have to be imposed directly or via the parameterization of trends in variables

[1] There are two prominent alternatives to this approach: (i) using intentions data (e.g. Papapaganos et. al. (2000), Bauer and Zimmermann (1999)) – since it is the manifestation of intentions, not some verbal account of desires, which are at issue, this approach risks being very unreliable; (ii) inference based on historical precedent – very rarely will it be possible to detect a closely comparable situation in historical data, however, making it very likely that this approach remains anecdotal.

or relationships, but also the additional invariance across space: often future migration is likely to take place between origin and destination regions that do not share a common history of migration. Moreover, the intertemporal pattern of regulations and institutions relevant for migration streams, albeit endogenous to social and economic changes, is often taken as exogenously given.

This paper will formally address this double extrapolation problem, with an application to the case of EU enlargement and the ensuing expected migration streams from Eastern Europe after the associated changes in the regulations concerning migration. The paper thus intends to contribute to the clarification of three important issues:

1. Specific *identification assumptions* have to be invoked by every aggregate migration study. These assumptions might appear particularly restrictive in studies being motivated by microeconomic considerations; basing the analysis on theoretical reasoning is necessary, though, if we want to improve upon mechanical curve fitting.

2. The role of *demographic factors* in the migration decision is widely neglected; evaluating the size and impact of migration flows has to take into account this major supply side factor. This holds particularly within the EU which erects fairly low institutional barriers to migratory movements of their own citizens.

3. Imposing more and more *structure* on the estimation of the determinants of aggregate migration flows has important consequences for the forecasting of future migration flows; more structure typically reduces uncertainty *within* sample if the invoked assumptions are correct, but may not necessarily lead to better forecasts.

The paper is structured into two major parts. Section 5.2 provides a selective survey of existing aggregate-level migration studies. The first half of this section is devoted to technical issues, emphasizing the characterization of the particular empirical strategy chosen in each paper to identify the impact of explanatory demographic and economic factors on the magnitude of migration flows. Here we aim at clarifying the implicit and explicit identification and invariance assumptions invoked by the migration literature. In this context, the role of structural economic models as opposed to reduced-form models as predictive tools is also discussed. Recent developments link the migration literature

to the macro-economic literature on convergence by introducing political variables such as freedom and rule-of-law indices; the predictive potential and the additional problems arising from such variables are explored. The second half of section 5.2 provides a synoptic discussion of the results of existing studies of aggregate migration flows to Germany, in the light of these technical arguments; specific emphasis is on the explanation of agreement and disagreement between existing studies as results of the chosen identification strategies.

The second part of the paper will develop our own approach to the particular problem of predicting future migration streams from Central and Eastern Europe to the West within a unified Europe. This topic has received increased attention in recent years, with the answers varying substantially across studies (cf. e.g. Bauer and Zimmermann (1999), Fertig (2001) and Sinn (1999), (2000)). In section 5.3, we prepare this empirical application by formulating a generic theoretical model as a frame of reference, and then discussing alternative identification assumptions. On the basis of our Western data for the post-WW II period, we proceed in section 5.4 to estimate the historical relationship between migration to Germany and its aggregate-level determinants. We then use these estimates to generate concrete predictions of the immigration flows from Eastern Europe following EU enlargement, with a focus on the impact of varying identification strategies on these results.

In section 5.5, we summarize our results, both on the methodological lessons to be drawn and the concrete results of our empirical application, and provide an agenda for further research on this issue.

5.2 The State of Discussion

In this section, we will provide a selective survey of existing aggregate-level studies of international migration. Our review emphasizes the particular empirical strategy chosen by each paper to identify the impact of explanatory demographic and economic factors on the magnitude of migration flows. The aim of this focus is the clarification of the implicit and explicit identification and invariance assumptions invoked by the migration literature. In this context, the role of structural economic models as opposed to reduced-form models

as predictive tools will also be discussed.

5.2.1 Empirical Strategies and Identification Assumptions

Empirical analyses of international migration typically rests on aggregate data. In the particular case of (gross or net) emigration from a set of origin countries to a single destination these models take the generic form:

$$m_{s,t} = \mu_s + X_{s,t}\beta_s + \delta m_{s,t-1} + \epsilon_{s,t} \tag{5.1}$$

where $m_{s,t}$ typically denotes an appropriate measure of the aggregate migration rate (i.e. the actual migration as a proportion of potential migrants at the origin) from sending country s in year t. The parameter μ_s captures all unobservable aspects of the process which are specific to country s but constant over time, while the k-dimensional matrix $X_{s,t}$ denotes the observable time-varying characteristics of country s at time t (relative to the destination), and β_s and δ are (vectors of) unknown parameters to be estimated. Since the lagged dependent variable introduces dynamics into expression (1), $\delta < 1$ is a necessary condition for the stationarity of the process. Finally, $\epsilon_{s,t}$ is the error term reflecting all unsystematic influences on the process.

Variations of this generic form are typically more restrictive, either by expressing country-specific intercepts as a linear combination of time-constant observable characteristics, by restricting slope coefficients to be equal across countries, $\beta_s = \beta \; \forall s$, by omitting the lagged dependent variable, or by a combination of these restrictions. Usually, this model specification and the concrete choice of explanatory factors included in X is more or less based on microeconomic considerations relating the individual decision to migrate or not to rational economic behavior in the context of utility or income maximization.

Building on a long-standing tradition of economic reasoning about the determinants of migration, at the center of attention in such models are usually the economic variables collected in X. When social scientists first started thinking about the determinants of aggregate migration flows (a prominent early contribution is Ravenstein (1889)), they did this in the demographically relatively homogenous context of internal migration. The

large variety of possible driving forces offered by these contributions is a tribute to the ingenuity of the social sciences in modelling human motivation and behavior. Current studies typically follow the seminal paper by SJASTAAD (1962) and understand migration as an investment in human capital. This approach assumes that in their individual decision agents weigh current cost of migration, direct as well as opportunity cost, against the stream of benefits to be expected after the move, most prominently increased wages.

Yet, both historical data as well as current accounts of the problem (see for instance PLAKANS AND WETHERELL (1995) and ROGERS AND CASTRO (1986)) demonstrate clearly that migration typically happens in a narrow band of the life cycle, ranging from early adulthood to, at most, the prime of the working career. Since the demographic structure usually varies much more across countries than within regions of the same country – as a manifestation of differences in fertility, mortality, and migration[2] – one would certainly expect deviations in this structure to be prime determinants of migration flows. Specifically, the first question should be about the size of the population in the core migration age band – after all, it is not the individual migration decision that an aggregate study wants to explain, but the convolution of individual decisions, motivated economically or otherwise, with demographic structure.

Thus, in the context of international migration it seems rather unfortunate that current analysts often think first and foremost about the economic differences when they attempt to assess migration potential (see for instance SINN (1999)). Conceptually, it is the very idea of migration as an investment in human capital that makes the ample supply of core age individuals in the population of the origin countries a necessary prerequisite for economic discrepancies to have an effect on migration flows. Even in the presence of substantial disadvantages in the standard of living, compared with the destination countries, will it be very unlikely that a demographically mature society would produce substantial emigration flows.

[2]These differences are caused by underlying forces such as – among others – participation in wars (see for instance the comparison of Germany, Poland and Sweden, and the effect of WW II on their respective population age structure in SCHMIDT (1996b)), differences in the system of education and public health (in developing countries, education of the mother is a prime determinant of fertility and child mortality, and child mortality is still substantially different from that in the OECD), or differences in tax or social security systems.

In consequence, we would expect a complex interaction of indicators of demographic structure with economic variables to yield superior explanatory power for understanding emigration activity. That is, demographic characteristics such as the fraction of core age individuals in the sending country do not simply appear as additional regressors, since this would assume that all other regressors are taken to impact on aggregate migration rates (i.e. actual migration relative to the population at the origin, irrespective of the age composition of numerator or denominator) *identically*, whether the origin country is relatively old or relatively young. In our own empirical approach, we will deviate from the reviewed literature and move emigration rates from within the core age group into the center of attention. Specifically, we will argue that for purposes of prediction the modelling strategy of choice should be to start from a simple model of emigration rates among individuals of core age. There are good reasons to be reluctant to augmenting this model by notoriously difficult to predict economic information[3].

In the received literature on international migration wages and employment or unemployment rates play a major role as regressors. Mostly, per-capita incomes or the growth rate of income in sending and destination countries are taken as proxies for wages. Following Sjaastad (1962) and Harris and Todaro (1970) it is *expected* income which is the relevant income measure for the migration decision. Expected income is typically defined by the wage times the probability of finding a job, where these variables are approximated by per-capita income and the (un-)employment rate, respectively. In the empirical application, both variables are then typically either entered separately into the regression, or parameter restrictions are imposed a priori and, perhaps, tested statistically.

In addition, there are several other variables which are often employed in empirical studies. For example, following the literature on international trade relations, some papers set up a "gravity model" which includes the geographical *distance* in addition to the economic variables[4]. Another strand of the literature focuses on potential network effects in the migration decision proxied by the *stock of migrants* in the destination country (an alternative interpretation of this stock variable is given below). In addition, most empirical

[3]The received literature frequently pays particular attention to the distinction of economic and non–economic migrants, with the latter comprising migrants pursuing family re–unification and political and war refugees. Our argument applies to voluntary migration.

[4]Needless to say that this precludes a separate inclusion of country-specific effects.

studies employ a set of dummy variables to capture (often quite persistent) institutional and/or legal aspects, like e.g. EU membership, a common border or language. A more recent approach focuses on supply–side non-linearities á la Kuznets and includes various measures for the *level of development* and the political and *human rights* situation, (c.f. VOGLER AND ROTTE (2000)), in this equation. Alternatively, health measures or life expectancy could be included. It has to be understood, that while their inclusion is based on underlying theoretical reasoning, the way these variables enter the specification is still completely ad hoc.

The *counterfactual* question implicitly asked by such a model is what would have happened to immigration flows from a specific country if one or several of the explanatory factors were different. Unfortunately, one only observes a country at any point in time with a single specific configuration of explanatory variables, making the decision to use a regression model such as (1) a method of choice. This decision is not innocuous. Any particular specification of this model necessarily invokes a set of *a priori* identification assumptions beyond the (log-) linearity of migration rates, enabling the analyst to construct this unobserved counterfactual situation. These identification assumptions are *assumed* to be true for the purposes of the analysis and their validity is not reflected in the usual measures of sampling variability (SCHMIDT (1999)). Moreover, more restrictive assumptions will generally reduce the remaining uncertainty *within* sample if these assumptions were correct. However, the reduction of uncertainty within sample need *not* necessarily be accompanied by a smaller uncertainty *out-of-sample*, a principle evidenced by the prominence of univariate prediction models in the analysis of financial markets.

Several different and non-exclusive identification assumptions are listed below. They concern the level of aggregation (1. and 2.), the loss of information from focusing on selected origins and destinations (3.), restrictions on the parameters (4.), and restrictions on the disturbance process (5.).

1. *"Population Homogeneity"*: Using the aggregate migration rate requires the assumption that this rate accurately reflects the average individual probability of migration for individuals from origin country s. The implicit assumption of no positive or negative selection due to unobservables is particularly severe, since nearly

every individual characteristic, like education, marital status etc., is unobservable on the aggregate level. If this assumption is violated, using aggregate figures like the per-capita income or unemployment rates in the explanation of the migration decision is misleading since these figures do not describe the economic opportunities of the migrants correctly.

2. *"Participation Assumption"*: Using aggregate (un-)employment rates as proxy for individual probabilities to find a job requires the assumption that participation issues play no substantial role (DUSTMANN AND SCHMIDT (2000)), particularly since empirical studies usually do not distinguish between male and female immigrants.

3. *"Stability of Alternative Destinations"*: Focusing the analysis on permanent immigration from *different* origin countries into *one* destination country requires the assumption that immigration into other potential destination countries varied proportionally to observed migration flows over the considered time horizon. For instance, if a substantial increase in immigration figures to Germany from, say, Turkey is accompanied by a moderate increase in the income differential between Turkey and Germany one would conclude that this moderate increase has led to the greater inflow. But if, at the same time, economic prospects in other potential destination countries deteriorated considerably, the great increase in immigration to Germany might simply stem from a redirection of flows. This argument naturally extends to the implied stability of the political and institutional environment.

4. *"No Country–Specific Effects"*: Using an overall constant, i.e. $\mu_s = \mu \ \forall s$ instead of country–specific intercepts requires that there be no persistent country–specific determinants of aggregate migration streams[5]. With the inclusion of country–specific intercepts, the identification of the β_s exclusively stems from the time–varying components of the $X_{s,t}$ matrix. The latter, however, are typically restricted to equality, i.e. $\beta_s = \beta$, if one intends to allow for country-specific intercepts.

5. *"Spherical Disturbances"*: In the case of pooled data sets, parameter estimation by

[5]Country fixed effects are a problem for forecasting future streams from countries *not* being in the sample. However, this problem may be solved by modelling these effects directly (see below) or by a two-step procedure whose second step re-parameterizes the estimated intercepts by a set of time-invariant regressors (FERTIG (2001)).

pooled OLS invokes a set of severe covariance restrictions. Specifically, this estimation procedure requires the assumptions of *homoscedasticity* across regions and time, no *correlation* across regions, and no *autocorrelation* across time. For a sufficiently heterogenous sample of sending countries this seems to be very implausible. For example, if there are unobserved shocks which affect migration streams from different countries in a similar manner, observed migration figures may be correlated across groups. Also, it is quite plausible that there may be shocks which will lead to a correlation across time. Finally, the sheer difference in magnitude of inflows from different countries of origin may lead to a non-constant variance across countries.

Our selective review of studies of aggregate international migration flows will demonstrate that assumptions (1.) to (3.) are typically not questioned, while some studies introduce country-specific effects μ_s at the expense of (4.), and others model their error process more carefully in a weakening of (5.). Naturally, none of the studies works without identification restrictions.

5.2.2 Results of Existing Studies

This section will *synoptically* discuss the results of selected existing studies of aggregate immigration flows to Germany in the light of these identification assumptions. Specific emphasis will be on the explanation of agreements and disagreements between existing studies as results of the chosen identification strategies.

Table 5.1: Existing studies of aggregate migration flows to Germany

Author(s)	*Katseli and Glytsos (1986)*	*Karras and Chiswick (1999)*	*Fertig (2001)*	*Vogler and Rotte (2000)*
Dependent variable	Gross migration rate	Net migration rate	Change in net migration rate	Log of gross rates and asylum seeker rates
PCI in origin country	0			+ (level); - squared level
PCI in Germany	0			
Relative PCI		0	+ (level and change)	+
Growth of GDP in Germany		+		+
Growth of GDP in origin country		-		
Unemployment rate in origin country	+		+ (level and change)	
Unemployment rate in Germany	-		- (level and change)	
Lagged dependent variable	0	+	- (level)	
Stock of migrants in Germany			0	
Other variables	0 Remittances	+ Mean schooling	+ EU dummy; 0 guest worker dummy	0 Political Terror Scale; - Civil rights; + Share of urban population
Dataset	Time series for Greek-German migration (1961-1983)	Pooled cross-section/time-series mainly for European countries (1960-1988)	Pooled cross-section/time-series mainly for European countries (1960-1994)	Pooled cross-section/time-series for Asian and African countries (1981-1995)
Estimation Procedure	OLS	Pooled OLS	ML by iterated GLS	Fixed and random effects panel estimator
Identification assumptions	(1), (2), (3), (5)	(1), (2), (3), (4), (5)	(1), (2), (3)	(1), (2), (3), (5)
Forecasting	None	None	Double out of sample for 10 CEEC's	None

Note: + denotes a significant positive impact on the dependent variable, - a significant negative, and 0 an insignificant effect.

The literature on empirical investigations of aggregate immigration flows to Germany is quite scarce. An early contribution is the analysis of migrant flows from Greece to Germany by KATSELI AND GLYTSOS (1986). In terms of the generic expression (1), we necessarily have $s = 1$ in this paper. Overall, the employment rates in both countries are statistically significant in almost all variants of the basic specification, whereas for the most part the real income variables, the lagged dependent variable as well as the additional variables are not.

KARRAS AND CHISWICK (1999) utilize pooled cross section-time series data, that is $\beta_s = \beta$, to analyze aggregate migration flows to Germany for a sample of 17 countries of origin and a time period covering 1964-88. The authors perform two pooled OLS regressions of the net migration rate on different sets of explanatory variables. One regression uses a common constant, i.e. $\mu_s = \mu$, and another employs country–specific intercepts. The different sets of explanatory variables include the lagged migration rate, the per capita income ratio between Germany and the origin countries as well as the growth rates of per capita income and lags of these variables, a measure of average schooling in the sending country, a dummy variable for EU membership and different interaction terms of this dummy variable with all other variables. The sample was split into the two subperiods 1964-73 and 1974-88. The fixed–effects specification was rejected; the results of the specification with a common intercept indicate no statistically significant effect of the income ratio and the schooling measure for the first sub-sample. The lagged net migration rate and the income growth rate in Germany were statistically significant in both sub-samples.

A similar approach is used by FERTIG (2001). The author also uses a pooled cross section-time series dataset for 17 countries of origin and a period covering 1960-1994. The estimation equation specifies the first difference of the net migration rate in terms of the changes and the levels of the per capita income ratio (in PPP) between Germany and the sending countries as well as the changes and levels of the employment rates of the respective countries. In addition the stock of migrants, the lagged level of the net migration rate and two dummy variables for EU membership and the German guest worker system of the 1960's and 70's are included. The model is specified with country–specific intercepts, i.e. $\mu = \mu_s$ and estimated by iterative GLS.

The restrictions on the disturbance matrix are relaxed in a stepwise process leading to groupwise heteroscedastic and correlated disturbances. The estimation results suggest a statistically significant positive impact of the income differential, the employment rate in Germany and the dummy variable reflecting EU membership as well as a statistically significant negative effect of the employment rate in the sending countries and the lagged level of the migration rate on observed immigration flows. The stock of migrant measure and the dummy variable for the guest worker years were statistically insignificant. The author also performed forecasting scenarios for future migration streams from Eastern Europe which support the view of positive albeit moderate future inflows from those countries. The predicted figures for the first-round candidates varied between 32,900 and 36,300 immigrants per year between 1995 and 2015.

On the basis of a substantially wider set of origin countries Vogler and Rotte (2000) address the complex set of issues associated with the relation of migration and economic development, political freedom, rule of law, and democracy. Specifically, their dataset contains immigration flows by asylum seekers for a sample of 86 Asian and African countries between 1981 and 1995 as well as indices of political participation opportunities (*Freedom House Index*) and political violence (*Political Terror Scale*) in the respective sending country. In addition, these authors try to account for changing emigration activity in the course of development, similar to the argument raised in Faini and Venturini (1994). The random–effects panel data estimates of Vogler and Rotte (2000) suggest a positive impact of economic differences between Germany and the countries of origin which declines in magnitude over time. The results also suggest an important role for financial restrictions and migrant networks in explaining the migration decision.

Overall, these previous studies provide an interesting, albeit not completely satisfying account of aggregate migration flows to Germany during the past decades. Specifically, the most prominent factors which are accounted for, such as wages or unemployment rates, do not yield stable results. Conceptually, in our view, most problematic in the explanation of emigration flows is the omission of source country–specific heterogeneity, accounting for which requires access to panel data. That is, studies which impose a common intercept term either follow an implicit assumption that no important persistent differences in migration activity exist across source countries, or that this variation across countries is

orthogonal to the other determinants included in the specification. Yet, even under this latter, quite restrictive implicit assumption, most studies tend not to provide the most efficient (GLS) estimator but rather LS estimates (an exception is FERTIG (2001)).

We have argued here that discrepancies in the demographic structure of source and destination countries might be an important, perhaps the crucial driving force behind migration. Yet, demographic characteristics of the source countries are hardly a prominent factor in the existing studies. If demographic and economic factors are highly correlated, using economic predictors might alleviate this problem somewhat – but in terms of *explaining* migration flows, accepting this argument raises a critical shadow of doubt on existing estimates. The existing evidence also suggests that there is considerable temporal persistence in the process, although none of these studies (except FERTIG (2001)) modelled cyclical variation in migration activity which affected origin countries together.

Moreover, since prediction was *not* the major objective of most of these studies, their potential as the basis of such predictions is in doubt. Specifically, it was the declared aim to provide a maximal fit to the historical data, leading to a relatively large set of conditioning variables. Not only will a good within-sample fit not necessarily guarantee a satisfactory predictive performance out-of-sample, but predictions of migration rates will require predictions of the conditioning variables. The large set of controls included in these studies will make this task extremely difficult. This problem will be relatively moderate though, if the set of conditioning variables is exclusively demographic – demographic developments can usually be predicted relatively well, since most people present tomorrow have typically been born in this country already today.

5.3 Prediction of Future Migration Flows to Germany

This section develops our own approach to the problem of predicting future migration streams from Eastern Europe to the West within a unified Europe, including the first-round accession candidates, i.e. *Czech Republic*, *Estonia*, *Hungary*, and *Poland*. The first subsection briefly describes the Eastern European countries with a special emphasis

on demographic developments. Finally, subsection 5.3.2 outlines the utilized model and describes the employed estimation technique.

5.3.1 The Crucial Role of Demographics

In a legal framework like that of the European Union with only small institutional barriers to internal migration, demographics are a major determinant of immigration streams. For a discussion of the potential size as well as the ensuing impact of immigration it is therefore necessary to take into account demographic factors. Germany for instance experienced a substantial inflow in the post-1950 era (e.g. SCHMIDT AND ZIMMERMANN (1992)). Gross immigration amounted to 25.5 million up to 1990, and net migration was around 10 million people. In addition, after 1990 with the demise of communism in Eastern Europe and the civil wars in former Yugoslavia a remarkable inflow of "ethnic Germans" (*Aussiedler*) and war refugees was added. Demographic aspects have played an important role in this impressive immigration record for two reasons.

First, there has been a remarkable life-cycle pattern in the influx of immigrants to Germany (cf. SCHMIDT (2000a)); many immigrants have been young adults. In addition, during the first years of the post-1950 era most of the *net* migration comprised males, thereby confirming the view of the typical migrant being a young male worker. This observation is a direct reflection of the fact that Germany actively recruited so–called *guest workers* which were typically young males. While the age structure of the influx has changed over time, particularly after the halt in active recruitment in 1974, this observation nevertheless emphasizes that migration activity is crucially determined by the size of young cohorts at the origin. This general conclusion is unlikely to change when considering future migration potential from the EU accession candidates. Thus, in our own approach to its prediction, we concentrate on the characterization of the size of the population at these origins, specifically among more recent cohorts.

Second, these relatively young immigrants displayed a higher survival rate than the relatively old indigenous population. Moreover, even if one assumes that fertility rates are not higher for migrants than for natives of the same birth cohort, the fact that the largest part of the migrant population is in prime childbearing age has contributed substantially

to the growth of the migrant population over time (cf. SCHMIDT (2000a)). Potentially, there might be an important dynamic impact of this migrant stock on future immigration to be expected. However, as the following discussion demonstrates, its direction is indeterminate, suggesting to start the prediction exercise with a static model of migration.

Past immigration flows and the resulting *stock of immigrants* in a specific destination country may have several implications for the individual migration decision and, therefore, current migration flows. A part of the literature on the migration decision tries to take into account so called *network* effects. If people already living in a foreign country help their friends and relatives to get started, e.g. in finding accommodation or jobs, this effect would induce *chain migration*. This hypothesis might be captured empirically by the stock of previous immigrants to a country. Several empirical papers indeed suggest that there has been a positive effect of previous migration on contemporary migration. However, network effects are not the only possible interpretation for this pattern. For instance, as already pointed out by GREENWOOD (1975), the stock of migrants could also be seen as a proxy for an informal information flow between the sending country and the potential destination countries.

One could imagine that for a potential migrant there are two principal channels of information flows concerning the economic opportunities at the destination. One channel are the publicly available statistics on official unemployment rates and per–capita income provided by the statistical offices or the media, while the second comprises informal information by compatriots already living in the possible target country. While the official statistics are certainly a good starting point for the formation of expectations on the economic prospects at the destination, they rarely reflect the relevant opportunities accurately, especially if skills acquired at the origin are not fully transferable to the destination country. In Germany, for instance, new immigrants are competing with low–skilled native workers and previous immigrants in a small range of occupations where unemployment is higher than the national average (cf. e.g. SCHMIDT (1997)). This implies that their employment prospects would be overestimated by the average unemployment rate and that informal information flows could very well lead to a reduced migrant influx as the population of compatriots accumulates over time.

Thus, the relationship between size and structure of the immigrant population at the destination and prospective migrant influx is intricate. Moreover, a closer look at *cohort specific* emigration rates (cf. BAEVRE ET AL. (2000) for the case of Norwegian emigration) suggests that there is a negative effect of emigration of members of one cohort on future emigration from the *same* cohort. This observation is in line with the hypothesis that the propensity to migrate may be heterogenous and the individuals with the highest propensity are migrating first. Alternatively, the emigration of a part of a cohort reduces the labor market competition for the stayers and reduces their incentives to migrate[6]. On balance, these arguments suggest a conservative approach to the prediction of future migration flows which de–emphasizes the dynamic impact of previous on current immigration.

Both the general historical evidence (cf. PLAKANS AND WETHERELL (1995)) and these observations on the specific case of post–WW II Germany have induced us to pursue a modelling strategy emphasizing demographics while absorbing the – slowly changing over time and difficult to predict – economic differences between origin and destination regions into region–specific factors, and an autocorrelated error–component common to all origins. Most importantly, following the received literature in trying to explain observed aggregate migration flows mainly by economic variables, like differences in per–capita incomes, while omitting demographics, might not be very promising. These variables typically reflect economic opportunities of average natives at the origin and at the destination, not of those individuals facing the migration decision.

Moreover, differences in economic opportunities are relevant only to a fraction of the population, that in the core age–group of migration. In the extreme, very large cross–country differences in economic opportunities might not induce any migration worth mentioning, if the population in the origin region mostly comprises old men and women. What we therefore suggest to use instead of the usual migration rates are *core age migration rates*, describing migration activity only among the young. Alternatively, we will use age structure as a regressor in the empirical model, thereby probing the robustness of our predictions. Before we proceed to develop our parsimonious model of migration, we will

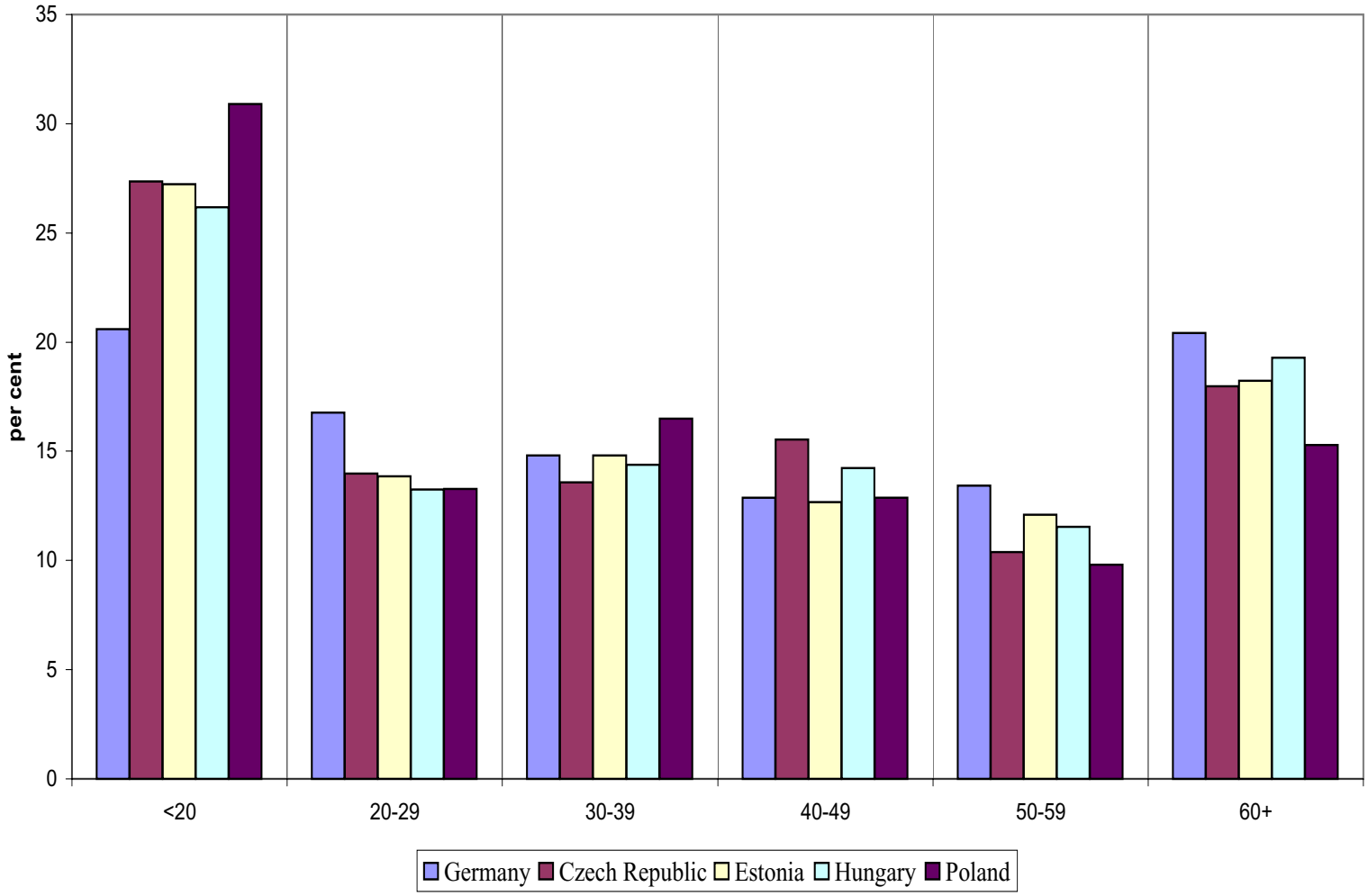
[6]A similar approach for southern European migration flows is adopted by (FAINI AND VENTURINI (1994)).

briefly characterize the demographic structure of the prospective EU accession countries.

The most likely candidate countries for the first round of EU enlargement towards Central and Eastern Europe are the three Eastern European NATO members *Czech Republic*, *Hungary* and *Poland* as well as one Baltic country, *Estonia*. These four countries (henceforth denoted as *CEEC-4*) currently comprise some 60 million inhabitants and are quite heterogeneous in their economic and demographic characteristics. They also exhibit remarkable differences compared to Germany. Most importantly, post–WW II population dynamics as well as WW II itself have left their imprint on the population age structure of these countries (cf. also SCHMIDT (1996b)).

Whereas Germany experienced a decade of high birth rates in the late 1950's and early 1960's, the CEEC-4 experienced such a *baby–boom* directly after the end of WW II. Therefore, at the end of the 20th century the population age distribution varies considerably between possible origin countries and the potential destination of migrant flows. For 1993 (1990 for Germany) **Figure 5.1** documents a relatively high proportion of people in the age group [20-29] for Germany, while the CEEC-4 display substantially higher population shares among the very young [< 20]. These cohorts and their children will be the prime candidates for the migration to the West that might be expected after EU enlargement.

Figure 5.1: Population by age groups - CEEC-4 vs. Germany



Source: United Nations (1996); own calculations

Moreover, whereas mortality rates remained relatively stable during the 1990's (cf. United Nations (1996)), there was a remarkable decline in birth rates in the beginning of the 1990's for all of the CEEC-4, thereby moderating future migration pressure. In our predictions we will try to defend ourselves against a downward bias in predicted migration flows and predict the CEEC-4 population into the future using relatively high fertility rates (see below). It is the predicted (young) population at the origin that, together with our estimates of migration rates will then lead to predicted migration flows.

The considerable differences in economic indicators between the four accession candidate countries and Germany as well as among the CEEC-4 themselves, have led some economists to conclude that there is a vast migration potential in the CEEC-4 just waiting for the starting signal to launch their march to the West and especially to Germany (cf. the controversial views in Bauer and Zimmermann (1999), Fertig (2001), and Sinn (1999), (2000)). By contrast, economic differences and their certainly imprecise predictions into the future are not discussed at length in this contribution, releaving us from the requirement to construct convergence scenarios between East and West.

Rather, we utilize our arguments on the crucial role of demographic factors for our predictions which enables us to assess the migration potential without a large range of daring assumptions on the evolution of conditioning variables. Implicitly, this presumes that economic differences are either persistent enough in the short– and medium–term to be absorbed in the country–specific intercept of the migration rate equations or are correlated enough to be absorbed by the time varying error component. The convincing choice of the country–specific intercept for countries for which no previous migration record exists is therefore the principal conceptual challenge for the prediction – yet, this has not been addressed formally in any of the previous papers on this topic.

5.3.2 Theoretical Model and Alternative Identification Assumptions

We will prepare the empirical application by the formulation of a generic model of aggregate migration flows to a single destination as a frame of reference. Within this framework we are then able to discuss a variety of identification assumptions and corresponding speci-

fications of the model. The simplest conceivable model of aggregate migration rates would be in terms of orthogonal country– and time–specific components, drawn from a common distribution of effects, respectively. In such a variance-components model (in a different context, a similar model is employed by ASHENFELTER AND CARD (1985)) the migration rate $m_{s,t}$ in the relevant age range for origin country $s = 1, .., S$ and period $t = 1, ..., T$, consists of an overall intercept term μ, a random component specific to country s but persistent over time ϵ_s, a component specific to time periods but relevant for all countries at this point in time ϵ_t, and an unpredictable white noise error term $\epsilon_{s,t}$.

In effect, we have

$$m_{s,t} = \mu + \epsilon_s + \epsilon_t + \epsilon_{s,t}. \tag{5.2}$$

The country-specific component ϵ_s captures all aspects of the process determining migration from s to the destination country which tend to persist over time, such as a common (colonial) history, climate and distance, a common language or border but also persistent economic differences. This formulation enables us to characterize the distribution from which the country–specific intercept term of those future migration countries is chosen for which no previous immigration record is available.

The period–specific component ϵ_t reflects all determinants of migration activity which vary over time but operate in all countries identically during the same period. A case in point could be any fluctuations in economic activity in the destination country, for instance in aggregate labor demand. Even in this basic model we would be very hesitant to exclude correlation of this factor across periods. Modelling the autocorrelation of this factor will therefore be central to our application. Specifically, we will model this process as an autoregressive process of first order. In brief, the stochastic structure of the process (there are naturally no correlations across the variance components) is

$$\epsilon_s \sim (0, \sigma_s^2), \epsilon_t \sim (0, \sigma_t^2, \rho), \epsilon_{s,t} \sim (0, \sigma_{s,t}^2). \tag{5.3}$$

In our empirical work we will solve the estimation problem by using *Method of Moments* techniques. Intuitively, the idea behind Method of Moments is estimating the unknown parameters by matching the theoretical population moments, which are functions of the unknown parameters, with the appropriate sample moments (HARRIS AND

MATYAS (1998)). Formally, the first step in this endeavor is to define the moment conditions. We want to estimate from our observed sample $\{m_{s,t}; s = 1, ..., S; t = 1, ..., T\}$ a $p \times 1$ vector θ of unknown parameters with true value θ_0. If $f(m_{s,t}, m_{s',t'}; \theta)$ denotes a continuous $q \times 1$ vector function of θ and $E(f(m_{s,t}, m_{s',t'}; \theta))$ exists and is finite for all s, s', t, t' and θ, then $E(f(m_{s,t}, m_{s',t'}; \theta_0)) = 0$ are the *moment conditions*.

In our application the vector of unknown parameters is $\theta = (\mu \ \sigma_s^2 \ \sigma_t^2 \ \rho \ \sigma_{s,t}^2)'$ and the moment conditions are

$$\begin{aligned}
g_0 &\equiv E(m_{s,t}) &&= \mu \\
g_1 &\equiv Var(m_{s,t}) &&= \sigma_t^2 + \sigma_s^2 + \sigma_{s,t}^2 \\
g_2 &\equiv Cov(m_{s,t}, m_{s',t}) &&= \sigma_t^2 && for\ s \neq s' \\
g_3 &\equiv Cov(m_{s,t}, m_{s,\tau}) &&= \rho^{|t-\tau|}\sigma_t^2 + \sigma_s^2 \\
g_4 &\equiv Cov(m_{s,t}, m_{s',\tau}) &&= \rho^{|t-\tau|}\sigma_t^2 && for\ s \neq s'.
\end{aligned} \tag{5.4}$$

The moment conditions g_3 and g_4 imply that the covariance of migration rates over time jointly reflects country–specific variation and persistence of the process. If one restricted ρ to zero, all this covariance would be attributed to country–specific effects.

Let $u_{s,t} = f(m_{s,t}, m_{s',t'}; \theta_0)$ denote the Method of Moments disturbance and assume that $\{m_{s,t}\}$ is a stationary process. Let $f_{S,T}(\theta) = (ST)^{-1} \sum_{s=1}^{S} \sum_{t=1}^{T}$ $f(m_{s,t}, m_{s',t'}; \theta)$ denote the sample moments corresponding to the moment conditions and define the criterion function $Q_{S,T}(\theta) = f_{S,T}(\theta)' A f_{S,T}(\theta)$, where A is a stochastic positive definite matrix. Then the *Generalized Method of Moments* (GMM) estimator of θ is

$$\hat{\theta}_{S,T} = argmin_\theta Q_{S,T}(\theta) \tag{5.5}$$

Given a number of assumptions (HARRIS AND MATYAS (1998), p. 11-21) the GMM estimator is weakly consistent and asymptotically normally distributed.

If the number of moment conditions is equal to the number of parameters to be estimated, the above system is exactly identified. Then the GMM estimator does not depend on the choice of the distance matrix A and collapses to the *Method of Moment* estimator. However, if the system is overidentified, i.e. if $q > p$, different GMM estimators are obtained for different distance matrices. The choice of the distance matrix that results in an asymptotically efficient GMM estimator is the long-run covariance matrix V of the

GMM disturbance $u_{s,t}$. Given this choice of the distance matrix $\sqrt{ST}(\theta_{S,T} - \theta_0)$ has an asymptotic normal distribution with mean zero and covariance matrix $(F^{'}V^{-1}F)^{-1}$, where F denotes the matrix of derivatives of the moment conditions with respect to the parameters.

With a consistent estimator $\hat{V}$ for V in hand one will be able to obtain $\hat{\theta}_{S,T}$ by setting $A = \hat{V}^{-1}$. The resulting estimator is called the *optimal* or efficient GMM estimator given $f(m_{s,t}, m_{s',t'}; \theta)$. The estimated standard errors of this optimal GMM estimator are then obtained as the square roots of the diagonal elements of $(ST)^{-1}\{F_{ST}^{'}\hat{V}^{-1}F_{ST}\}^{-1}$. Furthermore, given the optimal choice of the weighting matrix the resulting value of the criterion function can be used as a test statistic for the detection of mis–specification, since $(ST)^{-1}Q_{S,T}(\hat{\theta})$ is asymptotically distributed as χ^2 with the number of overidentifying restrictions as the appropriate degrees of freedom. In our application, we estimate the long run covariance matrix V as a diagonal matrix using the empirical moments in the sample.

5.4 Estimation Results and Forecasting Scenarios

On the basis of our Western data for the post-WW II period, we will now estimate the historical relationship between migration to Germany and its aggregate-level demographic determinants, and use these estimates to generate concrete predictions of the immigration flows from Eastern Europe following EU enlargement. To explore the robustness of our predictions we will contrast three different specifications of our model. In a first specification, we model the overall migration rate (the migrant flow relative to the population at the origin) using our most parsimonious variance–components formulation.

A second specification concentrates on the population of core age (less than 39 years of age), retaining the parsimonious empirical specification. This strategy requires that we prepare the estimation by a careful transformation of the available data. Finally, the time–varying age structure in the various origin countries is used as a regressor parameterizing the mean migration rate μ. In all variants of the model we contrast exactly identified and overidentified specifications. Before we proceed to reporting our estimation results, we

briefly introduce the data material and the preliminary data transformations necessitated by our approach.

5.4.1 Data and Variable Construction

Our sample consists of observed migration streams from 17 countries of origin (Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Greece, Italy, Yugoslavia, Netherlands, Norway, Portugal, Sweden, Turkey, United Kingdom, and USA) for the time period covering 1960 to 1997. Therefore, the number of observations is 646. Immigration figures comprise inflows and outflows of foreigners only, while the flows from and to the numerically negligible CEEC-4 were excluded from the sample. In effect, we have to predict the net migration from the CEEC-4 not only out of the temporal sample experience, but also out of the realm of the observed origin countries. Since the data only comprises foreigners, for the years after 1990 the substantial inflow of ethnic Germans (*Aussiedler*) is not taken into account. The migration data stems from German Federal Statistical Office (*Statistisches Bundesamt*), which also provides information on the population by birth cohorts in Germany. Population data for the sample countries as well as the CEEC-4 is reported in the *Demographic Yearbook* published annually by the *United Nations*.

In our estimations we utilize two different dependent variables. In a first variant we use the standard net migration rate, i.e. net migration from country s in year t divided by the stock of population in the respective country and year, as dependent variable. In a second variant, following our reasoning outlined above, the dependent variable is the "age adjusted" net migration rate, i.e. the flow of migrants from s at time t in the core age group (0 to 39 years of age) divided by the population in s and t in this age group. These migration rates, however, are neither observable directly nor can they be constructed from the available official statistics. Therefore, we employ a simple population accounting approach which enables us to construct such rates.

Specifically, immigration figures have generally been recorded as an aggregate over all ages. To calculate the number of immigrants from any particular country of origin, we would like to correct observed overall influx from that source country by an appropriate correction factor lying between 0 and 1 and varying over time. While we are not be able

to separately construct such a correction factor for each origin country, we are able to offer an estimate of the aggregate net influx by age for each individual year of the sample period (cf. SCHMIDT (2000a) for details). The desired time–varying correction factor is derived by tracking individual birth cohorts through time in a variant of the *life-table survival method*. Abstaining from distinguishing natives and migrants along any other dimension than age and gender, this method applies a life-table to a census count to project survivors at either past or future time points.

The difference between the projected number of survivors and the enumerated population at that time is then taken as the estimated net migration, with an estimated migration figure for each individual year of age. The net immigration measured for each individual birth cohort in the sample range can then be accumulated appropriately for each year t to estimate the net immigration in a certain age range. Since mortality only changes slowly over time, the survival probabilities are taken from the 1970/72 lifetable for Germany and, thus, describe most accurately the middle of the observation period. In the calculations, *identical* conditional survival probabilities are applied to natives and migrants already present in the destination country. The primary basis for the population data employed here are the census waves of 1950, 1961, 1970, and 1987. Annual data are updates based on community registers of births, deaths and relocation.

For both dependent variables the variance components–model of section 5.3 is estimated by the *Generalized Method of Moments*. In addition, in the model for the standard migration rate, the constant overall intercept is parameterized in a third variation of the model as a linear function of the share of young inhabitants (0-39 years) in the various origin countries yielding a sixth parameter β to be estimated. In all three cases, the estimation procedure comprises two different specifications. Firstly, we estimate an exactly identified system, where we chose five (six) moment restrictions in order to estimate the five (six) unknown parameters of the model. Secondly, we overidentify the system by imposing two (one) additional moment restrictions, thus yielding seven moment restrictions for the estimation of five (six) parameters. Obviously, the criterion function evaluated at the final estimates need not necessarily yield a value of zero. Therefore, one has to test whether these additional overidentifying restrictions hold in the data.

5.4.2 Parameter Estimates

GMM estimation results for the standard migration rates as dependent variables are reported in **Table 5.2**. The first column shows the results for the *exactly* identified system whereas results for the overidentified system are reported in the last column. Our interpretation and our simulations (see below) will focus on the overidentified model.

Table 5.2: GMM results – standard migration rates ($\times 100$)

	exactly identified model	overidentified model
Common intercept	0.029	0.029
	(0.0045)	(0.0045)
Variance of		
Country–specific component	0.008	0.005
	(0.0018)	(0.0012)
Time–specific component	0.0022	0.0024
	(0.00062)	(0.00056)
Unsystematic component	0.003	0.006
	(0.003)	(0.003)
Persistence parameter	0.645	0.645
	(0.224)	(0.186)
Overidentification test	-	4.23

Standard errors are reported in parentheses.

The average migration rate for the typical origin country during the sample period was approximately 0.03 percent of its population. Around this average value, we observe a substantial fluctuation across space and time with all variance components being estimated quite precisely. The country–specific variance component is estimated to account for more than a third of the overall variation, despite allowing for persistence in the temporal error component.

By contrast, this variance component being common to all countries is estimated to be relatively small in magnitude, although the large value of the autoregressive parameter indicates that any shock to aggregate migration activity typically has a long–lasting impact. Close inspection of the predicted values of the time–specific component over the sample period indicates that migration activity to Germany was relatively low at the end of the 1990's. Finally, the computed value 4.22 of the test statistic implies that the null hypothesis that the overidentifying restrictions hold is not rejected at any reasonable level of significance.

Table 5.3: GMM results – "age adjusted" migration rates (×100)

	exactly identified model	overidentified model
Common intercept	0.041	0.041
	(0.0062)	(0.0062)
Variance of		
Country–specific component	0.015	0.009
	(0.004)	(0.0023)
Time–specific component	0.005	0.005
	(0.001)	(0.001)
Unsystematic component	0.006	0.011
	(0.006)	(0.005)
Persistence parameter	0.642	0.633
	(0.214)	(0.183)
Overidentification test	-	3.59

Note: Standard errors are reported in parentheses.

The results of the GMM estimation with the "age adjusted" net migration rates as dependent variable are reported in **Table 5.3**. Again, the first column contains the exactly identified and column two the overidentified model. As was to be expected, the overall average of the migration rate among the young is relatively high, approximately 0.04 percent. Estimation results for the variance components are qualitatively very similar to those reported in the previous table, and are again estimated quite precisely. The country–specific component accounts for approximately one third of the overall variance, the time–specific component is of relatively minor magnitude but of remarkable persistence. Again the overidentification test indicates a satisfactory performance of the model specification.

Finally, **Table 5.4** reports the results of fitting a third specification to the data which parameterizes the overall constant to be a linear function of the share of young individuals (0-39 years of age) in the population. Of course, the average migration rate is again estimated to be 0.03 percent for a country with the typical age–structure (almost 60 percent being younger than 40). Any origin country whose age structure deviates by the share of younger individuals being, say, 5 percentage points higher than the average, will typically display an increase in its migration rate to almost 0.06 percent.

Table 5.4: GMM results – age–share as regressor (×100)

	exactly identified model	overidentified model
Common intercept	-0.254	-0.254
	(0.0045)	(0.0045)
share of core–age pop.	0.483	0.483
	(0.0005)	(0.0005)
Variance of		
Time–specific component	0.008	0.005
	(0.002)	(0.001)
Country–specific component	0.002	0.002
	(0.0006)	(0.0006)
Unsystematic component	0.003	0.006
	(0.003)	(0.0026)
Persistence parameter	0.630	0.635
	(0.235)	(0.192)
Overidentification test	-	4.21

Note: Standard errors are reported in parentheses.

The importance of the country–specific variance component is only slightly reduced in these estimates, indicating relatively persistent age–shares during the sample period. No substantial impact can be detected on the estimate of the persistence parameter as well. Overall, these results seem sufficiently stable to serve as the basis for our predictions. In particular, the variation captured by the variance components implies that the location of any prospective origin country in the distribution of country–specific effects will be decisive for the predicted accumulation over time of migration flows from that source. The temporal component will – due to its negative value at the end of the sample period – likely dampen prospective migration flows for several years to come. To ward off any downward bias in our predictions, we will disregard this dampening factor in our simulations.

5.4.3 Forecasting Scenarios

Our approach identifies the overall population size in the CEEC-4 and its age–structure as the principal driving forces of future migration to Germany. To predict future migration flows, we therefore need the projected population size and age structure for these countries. Starting from the current age structure, we again construct these demographic projections using the German life-table of 1970/72, ignoring any loss of population due to emigration, and predicting the birth of future cohorts according to a common set of age–specific

fertility rates. Specifically, it is assumed that reproduction rates in the CEEC-4 do not differ substantially from that observed for a typical cohort of post-WW II German women, the cohort born in 1936, which started its reproduction around 1950 and continued up to approximately 1984.

While initially the Polish population is relatively young, indicating a relatively high migration potential, that of Hungary is relatively old, with Estonia and the Czech Republic being somewhere in between. Neither country displays a spectacularly high share of young individuals, and the overall development is towards an ageing population, a phenomenon quite familiar from Western economies. Our particular choice of demographic parameters is likely to over–predict the young population. In our projections we combine this predicted age structure for each year 1998 to 2017 with our estimated parameters reported in the previous section.

Since the CEEC-4 have no previous record of migration to Germany, choosing the likely location of the country–specific intercepts in the distribution whose variance has been estimated from the data for those countries which actually had such a migration record is of crucial importance for the validity of the results. To explore the impact of different invariance assumptions, we compare scenarios for the "typical country" with $\epsilon_s = 0$ with a "high–emigration" country whose value of ϵ_s is determined as plus one standard deviation apart from the typical country.

For both principal scenarios we predict migration to Germany over the period 1998 to 2017 using the standard migration rates applied to overall population (scenarios I and IV in **Table 5.5**) and to the overall population and age–structure (scenarios III and VI), and using the age–adjusted migration rates (scenarios II and V). Using the latter implicitly assumes that it is only the net migration of the young that is of importance in the future, and that the migration of old individuals that we observe in the historical data exclusively reflected the specific institutional setting before the turn of the century.

Table 5.5: Summary of forecasting scenarios 1998-2017

Scenario:	average annual inflow	accumulated inflow
I: standard rates		
	17,964	359,285
II: age–adjusted rates		
	14,656	293,122
III: with age–share as regressor		
	15,079	301,583
IV: standard rates plus one std.–deviation		
	62,656	1,253,129
V: age–adjusted rates plus one std.–deviation		
	48,551	971,011
VI: with age share as regressor plus one std.–deviation		
	57,377	1,147,533

Note: All figures comprise the CEEC-4, i.e Czech Republic, Estonia, Hungary, and Poland.

Irrespective of the particular specification chosen for the predictions, it is the choice of the country–specific component that is decisive for the magnitude of the forecasts. If the CEEC-4 behaved as a typical source country for the migration to Germany, annual net migration for all four countries taken together would fluctuate around 15 to 18 thousand individuals during the forecasting period, leading to an accumulated figure of 300 to 400 thousand people by 2017. By contrast, if it were a high–emigration region, between 49 and 63 thousand people would arrive in Germany – net of countervailing emigration flows – each year, leading to an accumulated influx of between 900 thousand and 1.2 million people.

Although this figure is much higher than those of the scenarios I to III, it nevertheless seems moderate when compared to the high figures that fuel the public debate on this issue. While we explicitly refrain from any more concrete speculation on the impact that the large initial differences in economic prosperity between the CEEC-4 and the rest of the EU might have on the country–specific components to be realized, the high–immigration scenarios are likely to provide an upper bound on what to expect after EU accession of the CEEC-4.

5.5 Concluding Remarks

In this paper, we have reviewed aggregate-level migration studies with a particular emphasis on their potential and their limits as tools for forecasting future migration streams. As we have emphasized, the task of assessing migration potential and predicting future migration flows requires strong identification assumptions to hold, particularly when following the usual approach of fitting a relatively saturated specification to the observed migration data, typically including a substantial number of economic variables on the right-hand side of the regression. Over and above the necessary assumptions of temporal stability of the behavioral relationships, one has to have a relatively precise notion about the development of these conditioning variables in the future. Unfortunately and in contrast to key demographic variables, economic variables are notoriously difficult to predict.

Moreover, whenever a new origin region enters the scene, the extrapolation exercise has to extend from predictions out of the sample horizon to predictions out of the spatial realm of experience. This requirement is an almost prohibitive challenge to any saturated model of aggregate migration intensity. The specific application that our paper addresses is the prediction of migration flows to be expected from the most likely accession countries in Eastern Europe. No previous migration record to Germany exists for these countries that can be used to gauge future emigration propensities from these countries, once they were to enjoy the freedom-of-movement privileges held by other EU member countries. Consequently, it hardly seems surprising that current predictions of the expected migration flows from these countries appear to vary widely.

In developing our own approach to the problem, we depart from the received migration literature – whose emphasis is typically on the explanation of migration activity, not its prediction into the future – and pursue a very parsimonious specification of migration rates that is fitted to historical data on the German post-WW II immigration experience. Its formulation explicitly allows for persistent economic and non-economic differences to be captured by a set of country-specific random effects which, together with a time-specific and a white noise component drive the fluctuation of migration rates around its average across time and space. The relative magnitudes of these unobserved orthogonal variance

components lends itself naturally to a discussion of the prediction problem raised by EU enlargement.

Specifically, if the new EU members were to display the emigration behavior to Germany that has characterized the typical origin country during the (high–immigration) post-WW II era, prospective net immigration would be of almost negligible magnitude. If, by contrast, they were to display a substantially more pronounced emigration propensity, future net immigration could be much larger, albeit still relatively moderate when considering the figures circulating in the public debate on this issue. Notably, while the proponents of large migration forecasts are likely to emphasize the large economic differences between the prospective EU members and the existing member states, it is very difficult to predict – if it materializes at all – the pace of any economic convergence towards the EU average within the next two or three decades. Moreover, the existing migration literature does not at all provide a convincing body of evidence for the actual relevance of economic variables to migration activity. At best, this evidence is mixed. It is also quite likely that the large economic discrepancies are balanced to some degree by considerable migration cost.

Most importantly, our approach to the problem emphasizes the crucial role of demographics for what is primarily a demographic process. It is the size of the population in the origin region, and particularly the size of the young population which is of principal importance for the expected migration flows. Large fluctuations in economic differences would exert little impact on migration activity, if the population in the source regions were to be old, a simple truth that seems to be neglected in many migration forecasts. Thus, in combining the estimates from our parsimoniously specified model for the aggregate migration rate with the projected population size and structure in the prospective EU member countries, we have exploited the fact that demographic circumstances can be predicted relatively precisely into the future. To assess the robustness of our forecasts to a variation of the model structure we have pursued several specifications and several forecast scenarios, all yielding qualitatively similar results. If our emphasis were on explaining past migration behavior, rather than forecasting into the future and into different spatial circumstances, we would of course have pursued less parsimonious specifications, a task that we leave to future research.

Chapter 6

Evaluating Immigration Policy – Potentials and Limitations

Abstract. Based on the ideas developed in the literature on the evaluation of active labor market policy, this paper provides a framework for the evaluation of key elements of immigration policy. To this end, the fundamental ingredients of evaluating policy interventions are explained and the specific case of *immigration* policy is analyzed. It becomes transparent that the evaluation of the effect of immigration policy is a particularly complex task since it requires unusually strong assumptions to hold a priori. These assumptions and possible reasons for their failure are discussed in detail. It is clarified that any violation of these assumptions renders the interpretation of the policy effects invalid. Finally, these insights are utilized for a critical review of the received literature.

6.1 Introduction

During the last 50 years international migration flows have changed in intensity and composition to an extent[1] which was not observed before. Since the end of World War II Europe as a whole underwent a transition process to an *immigration* region. The early European post-war migration experience has been dominated by migration streams from Europe's South to Western and Northern Europe, with a clear focus on labor migration. In the course of time, the ethnic composition of immigration to Europe has changed dramatically. Europe as a whole has become a net receiving region, and the geographic and cultural distances to the immigrants' countries of origin have increased significantly. These developments coincide with changes in the demographic and political situation in Europe. As a consequence, immigration policies of the destination countries are reacting to the new challenges by reshaping existing regulations, with the current discussion in Germany as a prime example.

On August 03, 2001 the Federal Interior Minister Otto Schily proposed a bill that intends to give Germany its first regulated immigration system ever. The proposed bill is motivated by the insight that "Germany is an immigration country" (Otto Schily) and that the country has to engage itself in the international competition for high-skilled migrant workers to pursue its own economic interests. The main directions of the proposed bill point towards (i) an active regulation of immigration by combining the work and residence permits with a point system for the selection of immigrants; (ii) an improvement of the existing integration policy by an extended system of language and culture courses; and (iii) a tightening of the existing right to apply for asylum. Regarding the first direction, high-skilled workers can obtain permanent residence and work permits if they score high enough in a point system which favors young and educated individuals with a sound knowledge of German and/or a special relationship to Germany. Students and less-skilled workers can initially receive a temporary permit which can be made permanent if they score enough points after some years.

Prior to this development, in August 2000 Germany introduced the so called "green

[1] For an overview see Chiswick and Hatton (2001) for the case of Europe and Borjas (1999) for the case of the US.

card" regulation to recruit high-skilled IT-specialists on a *temporary* basis. These latest developments only reflect a persistent phenomenon in yet unprecedented intensity. Historically, Germany has been an immigration country since the 1960's despite the official wording. Even after the recruitment stop in 1973 Germany experienced a steady inflow of migrants, accompanied however, by a substantial outflow over time as well. The historical experience with immigration to Germany is described in many papers, among others SCHMIDT (1994b), SCHMIDT (1996a), ZIMMERMANN (1994) and ZIMMERMANN (1995).

On the other hand, in the current negotiations regarding the enlargement of the European Union towards Central and Eastern Europe the extension of the free movement of labor agreement towards the prospective member states is heavily discussed. Many people in Germany, and also some economists (e.g. HÖNEKOPP AND WERNER (1999) or SINN (2000)), express serious concern about the possibility of a massive inflow of foreigners after the enlargement of the EU. Although the weight of the available evidence (see e.g. FERTIG (2001) and FERTIG AND SCHMIDT (2000a)) clearly suggests that this fear has no substantial grounds, it is very likely that the extension of the free movement agreement towards the new member states will be postponed for a transitory period of five to ten years.

In any event, there will likely be immigration to Germany in the future, and given the demographic and labor market developments in Germany there is also a dire need for further immigration. There are many possibilities for the regulation of these future immigration flows. Ample precedence for these possibilities is provided by the many different immigration policy regimes operating in different countries all over the world. This nexus is precisely the object of interest in this essay. In the context of this paper the label "immigration policy (regime)" comprises all policy measures aiming at the regulation of the entry process of immigrants as well as all attempts at their integration into the destination country's society in the period directly after their arrival. This definition does, however, not include similar policy measures regarding asylum seekers. At the present time, there has been no conceptual attempt in the migration literature at formally evaluating different immigration policy regimes regarding their impact on observed immigration flows to a specific country. By contrast, the received literature either takes

it for granted that regulating entry is exerting a marked effect on immigration flows, or collects rather cursory evidence to this effect.

As with any other serious evaluation attempt, the impossibility of collecting experimental evidence implies that evaluating the effect of immigration policy requires strong assumptions to hold *a priori*. These assumptions are discussed in detail below. It becomes transparent that any violation of these assumptions renders the interpretation of the observed phenomena as causal effects of immigration policy invalid. This paper, therefore, provides a discussion of the problem of evaluating immigration policy resting on recent insights on causal analysis in econoemtrics and statistics. The concrete aim of the paper is to explain the fundamental issues of evaluating policy interventions and to analyze the specific problems of evaluating *immigration* policy interventions. For this purpose the principal strategy is to introduce an analogy to the evaluation of active labor market policy (*ALMP*). On the basis of this analogy it becomes transparent that the evaluation of the effects of immigration policy is a comparable, though more complex task than the evaluation of *ALMP*.

The first problem in this endeavor arises from the fact that the objectives of immigration policy of a given country are often not completely clear. At least theoretically, *ALMP* is typically pursued to bring unemployed individuals back into work or to enhance the income situation of disadvantaged workers. Of course, some measures might *implicitly* also be pursued because they demonstrate activity and are regarded by politicians as a possibility to be reelected. But it is certainly fair to gauge the success of *ALMP* mainly by their economic effects. By contrast, the aims of immigration policy are often of a variegated and certainly not of a exclusively economic nature. Rotte (1998), for instance, provides a discussion of the variety of motives and objectives which might be detected behind immigration policy in Germany.

Typically, proponents of a specific immigration policy offer a set of non-economic arguments, like the achievement of cultural or religious homogeneity or diversity, respectively, or the avoidance of ethnic conflicts. Economic goals of immigration policy are e.g. fostering economic growth in the destination country, increasing the size or altering the composition of the population or the labor force, or enhancing the provision of the economy with

human capital. Existing immigration policy regimes are motivated, explicitly or implicitly, by a mixture of such economic and non-economic objectives. However, distinctions like that are somewhat artificial since, for instance, the achievement of diversity is also a possible economic argument. LAZEAR (2000), for instance, argues that it is possible for an immigration country to realize a return from diversity in immigration flows since there may be a high reward on interactions between people with different backgrounds regarding creativity, information, cognitive ability or motivation. In the public discussion it is e.g. sometimes argued that the Asian immigrants in the US exhibit a different work ethic than natives or other immigrant groups which is perceived as one of the keys for their success.

There is a vast body of literature on immigration policy either for a specific country or on a synoptical basis for a set of countries. Section 6.2 provides a brief overview on this literature together with a discussion of the tasks of immigration policy. However, the majority of the papers within this literature is predominantly descriptive in nature and does not intend to follow a rigorous conceptual framework for an assessment of the effects of different policy regimes. Typically, the specific experience of any country is taken to be an episode too idiosyncratic to include it in a all-encompassing formal framework. From the perspective of economic policy, however, it is of prominent relevance to provide an answer to the question what would have happened to observed immigration – i.e. its magnitude and/or composition – to a specific country if the immigration policy regime of this country had indeed been different. This is the (implicit or explicit) *counterfactual question* of any empirical study on the effect of immigration policy, although no previous study explicitly discussed this aspect. The unobservability of this situation constitutes the fundamental evaluation problem, its solution must rest in a credible construction of such a comparison.

This paper, therefore, explains the principles of evaluating immigration policy in the light of the literature on the evaluation of public policy interventions in section 6.3. After a clarification of the relevant counterfactual question, the principal problems of defining an adequate outcome measure, choosing appropriate identification assumptions and measuring the "treatment effect" of different policy regimes will be discussed. Furthermore, this section also turns the attention back to several important contributions in the em-

pirical literature on immigration policy regimes. These papers are reconsidered again in the light of the discussion of section 6.3. Finally, section 6.4 offers some conclusions.

6.2 Immigration Policy – Literature and Analogy

This section provides an overview on existing immigration policy regulations currently in operation in the major immigrant receiving countries. Starting with a brief survey of the received literature on immigration policy the fundamental problem of evaluating immigration policy is then discussed, using an analogy to the evaluation of active labor market policy.

6.2.1 Survey of Literature

When providing a brief survey of the empirical literature on immigration policy it seems advisable to concentrate on a set of selected, particularly important contributions. The papers discussed in what follows are only a small subset of the vast body of contributions to this topic. However, taken together there are two strands in the received literature on immigration policy. The first strand analyzes data on a (semi-) aggregate level together with developments in the institutional settings of immigration policy over time. The second, and smaller, strand utilizes individual-level data to analyze the effects of a specific feature of a given immigration policy regime.

In the first group, most of the empirical papers present (semi-) aggregate evidence of the effects of immigration policy on a rather descriptive level. The papers[2] analyze the skill-, country-of-origin- and age-composition of immigration flows and paint a variegated picture of immigration outcomes under different policy regimes. They do not, however, provide any quantitative evidence on the effect of immigration policy on a specific economic outcome measure. While these analyses are insightful and informative, it is obvious that one would benefit from the additional insight not aimed at: what would the observed

[2]See e.g. Bauer and Zimmermann (1999a) for Europe, DeVoretz and Laryea (1999) for Canada, Hatton and Wheatley-Price (2000) for UK, VanOurs and Veenman (1999) for the Netherlands and Winkelmann (2000) for Australia and New Zealand.

phenomenon looked like, if all countries under study pursued a specific immigration policy instead of the actual in operation?

In the second group, comparable to the rest of economic migration research, the analysis of the "classical" immigration countries, i.e. Australia, Canada and the US, has taken center stage. In the United States[3] immigration is clearly dominated by kinship migration, i.e. induced by family reunification considerations. Skill-based immigration – that is, entry based on the provision of specific skills by migrants – is small compared to kinship migration, albeit high in absolute numbers compared to many European countries. On the contrary, the current immigration policies of Canada and Australia are dominated by selection mechanisms which reward formal skills rather than family ties. The differences in immigration policy between these countries as well as the different categories of migrants provide the basis for many of the analyses pursued in the second group of the empirical literature.

Borjas (1993) compares the educational attainment and the labor market performance of immigrants to the United States and Canada using the 1970 and 1980 census waves for each country. He reports that the average skill-level of different immigrant cohorts to Canada is higher than that of immigrants to the United States and attributes this finding to the more skill-based immigration policy regime operating in Canada. Furthermore, the estimation results of earnings regressions for both countries suggest that immigrants to the United States exhibit a higher earnings disadvantage upon entry relative to natives than immigrants to Canada. A decomposition analysis of the upon-entry earnings disadvantages of migrants demonstrates that the difference between migrants to the US and migrants to Canada can be explained by the differences in the national origin composition of immigration flows to both countries. Borjas concludes that the Canadian point system is not able to attract more skilled immigrants from a *given* country of origin.

Duleep and Regets (1996) aim at analyzing the effect of admission criteria on the labor market success of migrants in the US[4]. For this purpose they compare the relative earnings performance of kinship immigrant men to the relative earnings performance of skill-based immigrant men conditionally on observable factors like education and labor

[3] Borjas (1999) provides an overview on the US literature.

[4] A similar analysis is conducted by Jasso and Rosenzweig (1995).

market experience in a regression framework. The authors conclude that although kinship migrants display a higher earnings disadvantage upon entry relative to natives than skill-based immigrants, this disadvantage vanishes over time. They suggest that this catching up process is related to a higher investment into human capital by kinship migrants since they display a lower degree of transferability of their country of origin specific human capital.

For the case of Australia, Chiswick and Miller (1992) estimate the determinants of unemployment conditional on immigrant group and other explanatory factors. Estimation results suggest that there is no statistically significant difference in the unemployment situation between immigrant groups once one controls for education and other covariates.

For the case of Canada, Wright and Maxim (1993) provide an analysis of immigrant earnings conditional on immigrant status and human capital variables. The authors introduce an immigrant "quality" measure in their analysis by estimating the upon-entry earnings differential of different immigrant groups compared to native Canadians. The authors conclude that the skill-based selection system works better than other systems (e.g. family reunification) if success is measured by the upon-entry earnings differential. The empirical approaches and results of the contributions by Borjas (1993), Duleep and Regets (1996), Chiswick and Miller (1992) and Wright and Maxim (1993) will be reconsidered in chapter 6.3.

A different aspect of immigration policy is analyzed by Bauer, Lofstrom and Zimmermann (2000). The authors, using the 1995 wave of the *ISSP*, provide a cross country comparison on the perception of immigrants in different European and Non-European countries with a special focus on the influence of immigration policy on the attitudes towards minorities by the native population. The authors conclude that in countries with a more skill-based immigration policy, like Canada, natives have a more positive attitude towards immigrants than in countries with other policy regimes.

In the received literature, the problem of illegal migration is analyzed mainly from a theoretical perspective (see e.g. Todaro and Maruszko (1987), the special issue of the *Journal of Population Economics* (1999) or for a more recent contribution Entorf (2000)). The amount of empirical evidence on this topic is rather scarce. One exception

is the paper by COBB-CLARK ET AL. (1995) analyzing the effect of the *Immigration Reform and Control Act* of 1986 in the United States on the wages of immigrant workers in the manufacturing sector. This act imposed sanctions on employers who hire illegal immigrants and legalized many long time illegal immigrants in the US. The evidence presented suggests that there is a small negative effect of employer sanctions and small positive effect of legalization on workers' wages.

Many papers on immigrant performance demonstrate the high relevance of language skills for the success of immigrants in the destination country's labor market (see e.g. CHISWICK (1998) and CHISWICK AND MILLER (1999)). It is widely agreed that language skills are an important aspect of *integration* policy. COBB-CLARK ET AL. (2001) explore the role of post-migration investment in formal and informal human capital by immigrants for the case of Australia. The empirical results presented by the authors suggest that these investments play a substantial role for the labor market performance of migrants. Consequently, public assistance for the acquisition of job search skills and formal education seem to contribute to the success of immigrants in Australia.

This brief overview demonstrates that the received literature of economic migration research addresses a variety of aspects regarding immigration policy. These contributions combined with the research conducted on the impact of immigration on the receiving countries' economy deliver useful insights for an adequate regulation of future immigration in the destination countries. However, it is very difficult to pin down stable relationships between specific policy regulations and measurable outcomes reflecting the objectives of immigration policy. In this paper it is argued that the reason for this difficulty is the missing common frame of reference for the different studies conducted. The following sections, therefore, outline such a framework by discussing the different elements necessary for any serious evaluation attempt. To this end it is regarded as helpful to clarify the fundamental challenges of evaluating immigration policy. This is done by analogy to the evaluation of *ALMP*.

6.2.2 The Analogy

As a consequence of an exploding literature on the subject during recent years, the literature on the evaluation of active labor market policy is rather mature. If not for each and every application, at least at the conceptual level the potential and limitations of attempts to evaluate such measures are understood quite well. This is not the case for immigration policy, though. Therefore, this literature can serve as a clarifying background to compare the similarities and differences in the evaluation of both types of policies.

Active Labor Market Policy

Consider the case of non-experimentally evaluating the effect of a specific measure of active labor market policy, e.g. a training measure or a wage subsidy for unemployed workers. Suppose there is a pool of individuals willing to participate in a specific program. For an economist it is natural to think that the individuals who apply to participate in the measure have based their decision on a thorough cost-benefit-comparison of the program. If they apply to the program they, therefore, must expect a positive return from participation. Otherwise, they would refrain from an application and search for a new job on their own. Consequently, the observable as well as unobservable characteristics of applicants to the program are hardly a random sample of the population. However, there might also be a (presumably smaller) amount of individuals who do not apply voluntarily but are forced to do so. This might be the case, if they e.g. would otherwise run the risk of loosing their benefit payments.

In a second step, from this pool of potential participants the labor offices typically select those individuals who will be granted admission to this measure according to the overall guidelines set out by the legislator. If more than the (more or less fixed) maximum amount of people for the measure fulfill the formal requirements for participation, then the responsible persons at labor offices have to decide which of the eligible unemployed should be granted admission to the program and which not. For the observer this selection process is usually a black box. The details of the decision process in the labor offices as well as their internal guidelines upon which potential participants should be chosen for a measure are typically unobservable and to the analyst must remain highly speculative. It seems quite natural to suppose that the employees of the labor offices base their decision

on a personal assessment of the ability of potential participants to be successful in a specific program. Therefore, there is a high probability that the labor offices choose those candidates for the measure who seem to display the highest motivation or cognitive abilities. However, it is far from being guaranteed that the selection process is operating in such a way since the details of this decision process are usually unobservable.

The result of this black box, however, is observable. After the selection process has been completed there is a group of unemployed workers participating in the program (the so-called *treatment group*) and a group of non-participants searching for a job without the support of the measure. The latter individuals constitute the pool of a potential *comparison group*. To gauge the effect of the intervention on the participants, one sensibly concentrates on the labor market success of both groups a sufficiently long time period after the program is completed. The difference in the labor market success between both groups (treatment and comparison group) measured by the value of a suitably defined outcome measure can than be used to judge the effectiveness of the program. To construct a credible comparison, though, by some strategy the researcher has to select an appropriate comparison group from the reservoir of potential comparisons. This, however, requires that convincing identification assumptions – stating clearly what is the appropriate comparison group – are invoked and that a suitable treatment parameter is defined.

These identification assumptions are necessary to construct an observable counterpart for the unobservable counterfactual situation. In the case of *ALMP* the counterfactual situation is implied by the question: What would have happened to the labor market success of participants if they had not participated in the measure? In this case, convincing identification assumptions must be able to "correct" for the presumably positive (double) selection of participants, i.e. the fact that a (presumably) positive self-selection in the application and an also (presumably) positive selection in the labor offices results in a non-random participant group. This is a necessary prerequisite to facilitate the attribution of a *causal effect* of the program on the chosen outcome measure in an observational or non-experimental study. However, if the latter prerequisite does not hold then it is only possible to attribute a causal effect of both the program *and* the specific selection processes at work on the outcome measure. This is exactly what one would like to avoid.

Immigration Policy

Now consider the case of evaluating immigration policy measures. There are strikingly large similarities but also considerable differences generating additional problems. Suppose there is a pool of individuals willing to immigrate into a given country. Again it seems natural to think that these individuals have based their decision on a thorough cost-benefit-comparison. They compare the net present value of the expected utility streams from migrating to a specific destination country i with the net present values from migrating to all other destination countries and the net present value of staying at the origin. Consequently, for people applying for admission to country i their net present value of immigrating to this country must be the highest. In other words, they must expect a positive return from immigrating to a specific country. If this were not be the case, they would refrain from doing so and stay in the country of origin or go elsewhere. As a result the observable as well as unobservable characteristics of those people who eventually decide to emigrate from their origin country are also hardly a random sample of the population of the relevant country.

As it is the case for applicants to a labor market program, it is conceivable that the immigration policy of a specific country itself might have an effect on the "supply" of potential migrants, i.e. the pool of individuals willing to immigrate into the country. This might be the case, if the policy is able to serve as a signal for migrants that the specific selection mechanism, e.g. one which is awarding specific skills, is equivalent to a high return for those skills on the destination country's labor market. If this supply-side effect of immigration policy is negligible, though, the magnitude and the composition of the pool of potential migrants can be taken as exogenous to immigration policy. However, there is clearly also an amount of individuals who do not emigrate voluntarily from their origin country but are forced to do so due to civil wars or famines. These are refugee migrants for which the freedom of choice is definitely limited and the decision process will certainly not adhere to individual utility maximization. Perhaps, they are at least able to decide to which country they emigrate, but this is far from being guaranteed. The latter people, however, usually apply for access to a country via humanitarian channels and the discretion of immigration offices is limited by international regulations like the Geneva convention on the status of refugees.

In a second step, from the pool of potential immigrants (those not applying admission via humanitarian channels), the immigration offices typically select those individuals who will be granted admission to the country according to overall guidelines set out by the legislator. If more than the (more or less fixed) maximum amount of people for immigration fulfill the formal requirements to access the country, then the responsible persons at the immigration offices have to decide which of the eligible individuals should be granted admission and which not. Again, this selection process is usually a black box for the observer. The details of the decision process in the immigration offices as well as their internal guidelines upon which potential immigrants should be chosen for admission are unobservable to the analyst in practice and must remain highly speculative. As it is the case for *ALMP*, it seems quite plausible to suppose that the employees of the immigration offices base their decision on a personal assessment of the ability of potential immigrants to be successful in the destination country. Therefore, there is a high probability that the immigration offices choose those candidates for admission who seem to display the highest motivation or cognitive abilities. However, it is far from being guaranteed that the selection process is operating in such a way.

The result of this black box, however, is again observable. After the selection process has been completed there is a set of individuals for which admission to the country has been granted (denote them again as the *treatment group*) and a set of individuals which has not been admitted. The first group, the new immigrant cohort in the destination country, comprises individuals from different countries of origin with different individual backgrounds regarding the details of the immigration motives, education, labor market experience, knowledge of the destination country's language, motivation etc. This group might then be prepared for their access on the destination country's labor market by integration measures like language courses or programs which impart job search skills. Once they have entered the labor market of the destination country one is usually able to observe the success of this treatment group in terms of a suitably defined outcome measure. Yet, this is the point where the analogy to *ALMP* ends and the additional differences of evaluating the effects of immigration policy come to bear.

Contrary to *ALMP*, the "treatment" of immigration policy is either the selection process in the immigration offices itself or the combination of this selection process with

the upon entry integration measures. For an assessment of this treatment it is of course necessary to define a suitable treatment parameter as well. Furthermore, it is decisive to find a convincing comparison group. This is a complex task because one could not observe the non-migrants, i.e. those individuals who initially applied for admission to the country but were not accepted. Defining such a comparison group is equivalent to invoking convincing identification assumptions as it was the case with evaluating *ALMP*.

However, contrary to the evaluation of *ALMP* these assumptions should not simply correct for the selection of immigrants, since this selection is (part of) the phenomenon one is interested in. Rather, convincing identification assumptions must be able to reveal the results of the second selection process (i.e. that of the policy) net of the effect of the first self-selection process (i.e. that of the migrants themselves). The attribution of a causal effect of a specific immigration policy on the success of immigrants to a specific country is possible, if and only if this task is solved convincingly.

To organize ideas, consider as a completely hypothetical benchmark situation the case of a lottery, i.e. a distribution of the (more or less) fixed amount of work permissions among all individuals willing to immigrate by chance. Given that operating an elaborate selection system is more costly than a lottery, it is a necessary condition for a specific immigration policy to outperform at least the lottery system in order to have a chance of being efficient. This means, that as a minimum prerequisite, any real world immigration policy regime should be able to select more successful migrants than the lottery would. Since no country is operating a lottery system such a comparison situation is not observable. Nevertheless, this benchmark provides the conceptually ideal "no active immigration policy" regime from which all actual regimes distinguish themselves.

The economic success of a migrant cohort in the destination country is the result of the interplay between observable and unobservable characteristics (such as the details of the motivation to immigrate, cognitive ability, the degree of transferability of origin country-specific skills, motivation, return intentions etc.) upon which admission was granted as well as the economic and institutional environment on the destination country's labor market. The admission process itself upon which immigrants entered the country may hardly impinge upon their economic success *separately*. Rather, it exhibits an indirect

influence via the selection criteria. In the light of this quite intuitive discussion the next section provides a more formal discussion on the necessary elements of any serious evaluation study and suggests the construction of a comparison group which – under specific assumptions – is able to provide a solution to the fundamental evaluation problem.

6.3 The Principles of Evaluating Immigration Policies

Every empirical study is confronted by a counterfactual question[5]. In the case at hand the counterfactual question of an evaluation study of immigration policy is how the immigration experience to a given country – measured by an adequate outcome measure – would have been, if the immigration policy regime of this country had been different. The fundamental problem is that this counterfactual situation is not observable, since one observes a given country at a given point in time only once. This means that only one particular policy, and one particular immigration cohort with one particular composition are observed together.

It is, therefore, necessary and the decisive point for any evaluation study to invoke identification assumptions in order to construct an observable counterpart of this unobservable situation. As a preceding step it is necessary to define an adequate outcome measure, a task which is particularly problematic in the case of evaluating immigration policy. This task will be tackled in the next subsection.

6.3.1 The Outcome Measure

The first step in any serious evaluation attempt is to choose an appropriate outcome measure. In this context it is also necessary to distinguish between *effectiveness* and *efficiency* of a policy measure. A specific measure is deemed *effective*, if the aims of the policy intervention are achieved at all and it is called *efficient*, if those aims are achieved

[5]For a survey see Heckman et al. (1999) or Blundell and Dias (2000). Schmidt (1999) provides an in-depth discussion of the problem of constructing a reliable counterfactual situation for the case of evaluating active labor market policy interventions on the *individual* level. Fertig and Schmidt (2000b) discuss the principles of evaluating labor market policy on a *semi-aggregate* level.

by the smallest conceivable efforts. In particular, there must be no feasible atlternative achieving the same aim at lower cost. For the evaluation of the efficiency of a policy measures it is also necessary to take into account possible unintended or adverse side effects.

For example, in the case at hand the substitution of low-skilled native workers by immigrants or long-term strains of the public health or pension systems might be unintended adverse side effects. Often the aims of immigration policy are mainly of economic nature, for instance fostering economic growth in the destination country by attracting otherwise unavailable unskilled labor. Then, it might also be possible to achieve this goal by lowering barriers to trade with countries which produce goods and services containing mainly low-skilled labor. Evaluating efficiency is a notoriously difficult task since it is nearly impossible to determine all relevant cost and it is, therefore, usually neglected in empirical studies. Most commonly the focus of empirical studies lies on the effectiveness of policy interventions.

Choosing an adequate outcome measure and measuring the cost of a specific immigration policy regime is closely related to the economic impact of immigration. This impact unfolds in an indirect fashion via market reactions and its measurement is therefore a complex task. Additional immigration shifts the relevant labor supply curve outward. The direct consequences, in terms of employment and wages for the relevant groups of workers are a matter of the relative own elasticities of demand and supply and of the set of elasticities of complementarity with all other production factors.

However, the additional labor supply effect is only one side of the medal, since product demand, and thus labor demand (on all other sub-markets) might be affected positively. On balance, it might not be the case at all that immigration harms any group of native workers via the crowding out that the constant-output reasoning typically applied seems to suggest. The common problem of empirical (i.e. non-experimental) research on this topic is the fact that additional immigration does not vary randomly across time and space but is rather the outcome of systematic forces. Thus, comparing the relevant economic outcome measures across regions may confuse the impact of immigration with the underlying reason making the area particularly attractive.

Given the difficulties in measuring cost adequately, this paper does not attempt at evaluating the efficiency of immigration policy as well. Rather, the focus of the succeeding analysis lies completely on the evaluation of effectiveness. However, there is no guarantee that an effective immigration policy is also efficient. Moreover, effectiveness of immigration policy regimes is analyzed solely from the perspective of the destination country neglecting negative effects for the origin country (e.g. the loss of high-skilled labor for the origin country, the so-called "brain drain"). Effectiveness is, therefore, measured as the degree of reaching the (implicitly or explicitly) declared aims of the immigration policy of a destination country.

In the case at hand a natural candidate for an adequate outcome measure is the "success" of immigrants entering the country under a specific immigration policy regime. Success in terms of economic objectives, however, can be measured in different ways. In the long run economic success means that there is a welfare gain for the destination country economy. Welfare gains may be approximated (if only imperfectly) by significantly higher growth rates (per capita) due to a specific immigration policy regime. Given the data situation this approach does not seem feasible since this would require data over a sufficiently long time horizon, say 20-30 years.

In contrast to such a long term concept, a short run approach in assessing the ability of immigration policy to bring forth successful migrants would be to look at the average skills of a cohort of migrants. Since the pool of high skilled labor is commonly acknowledged as one of the major determinants of future economic growth (see e.g. Borjas (1999)) it seems natural to evaluate immigration policy by comparing the skills of immigration cohorts under different policy regimes. However, this approach suffers from the problem that human capital acquired in a specific origin country is usually not fully transferable to the destination country's labor market. Moreover, initial differences in observable skills may not matter very much for economic performance and migrants' contribution to economic growth (e.g. since it might be the unobservable traits common to all immigrants – motivation and perseverance – which matter). Finally, migrants might typically close a large initial gap faster than a small disadvantage, since investment into country-specific skills is less costly in terms of forgone earnings (as indicated by the results of Duleep and Regets (1996).

As the solution the middle way seems to be appropriate. A medium term concept in this endeavor would be based on the argument that migrants who are employed with relatively high earnings and, therefore, perform well on the destination country's labor market are determinants of long run economic growth as well. Moreover, selecting migrants with a relatively high labor market performance is closely connected with selecting high skilled migrants but also means that the skills of these migrants must be widely transferable to the destination country's labor market.

It is, therefore, argued to assess the effectiveness of immigration policy regimes by using the labor market performance of immigrants in terms of wage or employment aspects under different regimes as an outcome measure. With this outcome measure the counterfactual question stated above could be put in the more precise form: How would have been the labor market performance of a given cohort of immigrants in a given country if the immigration policy regime had been different? Since this counterfactual situation is not observable one has to invoke adequate identification assumptions to construct an observable counterpart. The following section, therefore, discusses possible assumptions suitable for identification purposes.

6.3.2 Identification Assumptions

Valid identification assumptions are assumptions that, in principle, allow the estimation of the parameters of interest with growing precision if the sample size increases. Clearly, since it is not possible to observe the performance of a given cohort of immigrants at a given point in time under *different* policy regimes, collecting more or even better data would never suffice to identify any parameter of interest. Instead, one has to invoke an assumption which yields a comparison between immigrant cohorts under different policy regimes where both situations ideally differ in only a single aspect, the specific policy regime. Such assumptions are not testable and, consequently, have to be assumed to hold *a priori*.

In the evaluation literature, e.g. regarding active labor market policy, social experiments are usually recognized as a convincing identification strategy (see Heckman (1996) and Schmidt (2000b)). The decisive feature of a social experiment is the ran-

domized assignment of individuals who are willing to participate in a specific measure into a treatment and a control group. However, in the case of evaluating immigration policy considering such a randomized assignment will not be feasible, since it is the explicit aim of all immigration policy regimes to select those individuals which will be the most suitable to achieve the aims of the policy, without any room for experimentation. Therefore, with this key feature of social experiments being not feasible, the whole approach of an experiment is not suitable to solve the evaluation problem.

In terms of a formal analysis, however, the concept of a randomization mechanism provides a sensible theoretical benchmark for the assessment of the effectiveness of immigration policy. The fiction of a randomized assignment of potential migrants to a set of potential destination countries may serve as a sensible reference situation to which the success of actual policy regimes might be compared. Specifically, as outlined above, a specific immigration policy might be termed successful if it is able to select immigrants out of the pool of potential migrants which are more successful in terms of their relative labor market performance than what would have been the result of a randomized immigration mechanism, for instance by a lottery of work permissions for different countries. Since such a reference situation is not observable one has to concentrate on direct comparison between different policy regimes, rather than on assessments of each regime in contrast to the benchmark situation[6]. Again, the conceptual requirement is that one has to construct a comparison situation by invoking identification assumptions.

In general, the central idea of "comparing the comparable" laid down in the evaluation literature in this context means that one wishes to compare the effect of different policy regimes conditional on a given supply of potential migrants. Therefore, the decisive point for any identification assumption to be convincing, is the ability to disentangle the double-selection processes in immigration. This means, that a convincing identification startegy must be able to discriminate between the effect of the self-selection of migrants (the supply, for short) and the effect of the selection by the immigration policy regime. This provides us with the possibility to assess the "quality" of a specific identification strategy by clarifying which assumptions have to hold in order to to assign a causal effect

[6]See KLUVE (2001) for an elaborate discussion of the necessity and importance of choosing the correct comparison situation in any evaluation attempt.

to immigration policy and to assess whether these assumptions are plausible in terms of economic considerations.

One possible and easily implementable approach would be a comparison across time (*before-after-comparison*) for a given country. This means that the performance of immigrants before and after a specific intervention in immigration policy, e.g. a change of policy from family reunification towards a skill-based selection, is compared and any change in this performance is causally attributed to the policy change. This requires the assumption that the performance of immigrants to that country, conditionally on a set of observable factors, would have been unchanged if the immigration policy intervention had not occurred. This is certainly a very restrictive assumption since there is typically a host of possible other factors changing with the regime switch, e.g. a changing demand for labor. Furthermore, any upturn in the business cycle, for example, that affected the labor market performance of immigrants in the specific country positively, would be attributed erroneously to the policy change yielding an overstated effect of the policy intervention. This cyclical sensitivity of a before-after-comparison is certainly one of the most convincing argument against proceeding in such a way. Finally, disentangeling the double-selection process with this apporach requires the assumption that there is no difference in the supply of migrants over time. This again seems to be a very restrictive assumption since the country-of-origin composition of migrants worldwide is changing over time and the observable as well as unobservable characteristics of these migrants are in all likelihood changing too.

Another possible identification assumption would invoke a comparison across space (*cross-section-comparison*), i.e. the comparison of a group of migrants conditional on a set of observable characteristics between different countries with different policy regimes at a given point in time. This requires the identification assumption that the relative labor market position of immigrants in country j had been equal to the relative labor market position of immigrants to country i ($i \neq j$) if the policy regime operating in country j had been equal to the policy regime operating in country i and that there is no difference in the supply of migrants to the different countries. Again, this is not a very convincing assumption since the pool of potential migrants to a given country is hardly a random sample of the population of potential migrants.

Furthermore, this identification assumption is vulnerable regarding the business cycle, too. However, in this case the problem is the *position* of the relevant countries in the business cycle. Finally, this identification assumption requires that the labor market performance of the native comparison groups in all countries under consideration is equal, since a given group of migrants, with a specific set of observable and unobservable characteristics, will be performing relatively better in a country with an, on average, less successful native comparison group.

This paper, therefore, suggests as a solution to these problems a combination of the afore mentioned identification assumptions. This combination takes the form of a *difference-in-differences comparison*, i.e. a comparison across time *and* space. Suppose we aim at assessing the effect of a change in immigration policy in a specific country on the value of a specific outcome measure, i.e. we wish to evaluate effectiveness of policy change by a mean effect of the policy change on those selected by the new policy. Specifically, consider the case of two countries (A and B) with a comparable immigration policy regime before a regime change (e.g. currently Germany and Israel where admission depends on descent or Canada and the US until the 1980's with the focus on family reunification). Furthermore, assume that the relative earnings performance of the migrant cohorts is an adequate outcome measure.

Throughout this analysis there are two maintained assumptions: (i) the respective policy in both countries is implemented according to the regulations set up by the immigration bill; and (ii) the policy as well as the change in policy itself do not display any supply effect. If the latter assumption is violated, it is impossible to disentangle the double-selection process described above. In order to be confident that this assumption is not violated, one has to consider immigration cohorts which entered the countries as directly as possible before and directly after the policy change. The analysis then proceeds in the following steps and is illustrated in **Figure 1**.

In a first step one compares the earnings position of a specific immigration cohort in country A (i.e. the performance of immigrants entering the country during a given period) relative to comparable natives (i.e. conditional on observable individual characteristics) a sufficiently long time period after the migrant cohort entered the country (five or ten

years, say). This yields the relative earnings position of the first cohort in country A. The comparison itself could be done in an earnings regression framework or, alternatively, by matching methods. Similarly, one has to calculate the the relative earnings position for the first immigrant cohort in country B by the same econometric procedure.

Then, in a second step, one calculates the *first difference*, i.e. the difference in the relative earnings positions of the two migrant cohorts *before* the policy change. This might yield, for instance, a higher earnings disadvantage for migrants in country B then for those in country A. This case is graphically depicted in **Figure 1**. This higher earnings disadvantage for migrants in country B might be the result of a difference in the supply of migrants between both countries or of differences in the institutional settings of the labor markets in determining the assimilation process of the migrant cohorts or it might be the result of an, on average, less successful native comparison group in country A. Moreover, and this is the decisive point for the evaluation of immigration policy, this first difference in relative earnings positions might also reflect a more successful selection by the specific regulations laid down in the immigration policy. Therefore, from this (cross-sectional) comparison of the value of the outcome measure it is not possible to isolate a causal effect of a specific policy regime.

Before proceeding with the description of the proposed difference-in-differences approach, it is illustrative at this point to reconsider the received literature again. This reconsideration is restricted to those contributions utilizing individual data on immigrants. Duleep and Regets (1996), for instance, compare the relative earnings performance of two different migrant groups in the US over time in order to analyze if skill-based migrants are more successful than kinship migrants. The authors argue that the catching-up process of kinship migrants is faster than that of skill-based migrants and that the difference in policy plays no substantial role in the long run. The implicit counterfactual question of their analysis, however, is: What would have happened to the relative earnings performance of skill-based migrants (conditional on observables) if they had not been admitted to the US on the basis of their skills? The answer and, therefore, identification assumption of Duleep and Regets (1996) is: The relative performance of this migrant group would have been equal to the relative performance of kinship migrants in the US.

This does, however, not provide a convincing answer to the question whether the skill-based selection mechanism is superior to the kinship immigration regime. From this cross-sectional analysis, i.e. from the difference in relative earnings positions of both migrant groups after a sufficiently long adaption process, it is impossible to disentangle the double-selection process in immigrant admission.

From the perspective of evaluating whether the Canadian immigration policy has been successful or not, the analysis of Borjas (1993) compares the upon-entry differences in human capital and earnings of skill-based migrants to the US and Canada. By decomposing these differences according to the country of origin of the immigrants, he concludes that that the Canadian point system is not able to attract more skilled immigrants from a given country of origin. In principle the same argument applies to the analyses of Borjas (1993) and Duleep and Regets (1996). In both contributions the effect of the first (self-) selection process could only be discriminated from the second, i.e. the selection process due to immigration policy, if one is willing to assume that the supply to both countries is equal in terms of observable as well as unobservable characteristics. Furthermore, for the case of Borjas' (1993) analysis, it is not really decisive where the immigrants come from but if the policy regime was able to select those from the pool of potential migrants who are the most successful. The analyses of Duleep and Regets (1996) and Borjas (1993), therefore, demonstrate the importance of a convincing comparison situation for the assessment of the effects of immigration policy.[7]

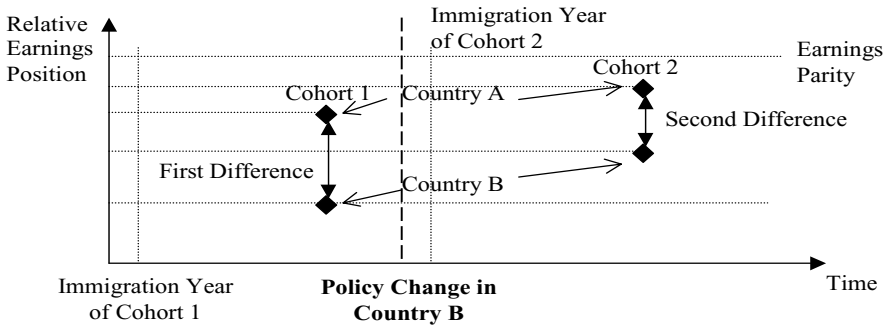
Consequently, to be able to disentangle both selection effects and, therefore, isolate the causal effect of the immigration policy one essentially needs a regime switch in one of the countries under consideration. In the example at hand, assume that country B changes its policy e.g. towards a more skill-based selection regime. Thus, directly after the regime change in country B there are two new immigrant cohorts entering both countries. For those two cohorts one again has to calculate the relative earnings positions a sufficiently long time period after they have immigrated. This yields the *second difference*, i.e. the difference in the earnings position of migrants in A and B relative to comparable natives

[7] The analysis of Wright and Maxim (1993) is comparable to that of Borjas (1993). Furthermore, Chiswick and Miller (1992) study determinants of unemployment conditional on immigrant group and other explanatory factors. This paper is comparable to Duleep and Regets (1996) despite a different outcome measure. Therefore, the same arguments apply for these contributions.

after the regime change in country B has occurred.

Finally, the treatment parameter, i.e. the mean effect of the regime change on the relative earnings position of immigrants to country B under the new policy regime, is then the *difference* between the first difference and the second difference, i.e. the difference-in-differences.

Figure 6.1: The Treatment Effect of a Change in Immigration Policy



This difference-in-differences can be interpreted as the causal effect of the change in immigration policy if and only if the following assumptions *jointly* hold:

(i) If there were a difference in the supply of migrants to both countries before the regime change, then the effect of this supply difference on the relative earnings position of immigrants stayed constant over time.

(ii) Similarly, if there were a difference in the institutional settings on the labor markets of both countries before the regime change, then the effect of this institutional difference on the relative earnings position of immigrants stayed constant over time.

(iii) The structure of the earnings performance of the native comparison group in both countries did not change over time.

The central identification assumption of this approach and, thus, the answer for the counterfactual question raised above is then: The difference in the relative labor market performance of the two immigrant cohorts in both countries would have remained constant if the policy regime operating in country B had not changed. If assumptions (i) to (iii) hold, all the differences between both countries which influence the value of the outcome measure and which are *not* related to immigration policy, including potential differences in the supply of migrants, will be netted out by the double differencing approach.

Note that assumption (i) does not necessarily mean that the second immigrant cohort in country A has to have the same relative earnings position after T years in the destination country as the first immigrant cohort. It is possible that there is a change in supply towards more successful migrants (as indicated in **Figure 1**). However, for the identification assumption to be valid, this "quality" change must be independent of the immigration policy regime itself and it must be accompanied by a proportional change in country B as well. Otherwise, one would fallaciously attribute the effect of this change in supply to the regime switch.

Moreover, assumption (iii) secures that there is no secular trend in the earnings performance of the native comparison group over time in one of the countries rendering the relative earnings position of one migrant cohort better or worse. Clearly, these assumptions are very strong and might be violated easily. However, without these assumptions the difference-in-differences identification strategy is not able to disentangle the effect of the policy regime from the supply effect, i.e. to discriminate between the two selection mechanisms.

Finally, since the relative labor market position of a migrant cohort, typically measured in an earnings-regression framework, decisively depends on the rate of growth in earnings conditional on the years since migrant, i.e. the slope of the earnings function with respect to the duration of residence of the migrant cohort in the country, the difference-in-differences analysis might react sensitively to the chosen evaluation points. It is, therefore, suggested to check the sensitivity of the results by choosing different time periods for the adaption process of immigrants.

6.4 Conclusions

From the perspective of a country like Germany, serving as a potential destination for people willing to emigrate from their country of origin, a rational regulation of immigration is of central concern for future economic prospects. An ageing society with its consequences for the social security system, an increasing demand for high-skilled labor as well as the prevention of a massive inflow of illegal immigrants will inevitably move

the issue of the "best" immigration policy into the center of attention. Unfortunately, economic research on this question has not been able to provide a completely convincing answer. This paper has outlined a conceptual framework for the assessment of the effect of a specific immigration policy by discussing the necessary elements of such a formal evaluation study. It clarified the need to invoke identification assumptions which have to be assumed to hold *a priori*. From this discussion it should have become transparent that it is a conceptually involved task to define an adequate outcome measure and to construct a convincing comparison situation for the unobservable counterfactual situation.

The scarce empirical evidence available at the moment suggests that the regulation of immigration focussing exclusively on the selection of migrants according to a country's current need for specific skills is not sufficient to guarantee that immigrants are successful on the destination countries labor market. Such a policy runs the risk of neglecting important aspects of the long-run determinants of immigrants' economic success, i.e. the ability to cope with a changing economic environment. The experience of the "guest worker" migrants, actively selected by the German immigration policy of the 1960's may serve as an example in this context. In the first years after their arrival these immigrants were employed and experienced a modest but positive earnings growth (see SCHMIDT (1997)) compared to similar natives. Their situation, however, has probably changed drastically in the 1980's when unemployment figures of this immigrant group rose substantially and remained high during the 1990's (see FERTIG AND SCHMIDT (2001)).

The international empirical evidence, furthermore, suggests that a rational and, therefore, foresighted immigration policy should be able to signal reliably that it is in the vital interest of the destination country to admit immigrants with a long-run perspective in the country. It is, therefore, necessary to provide incentives for immigrants to invest into destination-country-specific human capital. In this endeavor it does, for instance, not seem helpful to award work permissions on a temporary basis *a priori*, as it is done for the so-called "green card" migrants in Germany, or to restrict family reunification tightly as it is discussed for the new German immigration law.

In addition, there seems to be room for an integration policy comprising assistance in acquiring destination country-specific human capital or job search skills to immigrants. It

is, therefore, a complementary task of future research in this filed, to evaluate the effects of different integration policy measures on the economic success of immigrants.

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