

discussion papers

FS IV 02 – 03a

**The Determinants of the Migration
Decision of IT-graduates from Pakistan:
Empirical Evidence for the Design of a
German "Green Card"**

Talat Mahmood
Klaus Schömann

February 2003

ISSN Nr. 0722 - 6748

**Forschungsschwerpunkt
Markt und politische Ökonomie**

**Research Area
Markets and Political Economy**

Zitierweise/Citation:

Talat Mahmood und Klaus Schömann, **The Determinants of the Migration Decision of IT-graduates from Pakistan: Empirical Evidence for the Design of a German "Green Card"**, Discussion Paper FS IV 02-03a, Wissenschaftszentrum Berlin, 2003.

Wissenschaftszentrum Berlin für Sozialforschung gGmbH,
Reichpietschufer 50, 10785 Berlin, Germany, Tel. (030) 2 54 91 – 0
Internet: www.wz-berlin.de

ABSTRACT

The Determinants of the Migration Decision of IT-graduates from Pakistan: Empirical Evidence for the Design of a German "Green Card"*

by Talat Mahmood and Klaus Schömann

We analyse determinants of migration decision of the 1,500 IT-Graduates from Pakistan. The results show a high migration propensity and that economic factors such as better career positions, high income and a better living standard tend to be significantly more important than the socio-political as well as institutional factors (such as residence permit, racial tolerance, language/culture and social networks). A location comparison between Germany and the USA shows that the interviewees consider income, social networks, residence permit and language/culture significantly higher for the USA than for Germany. Other factors do not show any statistically significant differences between Germany and the USA. We find evidence for a competition between countries for "high potentials" from Pakistan. Accordingly we discuss some implications for the design of a German "Green Card".

* This is a joint project between the WZB Research Units "Competitiveness and Industrial Change" and "Labour Market Policy and Employment". The initial findings were presented in November 2001 at the "Skill Needs and Labour Market Dynamics" workshop (co-financed by the BMBF). The National College of Business Administration and Economics, Lahore (NCBA&E) carried out the survey on behalf of the WZB. We extend our thanks to Lambert Ashu for his support and assistance in the data's evaluation.

ZUSAMMENFASSUNG

Die Determinanten der Migrationsentscheidung von IT-Hochschulabsolventen aus Pakistan: Empirische Befunde zum Design einer deutschen „Green Card“

Wir testen Forschungshypothesen aus migrationstheoretischen Ansätzen anhand einer Stichprobe von 1500 kurz vor dem Studienabschluss stehenden IT-Hochschulabsolventen aus Pakistan. Die repräsentative Befragung wurde im Sommer 2001 landesweit in Pakistan durchgeführt. Mit Hilfe der Varianzanalyse wird die Wirkung der ökonomischen sowie gesellschaftspolitischen Einflussfaktoren auf die Migrationsbereitschaft der Hochschulabsolventen untersucht. Die Ergebnisse zeigen eine hohe generelle Migrationsbereitschaft in Industrieländer unter den Befragten. Ökonomische Gründe spielen für die Migrationsentscheidung eine viel wichtigere Rolle als andere institutionelle oder gesellschaftspolitische Aspekte im Herkunfts- und Empfängerland. Der Signifikanztest der einzelnen Einflussfaktoren bestätigt, dass ökonomische Gründe wie gute Karrieremöglichkeiten, hohes Einkommen und besserer Lebensstandard bei allen Empfängerländern signifikant wichtiger sind als die gesellschaftspolitischen Determinanten (wie Ausländerfeindlichkeit, Aufenthaltserlaubnis, Sprache und Soziale Netzwerke). Beim konkreten Standortvergleich zwischen Deutschland und dem klassischen Immigrationsland USA bewerten die Befragten das Einkommen, die sozialen Netzwerke, die Aufenthaltsdauer und die Sprache für die USA signifikant höher als für Deutschland. Andere Faktoren weisen keine statistisch signifikanten Unterschiede zwischen Deutschland und den USA auf. Im Wettbewerb um die besten IT-Experten, ist demnach die Ausgestaltung der Green Card in wesentlichen Zügen vergleichbar der USA zu organisieren.

1. Introduction

The starting point of current discussions about foreign immigration into Germany has been skill shortages on the German labour market. Particularly for specialists in information and telecommunications technology, the mismatch on the German labour market has now reached the critical point where it is actually inhibiting growth. Both the increasing worldwide competition for highly qualified specialists and managers and globalisation trends, in general have resulted in increased emigration of German skilled workers and, at the same time, create the need for greater immigration into growth markets. The problem has recently been attracting growing attention from actors in industry and commerce, public policy and politics (Unabhängige Kommission Zuwanderung 2001). The demand for information technology (IT) specialists is particularly strong with respect to specific types of technical knowledge (e.g. programming languages) and special “international skills”, such as opening up foreign product markets for companies and their partners.¹

The most influential factors behind these trends are increasing globalisation and demographic changes. Stalker (2000) referred to the strong globalisation effect in connection with a heightened degree of labour mobility in the twenty-first century. Labour mobility — caused by growing pressure on the labour supply, increasing disparities in income between respective countries and, above all, the revolutionary development of information and communication technologies — will play an increasingly important role in the international dissemination of knowledge and technology. On the other hand, demographic changes over the last few decades have been leading to a population decline in Germany and are having unwelcomed side-effects on economic development and innovative capacity.

The consequences of these trends for Germany have become all too evident: more intense international competition for the most talented, a growing demand for well-qualified workers, an expansion of the markets, and a competitive disadvantage in the information and communication technology fields as a result of high wage costs.

Two main reasons are given for the shortage of specialists in Germany: first, the constantly changing state of the computer technology and its continued rapid growth worldwide, and, second, the failure of German universities and polytechnic colleges to provide workers with training that is adequately geared to the needs of the labour market. Therefore, in order to roughly meet skill needs, further training and retraining schemes for the available domestic labour force are necessary, as are efforts, already underway, to build up the number of students and graduates in these fields (Neugart 2000).

This long-term labour shortage is considered to be the overall cause for the emergence of so-called migration flows. To solve this problem, the German Federal

¹ According to the IZA International Employer Survey 2000 findings (IZA – Forschungsinstitut zur Zukunft der Arbeit [Institute for the Study of Labor], Bonn), for which 340 telephone interviews in Germany and 170 interviews each in France, the United Kingdom and the Netherlands were conducted (Winkelmann 2001).

Government, in cooperation with industry and commerce, has now established a “Green Card Emergency Programme to Meet the Demand for IT-Specialists” (*Green Card Sofortprogramm zur Deckung des IT- Fachkräftebedarfs*: <http://www.bma.bund.de/download/broschueren/a232.pdf>) which enables such specialists from non-EU countries to work in Germany for up to five years. In view of the prevailing domestic labour market problems, economic migration was not a desirable option. Most do agree, however, that a selective migration policy would bring overall economic benefits to recruitment countries (Zimmermann 1996).

Migration research shows that the scale of international migration will increase overall. Little, however, is known about the determinants of past and present migratory movements, in particular those of IT specialists and highly educated persons, who could generate such migration flows (Regets 2001). Current discussions still focus on whether a selective policy would bring overall economic benefits. What is more, the topic of immigration itself seems to be a controversial matter in Germany, both socially and politically.

Particularly with regard to immigration from developing countries, no extensive empirical research has been carried out to date, which takes into consideration not only the economic and social aspects of migration but also the political and institutional factors. Vogler (1999) has analysed these factors using an aggregated panel data set of asylum-seekers who migrated from developing countries. A study by Fiedler (2000) deals with the question of the conditions for which highly qualified IT workers migrate from India to Germany. To conduct this study a questionnaire was used to interview 48 employees of an IT company: the results confirm the participants' willingness to migrate based on migration-specific factors.

Most empirical studies carried out thus far discuss in detail the question of which factors influence decisions to migrate. The aim of these studies is to ascertain the best strategy for the countries involved from a migration-policy perspective, in order to control economically motivated migratory movements. The data basis of such research is for the most part, official statistics with the use of various methodological approaches. These studies place an emphasis on immigrants who have completed the migration process, whereas those remaining in their native country are not included in such studies. In the current economic environment the international labour market situation, as described above, requires a change in outlook: mutual mobility is desirable, especially in the case of high-tech workers.

The aim of this study is to ascertain, on the basis of information gained through surveys, the economic and socio-political determinants of the decision to migrate. While using variance analysis, we empirically analyse the effect of these determinants on migration decisions by IT university students in Pakistan, just prior to completion of their studies, as if

they would migrate to Germany or some other high-wage country.² In addressing this question, we test existing theories from migration research and draw conclusions for the German case which pertain to the various decision factors.

In the second section of this paper we discuss several basic theoretical considerations from which the examined research hypotheses are derived. The survey data and the variables of the statistical analysis are then introduced. The fourth section presents both the descriptive findings and the test results from the variance analysis. The final section discusses implications of the research results and provides an outlook for further planned research.

2. Theoretical Considerations

According to Han (2000), migration is a complex process, which, as far as its emergence and development is concerned, is continually determined through a multiplicity of causes and factors. As a rule the causes triggering this process are a mixture of objectively compelling exogenous factors (e.g. company contacts or attraction through foreign research laboratories and resources) and subjectively justified decisions (e.g. good career opportunities, starting a family). A classic approach to explaining the complex and multicausal determinants of migration can be found in the theory of so-called push and pull factors.

Push factors (migration factors) comprise all those conditions of the migrants' country of origin that induce them to migrate or temporarily migrate, such as political or religious persecution, economic crises and international wars. Pull factors (factors that attract migrants) are those circumstances in the host country that motivate and encourage them to migrate. Factors that may attract migrants are, for example, political stability, a democratic social structure, economic prosperity, better education and wage/salary opportunities relative to those in one's own country. It is generally assumed that with modern information, and communication and transportation capabilities, push and pull factors are becoming ever more important to individual migration decisions. Gatzweiler (1975) pointed out that in the end every migration decision is the result of push factors from the source country and pull factors from the target country working together.

An array of approaches in the migration-theory literature aim to identify and explicate important determining factors for an individual's willingness to migrate or for aggregated migration flows. The starting point of most theoretical models attempting to explain individual migration decisions is the neo-classical approach. The majority of micro-economic models is based on this approach, which views migration as a form of investment that is worthwhile or "profitable" for some individuals, but not so for others. The human capital approach maintains that migration takes place when the cost directly incurred through it will be reimbursed or will

² After successful completion of this pilot study, other Asian countries and/or East European countries will be brought into the research project.

“pay for itself” through higher income in the future. Because of unemployment and other economic and non-economic aspects, migration is often connected with financial and social risks. According to neo-classical models, possible reasons for the relatively low level of immigration from developing countries are a strong preference for one’s present environment, high migration costs, poor labour market chances, great uncertainty and the hope that developments in one’s native country might unexpectedly turn for the better. With the new economy of migration the following aspects, in particular, are brought into the discussion; which are especially interesting for the situation in developing countries. Hence, the migration of individual family members can be regarded as a form of risk diversification.

Cobb-Clark and Crossley (2001) state the family investment hypothesis for Australia, which would only be empirically tenable for “traditional” families, and not for non-traditional families in which both partners, the husband and the wife, are gainfully employed. On the other hand, the new economy of migration challenges the central role of relative income differences, because it views this difference as only one important point among others with regard to the decision for or against migration.

There are considerations on the macro-economic level as well, which in the end can be traced back to a micro-economic foundation. Among these are demographic trends, self-selection of migrants, self-sustaining migration and institutional restrictions on migration. Demographic trends are quite important: higher population figures in the sending country lead to per se greater migration flows. With regard to the causes of self-sustaining migration, so-called network effects command the greatest attention. These result from the fact that, apart from the contacts amongst themselves, migrants maintain good contact above all, with their native country. Through this exchange of information, the information and migration costs go down for all future migrants. People who have migrated in the past help the next ones with assimilation in the receiving country and also help reduce psychological costs that may arise through separation from one’s native country (Bauer, Epstein and Gang 2000).

The other approach is based on political as well as economic factors and holds that the cause is both the rapidly growing migration potential in developing countries as well as the limited opportunities for immigration as a result of insufficient intake ability or a lack of receptiveness. Hence, when analysing migration flows the basic institutional conditions should also be taken into account (Vogler and Rotte 2000).

Relative to the large number of theoretical approaches (cf. Borjas 1994; Vogler 1999), there are few empirical findings, particularly with regard to migration from developing countries. This is in part, due to a lack of suitable or adequate data sets, in addition to the fact that no extensive national or international research has been carried out up to now. Furthermore, there are hardly any studies available that analyse the determinants of international migration, which take into account not only the economic and social aspects of migration but also the political and institutional factors. Furthermore, very few of these

studies deal with the question of why migrants, despite knowledge of the incentives, stay in their native country and do not emigrate.

An empirical study by Marr (1975) analysed migratory movements from the United States, the United Kingdom and Germany to Canada for the period from 1950 - 1967. According to him, relatively better working conditions and higher income played a significant role as pull factors towards Canada. A different study by DeVoretz and Maki (1983) examined the migration of highly qualified workers from 16 developing countries to Canada for the period 1968 -1973. They found that occupation-specific employment opportunities were much more important for well-qualified workers than earnings opportunities. In contrast, Greenwood and McDowell (1991) gave differences in income as the most important push factor.

An empirical study by Zimmermann (1994) examined asylum-related emigration from four major regions — Africa, Asia, Eastern Europe and the Middle East — to the European Union during the years 1983–1992. He found that the level of unemployment in the individual countries had the expected negative impact on immigration, whereas the size of the respective labour market and the level of its relative wages exerted a positive influence. Huang (1987) chose to focus on the migration of well-educated workers for the period 1962–1976. The estimates reveal the expected influence that the respective wage differentials would have on a stay in the United States (i.e. push factor). Fleischer (1963) studied migration from Puerto Rico to the United States and found that, here too, economic opportunities proved to be the most significant influence on migration across national borders.

Whereas the research discussed up to this point is based on the analysis of cross-sectional or longitudinal data, Vogler (1999) made use of a panel data set for his analysis of migration to Germany. It covers information on migration from 86 source countries for the period 1981–1995, including the number of asylum-seekers for the years 1984–1995. According to Vogler's findings, the decision of an individual to migrate from a developing country to an industrial nation can be interpreted as an investment. In making this decision the potential migrant compares the future income in his or her native country with that of the target region and also takes into consideration the costs associated with migration. Other factors to be taken into account include unemployment, social services and taxes, both in one's native country and in the country of destination (i.e. push and pull factors).

The German Economic Institute in Cologne (Institut der deutschen Wirtschaft Köln 2001) has investigated companies' and IT specialists' previous experiences with the German Greencard. The study found that most of the reasons for taking up work in Germany were of an economic nature. First and foremost, it is especially important for almost all foreign specialists that they be given the opportunity to do "interesting work" in Germany. Foreign IT specialists next rank the advanced vocational training offered in second place. Good career and advancement opportunities are given as the next reasons for a stay in Germany.

Bartel (1989) studied the migration behaviour of different groups of migrants (Asians, Europeans and Hispanics) to the United States in 1980. His research shows that the network effects are very strong. Regions with a high number of residents belonging to a particular ethnic group are the preferred destination of migrants of that respective group. In both their micro-economic and macro-economic studies, Bauer and Zimmermann (1995) have found a high level of significance for network effects on migration. In a recent study Bauer, Epstein and Gang (2000) examined the influence of a migration network on migrants' decisions based on location. They observed that the size of the Mexican network within the United States has a positive effect on the likelihood of migration.

From the perspective of the receiving country, there are essentially two types of studies on the differences in income between native residents and immigrants. Studies following the approaches of Chiswick (1978) and Borjas (1987) find an initial income disadvantage for immigrants when compared to native residents who are of the same sex, educational level and age and who work in the same industrial sector. However, according to their findings, the situation improves over time, and a gradual equalisation of earned income takes place. Other studies using the traditional decomposition method to calculate differences in income associate the unexplained remainder of differences in income between native residents and immigrants with statistical discrimination. Recently, Nielsen, Rosholm, Smith and Husted (2001) have attributed comparable orders of magnitude of income differences, to a deficiency in qualifications and work experience as well as incomplete assimilation.

A good deal of the public discussion, however, revolves around the fear, not yet empirically researched, that a German Greencard might give rise to entire waves of immigration comparable both to the recruitment of migrants in the 1950s and 1960s and to the consequences for the present form of the social system for migrants of the first and even the second generations (Fertig and Schmid 2001). The PISA Study findings for Germany point to further pressure still surfacing with third generation immigrants. To bring more objectivity to this discussion, we have chosen to contribute new empirical results, which were gathered directly from a highly mobile group of IT specialists in an important potential source country. In this way one can speak of an ascertainment of an "upper benchmark" for potential migration from any one source country.

3. Survey Data and Description of Variables

This study is based on a personal survey of University information and communications technology students in their final year of study in Pakistan. To obtain representative data a total of 40 universities and other institutions with IT courses were contacted in the spring and summer of 2001. These particular institutions were chosen according to an established and widely accepted Pakistani college ranking system. The sample was drawn from the first,

second, and third best institutions. In the end, twenty-five IT institutions participated in the survey. Letters to the appropriate professors explained that a foreign organisation wished to carry out research on the topic of international labour mobility and university graduates. This organisation's origin was not mentioned in order to avoid a country-specific bias in the results.

Consistent with the survey design of this study, the university students were during this first stage of research only questioned about their expectations for the future relating to possible migration decisions. The students were information technology and electrical engineering students in their final academic year of a master's and Bachelor's programme and, hence, possessed to the highest academic education equivalent to that of academically trained German engineers. In order to analyse actual immigration to Germany and other industrialised countries, we shall make a second survey one year later to again interview both the graduates who migrated and those who remained in their native country. This step will enable us to compare their previous intentions to migrate with their actual decision.

3.1. Questionnaire Design: Push and Pull Factors

The questionnaire has four main sections. In the first section, the students are questioned only about their personal characteristics. In the next section, they are only asked about individual determinants that might influence their migration decisions. In the third section, the students are asked to rank a number of alternative countries according to their preference. In the final section they are to explicitly assess, taking into account both the respective country and the importance of the various determinants, whether or not they might migrate to a particular country.

The relevant aspects to individual migration decisions are determined on the basis of general theories on migration behaviour, empirical research results and motives for migration already named in surveys. However, it would go beyond the scope of this project to take into account all possible push and pull factors. For this reason the analysis has been restricted to the most important factors, which are briefly presented below.

3.2. Social Networks, Chain Migration

We start with the assumption that before a person makes a decision to migrate he or she makes a comparison of possible destinations, a task that requires relevant information about the sending and the receiving country. This information may come from different sources, such as various media and information agencies that deal with the systematic recruitment of labour, and private information channels (Feithen 1985).

Whereas knowledge about the determinants of the sending country is based mainly on one's own experiences, information about the receiving country can only be gathered through external sources (Gatzweiler 1975). Personal relationships to relatives and friends are of utmost importance in obtaining such information (Feithen 1985). The dominance of private information channels can be explained by the fact that the weight of social and emotional bonds can outweigh other factors when making a migration decision. Treibel (1999) has argued that one cannot always assess reliability of such information. This circumstance also helps explain the so-called chain migration phenomenon, which is the larger subsequent migration flows of people who have been informed by previous migrants (Han 2000). Networks with continuing obligations and expectations may arise through the use of such personal relationships. The migrant networks resulting from this process help reduce risks and uncertainties by supplying valuable information (Faist 1997). The relatively pronounced mobility of highly qualified workers can also be understood in this context. Because highly qualified workers have a comparatively high level of information available and a wide job-search range open to them, they often find it easier to migrate than do workers with average skills and education (Janssen 1998).

3.3. Career Opportunities/Self-employment Opportunities and Improved Professional and Social Status

In principle, improvement of professional status can be grouped with the improvement of social status as one reason for migration, because the latter usually follows from the former as a result of an increase in income (Feithen 1985). One push factor related to such professional concerns is the lack of advancement opportunities in those sending countries characterised as developing countries. In comparison, there is an opportunity to make gains in professional and social status through migration to developed countries (Blahusch 1992). One pull factor is the possibility for relatively better on the job training/advanced vocational training in industrialised countries. Because, according to Schipulle (1973), highly qualified people have an especially strong desire to improve their status, it is hardly surprising that they often name professional career planning as a motive for migration (Körner 1999).

3.4. Salary/Income Situation and Standard of Living

One complaint of highly qualified workers in sending countries relates to poor wages received. This aspect represents an important push factor (Körner 1999), whereas higher income in industrialised countries functions as a pull factor (Blahusch 1992). The comparatively low income in their countries of origin, in contrast to the high income in industrialised countries together result in another cause of migration (Breidenbach 1982).

According to Schipulle (1973), as a rule, the difference in income between the developing and the industrialised country must be exceptionally large in order to induce migration. What is more, income frequently symbolises a person's standing and abilities and, as such, represents a measure of his or her accomplishments and success. A high income also leads to more respect within one's social sphere (e.g. standard of living).

3.5. Hostility Towards Foreigners

Social distance, which can lead to hostility towards foreigners in the receiving country, hinders migration (Gatzweiler 1975). Through the rise of prejudices against foreigners, xenophobia can be found time and again in alarming situations for the economy, society, politics and culture (Bade 1994; for an international comparison and evaluation, see Koopmanns 2001). Such a situation in the target country deters potential migrants, who fear that they might come to harm during their stay abroad (Thelen 2000).

3.6. Language/Culture

Fischer and Straubhaar (1998) were the first to describe the value of immobility in a systematic way by drawing from several new hypotheses. They argue that some skills and part of one's abilities are location-specific. These internal, country-specific advantages are not just of an economic nature; rather, they are culturally, linguistically, socially and politically binding factors. The effect of these factors and of one's native country on migration is like that of a "push factor" preceded by a minus sign. In addition, they deal with advantages specific to particular businesses, regions and societies.

When the languages of the sending and receiving countries differ, language barriers arise, resulting in a smaller probability of migration (Feithen 1985). Because mobility depends considerably on an individual's language abilities, which in a figurative sense reflect one's ability to integrate (Körner 1999), highly qualified people tend to exhibit a relatively high probability of migration because of the additional linguistic proficiencies they often possess (Janssen 1998).

3.7. Duration of Stay

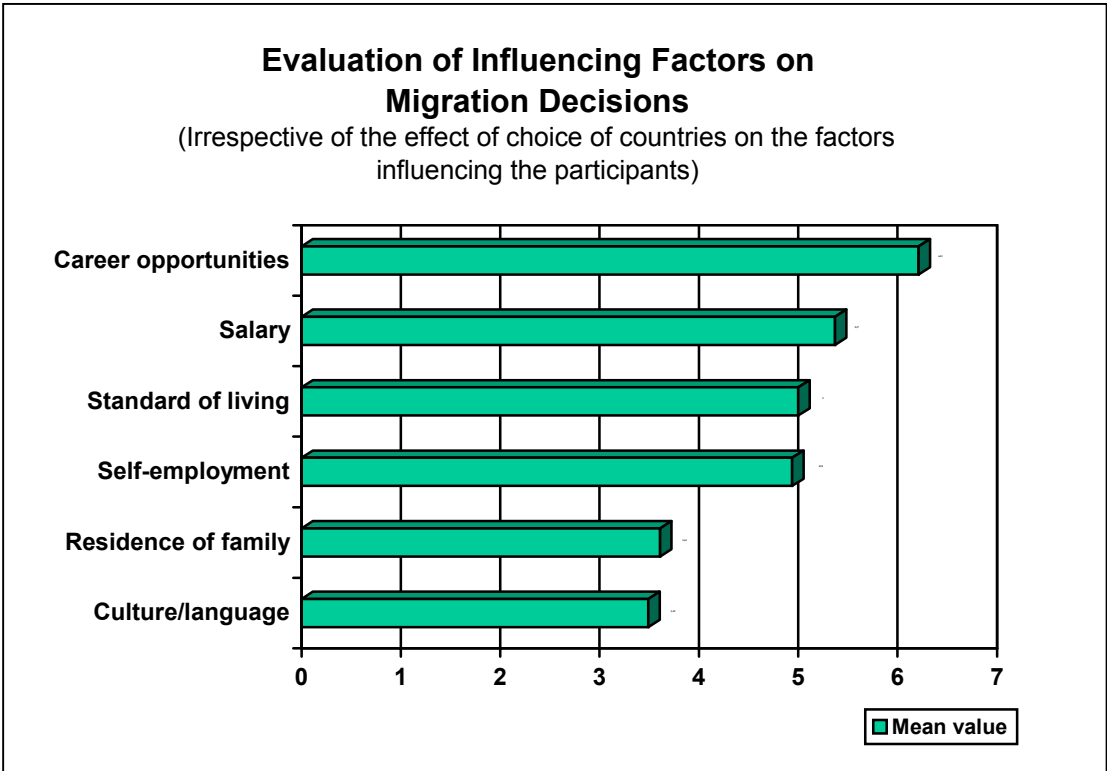
The permitted duration of stay in a receiving country is an important institutionally defined determining factor. The different immigration laws of countries can work to discourage or attract migrants. The United States, as the classic immigration country, is a good example of a pull factor in this regard, whereas Germany, with its non-immigration policies, can be considered a push factor. If migrants take this institutional factor into consideration in their decision-making process, the likelihood of migration may decrease.

4. Empirical results

4.1. Evaluation of the Factors

In this section we investigate how individual factors might influence the decision of university students to migrate abroad (using several countries as possible choices). Of the 1,500 distributed questionnaires, 116 could not be included in the results, so that we used at a net sample of N = 1,389. In the second section of the questionnaire the participants were asked to indicate on a scale of 1 to 7 extent that each of the determinants would influence their decisions about migration (1 = negligible influence/unimportant criterion; 7 = large influence/important criterion). The six criteria were salary, language/culture, social networks, standard of living, opportunities for self-employment and career opportunities. The participants were first asked to judge the importance of the six criteria on their decision about whether or not to migrate, independent of the choice of countries in question.

Figure 1:



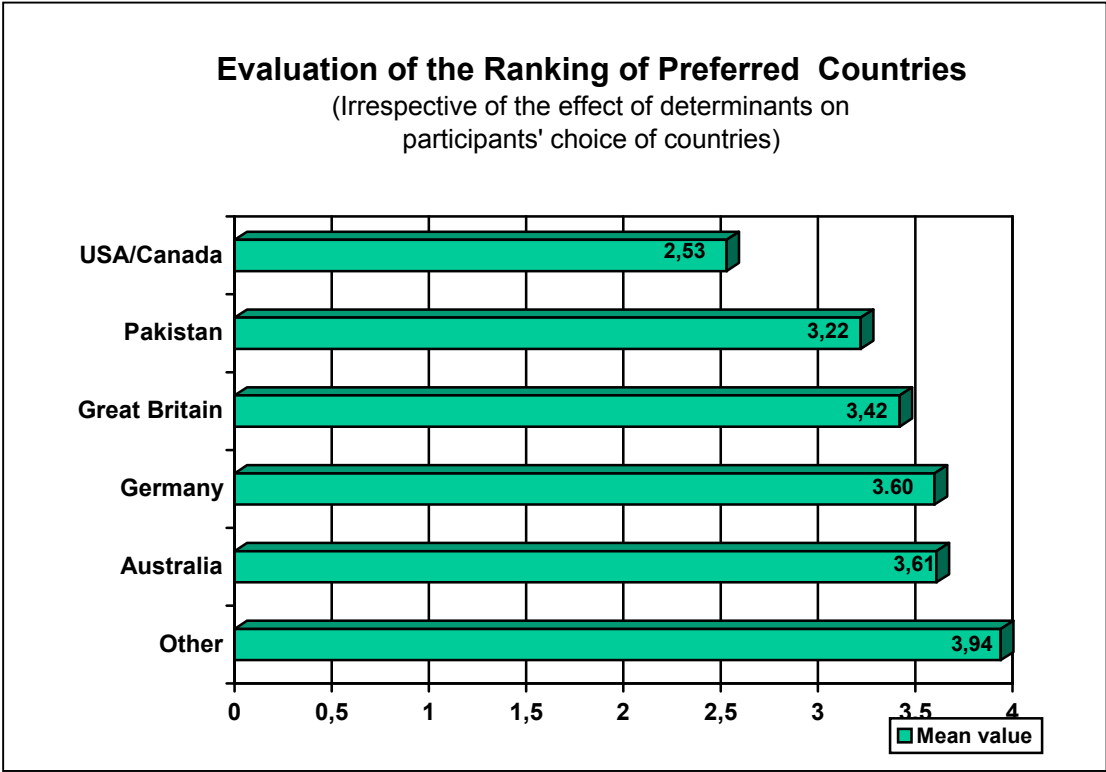
As figure 1 clearly shows, the participants gave career opportunities the highest rating with a result of 6.2. With a mean value of 5.4, salary is then rated as the second most important factor. Standard of living follows in third place with a score of 5.0. As for the remaining criteria, opportunities for self-employment receives fourth place (4.9), social networks/residence of family comes in next to last (3.6), and culture/language is ranked in

last place (3.4). The figure reveals that decisions about migration are determined mainly through economic considerations and the desire for greater professional and social status.

4.2. Ranking of Countries

In this section of the questionnaire the students are asked to rank the country of their choice as an alternative according to their own preference. They are asked to evaluate the countries irrespective of the determinants already given in detail, and to rate each one on a scale from 1 (highest) to 6 (lowest). A total of 1,384 cases were available for our analysis; the remaining responses could not be taken into account because of missing information. As shown in figure 2, the respondents indicated that their preference lies first and foremost with the United States/Canada, with a mean value of 2.5 — hardly a surprising result. Their native country, Pakistan, is the next most preferred country, with a mean value of 3.2. In comparison with those who chose North American countries, a lower inclination to migrate is found for those individuals who chose for Great Britain (3.4) or Germany (3.6). Finally, the participants' rating of Australia brought that country into fifth place with 3.6, before “other countries (mostly the Middle East countries)” in last place.

Figure 2:

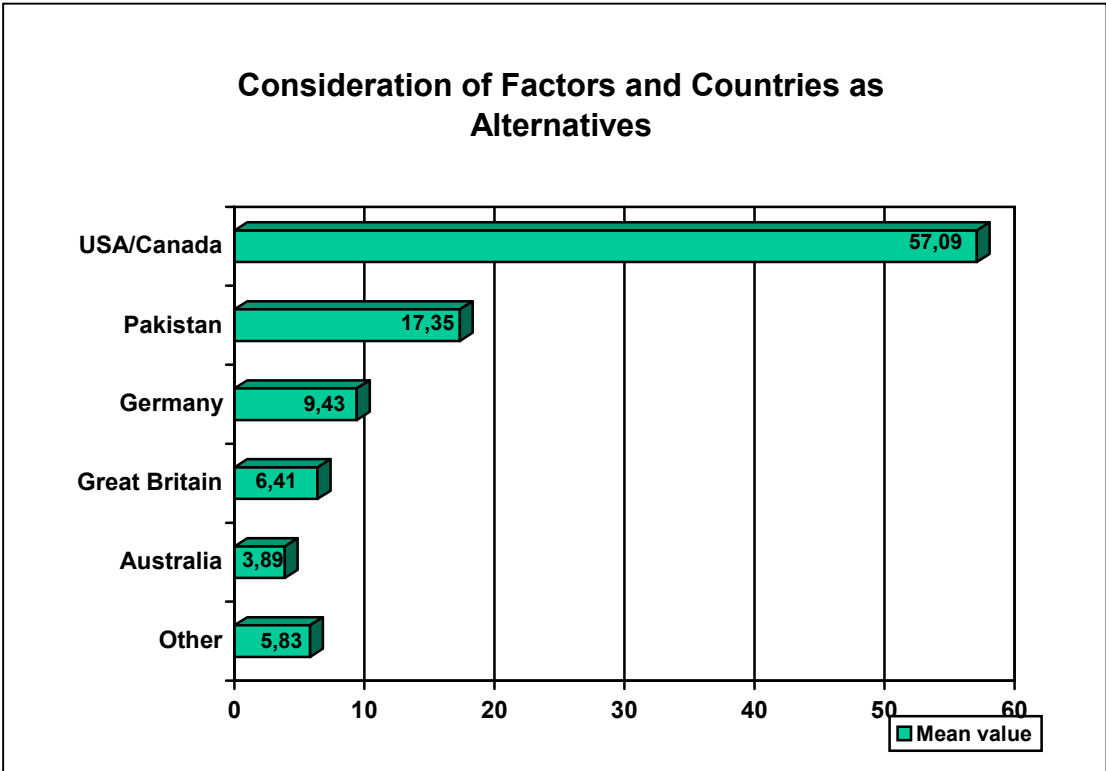


4.3. Consideration of Factors and Country's as Alternatives

As we have seen, the participants were at first only asked about determining factors; in the next section only questions about the countries as possible alternatives were posed. In the following section the students were asked to decide both for a particular country and according to the importance of the different factors. Of the 1,500 surveyed, 1,389 decided for one of the six options, resulting in the weighting shown in figure 3.

Well over half (57.09%) would prefer to work in North America (United States/Canada). Another 17.35% do not wish to migrate at all, instead preferring to stay in Pakistan upon completion of their studies. All the same 9.43% of those surveyed chose Germany after the United States/Canada, leaving Great Britain for third place among the target countries. Eighty-nine respondents (6.41%) decided for Great Britain. Another 5.83% of the participants wished to migrate to "other countries". Australia received last place with 3.89%.

Figure 3:



4.4. Comparison of Mean Values

In this sub-section we present a comparison of the mean values in order to show which of the eight factors are viewed by the survey participants as decisive in their choice of a particular host country. table 1 provides the mean values of the eight factors for each of the six country as an alternative. The empirical standard deviations are given in parentheses.³

In the first column of table 1, one finds the mean values of the eight criteria for Germany. Here, career opportunities has the highest mean value with 6.4. If one then compares the mean values of other countries, one discovers that career opportunities is regarded as the most important decision-making factor for all of the countries as alternatives. The second most important criterion for the participants was salary. With the exception of the United States/Canada and Pakistan, standard of living came in third place. As expected, the criterion standard of living played a less important role (ranked sixth) for those deciding to stay in Pakistan.

For the United States/Canada, the opportunity for self-employment is somewhat more important than standard of living. Opportunities for self-employment is the fourth most important criterion for all other countries considered here, with the exception of Great Britain (ranked fifth).

³ The figures given in the circle indicate the ranking of the determinant`s. The standard deviations are in parentheses.

Table 1: Comparison of Mean Values

	Germany	Pakistan	Australia	Great Britain	USA/Canada	Other Countries
Salary	5.764 ⁽²⁾ (1.51)	5.523 ⁽²⁾ (1.67)	5.778 ⁽²⁾ (1.51)	6.146 ⁽²⁾ (1.26)	6.384 ⁽²⁾ (1.10)	5.711 ⁽²⁾ (1.50)
Language/Culture	4.224 ⁽⁶⁾ (1.86)	4.462 ⁽⁵⁾ (2.01)	4.340 ⁽⁶⁾ (2.07)	4.907 ⁽⁷⁾ (2.02)	4.636 ⁽⁶⁾ (1.95)	4.840 ⁽⁶⁾ (1.94)
Social Networks	3.581 ⁽⁸⁾ (1.97)	5.231 ⁽³⁾ (1.91)	4.057 ⁽⁷⁾ (2.12)	5.103 ⁽⁶⁾ (2.03)	4.586 ⁽⁷⁾ (2.02)	4.613 ⁽⁷⁾ (2.11)
Tolerance towards Foreigners	3.856 ⁽⁷⁾ (1.97)	3.721 ⁽⁸⁾ (1.91)	3.726 ⁽⁸⁾ (1.92)	4.159 ⁽⁸⁾ (2.18)	4.011 ⁽⁸⁾ (1.98)	3.880 ⁽⁸⁾ (2.04)
Duration of Stay	4.944 ⁽⁵⁾ (1.74)	3.811 ⁽⁷⁾ (2.10)	4.641 ⁽⁵⁾ (1.99)	5.258 ⁽⁴⁾ (1.86)	5.413 ⁽⁵⁾ (1.70)	5.014 ⁽⁵⁾ (1.94)
Standard of Living	5.266 ⁽³⁾ (1.80)	4.352 ⁽⁶⁾ (1.88)	5.157 ⁽³⁾ (1.89)	5.341 ⁽³⁾ (1.71)	5.415 ⁽⁴⁾ (1.62)	5.149 ⁽³⁾ (1.77)
Opportunities for Self-Employment	5.248 ⁽⁴⁾ (1.75)	4.644 ⁽⁴⁾ (1.88)	4.907 ⁽⁴⁾ (2.03)	5.115 ⁽⁵⁾ (1.88)	5.494 ⁽³⁾ (1.63)	5.080 ⁽⁴⁾ (1.78)
Career Opportunities	6.398 ⁽¹⁾ (0.97)	5.624 ⁽¹⁾ (1.81)	6.148 ⁽¹⁾ (1.39)	6.371 ⁽¹⁾ (1.26)	6.518 ⁽¹⁾ (1.01)	6.237 ⁽¹⁾ (1.22)
N	131	241	54	89	793	81

For Great Britain, the duration of stay is regarded as more important than opportunities for self-employment. Otherwise, and with the exception of Pakistan, the participants gave duration of stay as the fifth most important criterion. Language/culture ranked sixth for all countries except Pakistan and Great Britain. With the exception of Germany, a decision for a particular country is least influenced by tolerance towards foreigners. Yet even in Germany this criterion comes in next to last: only the mean value for social networks is somewhat smaller. In Pakistan social networks is the third most important factor in the decision not to seek a job abroad.

In sum, it can be said that when a decision is made to go abroad, economic reasons (career opportunities, salary, standard of living) usually play a greater role than do institutional or socio-political criteria. In comparison, social networks play almost as important a role in the decision to stay in Pakistan.

4.5. Variance Analysis in Comparing Mean Values of Determinants within each Country

In this sub-section we investigate whether the mean values of the eight criteria differ from one another significantly. To this end, variance analyses were carried out for each of the six countries as an alternative.⁴ The results are presented in table 2. The criterion salary was selected as the reference category. The coefficients of the remaining factors indicate the difference from the mean value of salary ($\bar{X}_i - \bar{X}_{salary}$). T-values are given in parentheses for the hypothesis that these differences are zero ($H_0 : \bar{X}_i - \bar{X}_{salary} = 0$). The F -value given in the last line of the table tests the hypothesis that all eight mean values are equal. This can be rejected for each of the six alternatives at the 1% level.

The first column of table 2 shows the comparison of the mean values of the variable salary with the other criteria for N = 131 individuals who decided for Germany. The mean value for salary is $\mu_s = 5.8$; for career opportunities it is $\mu_{co} = 6.4$. The difference from salary is $\mu_{co} - \mu_s = 0.64$. With a t-value of 2.94, this difference is highly significant at the 1% level. The positive sign means that those students who decided for Germany evaluated career opportunities significantly higher (at the 1% level) than salary.

⁴ Model of the variance analysis: $Y = \mu_{salary} + \sum_{i=2}^8 \beta_i D_i + \varepsilon$ with Y = the vector of all eight criteria of a country option, D_i = dummy for criterion i and $\beta_i = \mu_i - \mu_{salary}$.

Table 2: Comparison of Mean Values of Determinants within Countries

	Germany	Pakistan	Australia	Great Britain	USA/Canada	Other Countries
Salary (S) (mean value)	5.764 (37.73**)	5.523 (44.74**)	5.778 (22.57**)	6.146 (32.26**)	6.3845 (107.87**)	5.711 (27.52**)
Language/Culture (diff. to S)	-1.540 (-7.10**)	-1.061 (-6.07**)	-1.438 (-3.96**)	-1.24 (-4.56**)	-1.748 (-20.78**)	-0.871 (-2.96**)
Social Networks (diff. to S)	-2.183 (-10.04**)	-0.292 (-1.68)	-1.721 (-4.74**)	-1.043 (-3.85**)	-1.797 (-21.38**)	-1.097 (-3.73**)
Tolerance towards Foreigners (diff. to S)	-1.908 (-8.80**)	-1.803 (-10.15**)	-2.052 (-5.59**)	-1.988 (-7.22**)	-2.37 (-28.11**)	-1.831 (-6.22**)
Duration of Stay (diff. to S)	-0.820 (-3.78**)	-1.713 (-9.71**)	-1.136 (-3.13**)	-0.888 (-3.29**)	-0.971 (-11.54**)	-0.697 (-2.360*)
Standard of Living (diff. to S)	-0.498 (-2.29*)	-1.171 (-6.68**)	-0.621 (-1.69)	-0.805 (-2.98**)	-0.968 (-11.51**)	-0.562 (-1.90)
Opportunities for Self-Employment (diff. to S)	-0.516 (-2.38*)	-0.879 (-5.03**)	-0.870 (-2.41*)	-1.031 (-3.81**)	-0.889 (-10.58**)	-0.630 (-2.14*)
Career Opportunities (diff. to S)	0.635 (2.94**)	0.101 (0.58)	0.370 (1.02)	0.225 (0.83)	0.134 (1.60)	0.526 (1.79)
R²	0.218	0.114	0.149	0.116	0.195	0.119
Adjust R²	0.212	0.111	0.135	0.107	0.194	0.108
N	1003	1866	423	697	6214	600
F test (P Value)	39.672** (0.0000)	34.201** (0.0000)	10.366** (0.0000)	12.930** (0.0000)	214.293** (0.0000)	11.4039** (0.0000)

In this connection it becomes evident that career opportunities has the highest preference for all six countries (positive sign, but not significant). However, only for those individuals who have chosen Germany, is the difference between career opportunities and salary significant at the 1% level (see column 1). In Great Britain and the United States/Canada, as in Germany, are all other criteria rated significantly lower than career opportunities and salary.

A qualitative study came to similar results by Fiedler (2000) of an IT company. The interviewees cited better career prospects and a higher standard of living as important advantages over other countries. Furthermore, the participants judged their career prospects in German companies optimistically. A study by the Institut der deutschen Wirtschaft Köln (2001) found that it is especially important to almost all foreign IT specialists that they find interesting work in Germany. The questions of whether they may further join their education at new work place and whether the company will offer them good career perspectives also played an important role.

For those final-year students who chose Germany, the difference of standard of living from salary is -0.49 . This is significant with a t-value (-2.28) at the 5% level. The minus sign means that these individuals rate standard of living significantly lower (at the 5% level) than salary and career opportunities. The standard of living factor is ranked sixth for Pakistan (see column 2 of Table 1), and fourth for the United States/Canada. Standard of living receives third place for the remaining countries (except the United States/Canada: ranked fourth). When respondents chose "other countries", standard of living was not viewed as significantly less important than salary. Australia and "other countries" do not differ from each other substantially in either ranking order or levels of significance.

This finding corresponds with a hypothesis from Schipulle (1973), which states that for migrants, too, income frequently serves as an indication for the abilities of a person, that is, it represents a measure of one's achievements and success. A higher income leads to more respect within one's social sphere and/or to a higher standard of living.

For Germany, the difference between the mean values for self-employment opportunities and salary amounts to -0.52 , and it is significant at the 5% level with a t-value of -2.37 . This implies that the individuals who decided for Germany evaluated possible self-employment lower than they did career opportunities, salary and standard of living. For the United States/Canada, possible self-employment receives third place, whereas for Great Britain this criterion — ranked just fifth — is less important than for all other countries. This finding confirms the work of Han (2000), who referred to migrants' observations about why they normally first venture to make the transition from salaried employee to self-employed entrepreneur only after waiting some years. Reasons given include low wages and a lack of opportunities for advancement.

Another factor which influences students' decisions about migration, and which should not be underestimated, is institutional regulations such as the permitted length of

stay. As table 2 shows, the difference between the mean values for duration of stay and salary comes to -0.82 for Germany, with a t-value of -3.7 indicating significance at the 1% level. This result shows that participants attributed less importance to duration of stay than to salary and other criteria.

The difference between the mean values for language/culture and salary is -1.5 . The t-value is significant at the 1% level. Those individuals who chose Germany assessed the importance of language/culture significantly lower than they did salary. Feithen's hypothesis (1990) that the likelihood of migration decreases when different languages are spoken in the sending and the receiving country, leading to a language barrier, was not confirmed through this analysis. With regard to the criteria language, Janssen (1998) has argued that a relatively high probability of migration predominates among highly qualified persons. Our empirical evidence confirms this theory, for in our analysis the determinant language/culture received quite a low ranking.

As expected for Germany, the influence of social networks is lowest in comparison with all other determinants (significant at the 1% level). There are only small groups of migrants from Southeast Asia in Germany. One noteworthy result for Pakistan is that the influence of social networks is hardly smaller (not significant) than that of salary, with the significance of these networks ranked third. Otherwise, social networks receives sixth place for Great Britain (see table 1) and just seventh place for all other countries — except Germany, for which it is even ranked last. For those individuals who wish to seek employment in Pakistan, the influence of social networks is not significantly smaller than that of salary or career opportunities. The remaining factors play a less important role here (significant at the 1% level). In Fiedler's study (2001), none of those surveyed evaluated social contacts within Germany very highly. Up to now emigrants from Pakistan to Germany have had very little opportunity to rely on long-established social networks.

The factor with the least effect when reaching a decision to stay in Pakistan was, predictably, hostility towards foreigners. On the other hand, this criterion had the smallest influence for all other countries too, with the exception of Germany (for which it was ranked next to last). Our findings do not confirm Gatzweiler's hypothesis (1975) that social distance, which may lead to xenophobia within the receiving country, has a negative impact on migration.

In sum, it can be concluded that the individual criteria are evaluated at a significant level for each respective country. For all countries, career opportunities, salary and standard of living are considerably more important in the decision-making process than the other criteria (with the exception of social networks for Pakistan and standard of living for Australia). The remaining decision-making aspects were classified as significantly less important (negative co-efficients) for both Germany and the other country options. According to an f- test carried out, the null hypothesis that all mean values are equal can be rejected at the 1% level for all of the alternatives.

4.6. Comparison of Mean Values of the Deciding Factors between the Six Countries as Possible Alternatives

In this sub-section further variance analyses are carried out for each of the eight determinants in order to ascertain whether the mean values differ to a significant degree between the six countries as alternatives.⁵

The results of the final-year students, who chose Germany, have been selected as the point of reference. The coefficients of the remaining criteria indicate the difference from the mean value for Germany ($\bar{X}_i - \bar{X}_{Germany}$). T -values for the hypothesis that these differences are zero, are given in parentheses ($H_0 : \bar{X}_i - \bar{X}_{Germany} = 0$). The f- ratio given in the last line, tests the hypothesis that all six mean values are equal, that is, that the preference structure (ranking of the evaluation of the determinants) of the students does not differ significantly from each other.

The first column of table 3 compares the mean values of the six alternatives the factor salary. The mean value for Germany is 5.76; for the United States/Canada it is 6.38. The difference comes to 0.62, and with a t-value (4.96) it is significant at the 1% level. Therefore, those who have chosen the United States/Canada assess the factor, salary, higher — by an amount of 0.62 — than those who have chosen Germany. In other words, for the former group salary is significantly more important than it is for the latter group. The positive effect of salary in a target country on migratory movement, set out numerous times in theory and confirmed by nearly all empirical studies to date, is found in this study as well. Furthermore, participants who decided for Great Britain evaluated salary significantly higher (t-value of 2.11 at the 5% level) than did those who chose Germany. This factor plays a slightly lesser role for Pakistan and “other countries” (negative co-efficients). This means that those students who chose Pakistan and “other countries” evaluated salary lower than that for Germany by an amount of 0.24. It is only slightly more important for Australia. This result confirms the well-known differences in income between Germany and the United States in the IT sector; it also confirms that, when comparing locations, the participants consider the determinant salary to be very important in reaching a decision. Furthermore, Breidenbach’s theory (1982), which states that the comparatively low income in source countries and the

⁵ Model of the variance analysis: $Y = \mu_{Germany} + \sum_{i=2}^6 \beta_i D_i + \varepsilon$

with Y = vector of one criterion from six alternatives, D_i = dummy for alternative i

and $\beta_i = \mu_i - \mu_{Germany}$.

Table 3: Comparison of Mean Values of the Factors for Deciding between Countries

Countries	Salary	Language/ Culture	Social Networks	Tolerance Towards Foreigners	Residence Permit	Standard of Living	Opportunity for Self- Employment	Career Oppor- tunities
Germany(G) <i>(mean value)</i>	5.764 (49.70**)	4.224 (24.06**)	3.581 (19.85**)	3.86 (21.74**)	4.944 (30.51**)	5.266 (34.34**)	5.248 (33.94**)	6.394 (59.14**)
Pakistan <i>(diff. to G)</i>	-0.241 (-1.67)	0.238 (1.10)	1.650 (7.42**)	-0.135 (-0.61)	-1.133 (-5.62**)	-0.914 (-4.82**)	-0.604 (-3.16**)	-0.77 (-5.76**)
Australia <i>(diff. to G)</i>	0.014 (0.07)	0.116 (0.36)	0.476 (1.44)	-0.131 (-0.40)	-0.303 (-1.02)	-0.109 (-0.38)	-0.341 (-1.21)	-0.250 (-1.26)
Great Britain <i>(diff. to G)</i>	0.382 (2.12*)	0.683 (2.48*)	1.523 (5.42**)	0.303 (1.07)	0.314 (1.25)	0.075 (0.31)	-0.133 (-0.55)	-0.028 (-0.16)
USA/Canada <i>(diff. to G)</i>	0.620 (4.96**)	0.412 (2.18*)	1.006 (5.18**)	0.155 (0.81)	0.469 (2.68**)	0.149 (0.90)	0.245 (1.48)	0.119 (1.02)
Other Countries <i>(diff. to G)</i>	-0.053 (-0.28)	06.160 (2.15*)	1.033 (3.52**)	0.024 (0.08)	0.070 (0.26)	-0.118 (-0.47)	-0.168 (-0.67)	-0.162 (-0.91)
R²	0.069	0.008	0.046	0.004	0.095	0.050	0.034	0.068
Adjust R²	0.066	0.004	0.042	0.000	0.092	0.047	0.031	0.064
N	1373	1349	1353	1318	1341	1343	1354	1372
F-test <i>(P value)</i>	20.379** (0.00)	2.017 (0.07)	12.934** (0.00)	1.112 (0.35)	28.297** (0.00)	14.113** (0.00)	9.575** (0.00)	19.830** (0.00)

correspondingly high income in industrialised countries together result in one cause for migration, is confirmed by our findings.

Our analysis confirms the general assumption in Germany that the need to learn the German language might have a negative effect on the decision to migrate to Germany. The findings reveal that the determinant language/culture is rated considerably higher by those who chose the United States/Canada, Great Britain or "other countries" (at the 5% level) than by those who chose Germany. As expected, Germany has the lowest mean value in this connection (4.2, ranked sixth). What is more, our results confirm Feithen's hypothesis (1985) that different languages in the sending and the receiving country lead to a language barrier and a decreased likelihood of migration to the country. The f-test for this criterion can only first be rejected at a level of significance of 7.4% (f-test: 2.016). Hence, equivalence of the mean values cannot be ruled out to a significant degree, and there is a significant preference structure of the university students for a particular country. This situation tallies with the conclusion reached by Hoffmann (2001) and Wagener (2000) that the German language is to some extent viewed as a fundamental problem for those interested in the Green Card. Owing to this language barrier, Germany is to be regarded as the second choice after the English-speaking countries. Fiedler (2000), on the other hand, comes to the conclusion that the language barrier is actually quite modest on the whole, and suggests that the willingness to migrate is high, despite language barriers.

As expected, social networks was evaluated most highly by those participants who wish to stay in their native Pakistan (t-value: 7.4 at the 1% level). Network effects are clearly evaluated as significantly more important in the United States/Canada, Great Britain and "other countries" than in Germany (all t-values are highly significant at the 1% level). Social networks play a smaller role for those individuals who selected Germany than they do for those who chose one of the other alternative. One should note here that with regard to the question on the presence of relatives or friends abroad, the United States/Canada ranked first, followed by Great Britain and "other countries".

The considerable importance of network effects on migration has been confirmed empirically by both micro- and macro-economic studies (see, for example, Bauer and Zimmermann 1995 for an overview). Network effects also proved to be an important influence on migration in a study by Vogler (1999). Fiedler (2000) has shown that a large share of interviewees, who have migrated to Germany, did not receive their information from relatives or friends, and has, therefore, concluded that there is a lack of personal contact to people living in Germany. After Pakistan, Great Britain shows the highest results (ranked second, see table 2). Significant differences among the six alternatives can be found for this criterion (f-value: 12.9), showing that these university students in their final year evaluate this factor differently when comparing specific locations.

There are no significant differences between the countries with respect to tolerance shown towards foreigners. Thus, equivalence of mean values cannot be ruled out. Only

those participants choosing Great Britain, the United States/Canada or “other countries” rated this criterion slightly higher (plus sign, but not significant) than did those who preferred Germany. Hence, the hypothesis from Gatzweiler (1975), discussed above, is not confirmed by our findings. As one might expect, university students remaining in Pakistan assess this determinant better than do those deciding for Germany. Amazingly, this criterion shows a minus sign for Australia as well. No significant differences between the six country options can be proven for tolerance towards foreigners. In addition, with the exception of Germany, this determinant was least important for all options considered here (ranked last, see table 2).

The respondents who chose the United States/Canada rated the duration of a residence permit significantly higher (t-value: 2.69) than did those who decided in favour of Germany. With the restrictive immigration policy in effect until just recently, foreign university students in Germany, in particular those from developing countries, were obliged to return to their native country upon completion of their studies. These strict measures have now been relaxed, for reasons already discussed in this paper.

As expected, the duration of a residency permit for Pakistan is less important (significant t-value of -5.62) than it is for Germany. The participants evaluated this factor as equally unimportant for Australia in comparison with Germany. They did not rate the criterion significantly higher for Great Britain and “other countries” than for Germany. With an f-value of 28.3, the null hypothesis of equivalent mean values can be ruled out for this determinant. Significant differences for this criterion can therefore be shown for the six country options, and in particular for the United States/Canada.

With regard to the criterion standard of living, Pakistan was the only country to receive a rating that is significantly lower (t-value: -4.82) than that for Germany. The criterion was given a slightly lower evaluation only by those choosing Australia and “other countries”. It was evaluated as somewhat more important by the university students who picked the United States/Canada and Great Britain (both t-value positive, but not significantly so). Hence, our results to some extent confirm Feithen’s hypothesis (1985) that enhanced social status results from increased income, which in turn is achieved through improved occupational status in an industrialised country. A study by Fiedler (2000) also demonstrates that the considerations of decision-makers with regard to leaving their native country, above all, have to do with the advantage of improved financial status. Yet the merits of better job opportunities and of a higher standard of living, which may come through emigration and which are closely connected with financial betterment (the former a precondition and the latter a consequence of one’s financial situation), also receive considerable attention. According to an f-test (f-value: 14.1), equivalence of the mean values for the criterion standard of living can be ruled out; that is, the determinant is evaluated differently for the countries under consideration.

According to the t-value (significant at -3.16), the criterion opportunities for self-employment is irrelevant only for Pakistan. In comparison with the results for Germany, it is also less important for those university students who selected Australia, Great Britain or "other countries". On the other hand, students who decided in favour of the United States/Canada find the possibility of self-employment somewhat more pertinent: the coefficient is positive, but not statistically significant. According to Han (2000), empirical surveys show that self-employed migrants generate higher incomes on average, than do those in dependent employment relationships.

Career opportunities in Pakistan are of little importance: the IT students who wish to remain in their native country attribute less importance to this factor (t-value: -5.76). Those who chose "other countries", Great Britain or Australia assess the career opportunities there lower than they do those in Germany. Only for the United States/Canada is the coefficient positive: these individuals rate the career opportunities there higher than they do those in Germany. However, though the coefficient is positive, it is not statistically significant. This result confirms the hypothesis of Schipulle (1973) and Körner (1999), which holds that highly qualified persons have a strong desire to improve their status and often experience their own career planning as a pull factor for migration. Equivalence of the mean values can be rejected for this criterion at a level of significance of 0.000% (f-value: 19.83); the effects of these determinants differ significantly between the various countries.

In sum, those individuals who chose the United States/Canada and Great Britain evaluated salary, social networks, duration of stay (not significant for Great Britain) and language significantly higher than did those students who selected Germany. The other criteria — hostility towards foreigners, standard of living, self-employment and career opportunities — show no statistically significant differences for these countries in comparison with Germany. Only for Pakistan are standard of living, self-employment, career opportunities and duration of stay less important. There are only slight differences for the factors salary and hostility towards foreigners. Self-employment and career opportunities come in second place for Germany in comparison with those who decided for one of the other country options. Social networks ranked third for those who decided to stay in Pakistan, in comparison with the other options. Our country comparison showed no significant differences for the criteria language/culture and hostility towards foreigners; the mean values for the others differ significantly at the 1% level. Hence, the null hypothesis of equivalent mean values can be rejected, with the exception of the factors language/culture and hostility towards foreigners.

5. Conclusion

Through the use of the individual's questionnaire, we examined the expectations to migrate and the migration decisions among highly qualified IT university students in Pakistan. By carrying out variance analyses, we tested and analysed the information gained through this on-site survey in view of economic and socio-political factors pertaining to migration decisions.

Our findings reveal a relatively high willingness in general to migrate to industrialised countries. In the detailed questionnaire on country preferences, the participants viewed the North American countries (United States and Canada) as their first choice in every respect. Germany at least takes third place in the ranking of preferred countries, placed after Pakistan but before Great Britain.

A comparison of the mean values for Germany reveals that economic aspects such as career opportunities, the possibility of self-employment and standard of living are evaluated significantly higher than other institutional or socio-political factors. Particularly noteworthy is Germany's rank as second with regard to opportunities for self-employment and business start-ups, following only the United States/Canada. In addition, the fact that Germany occupies second place for the most important decision-making factor (career opportunities) seems to indicate that Germany is the second most popular choice among the foreign options in this study. In such a comparison the low results for both language/culture and the limited number of social networks are of little importance.

The large number of applicants to the United States is reflected in this study in that this particular target country takes first place for five criteria and second place once. Only in the case of determinants that are considered less important, such as social networks (ranked fourth) and language/culture (ranked third), does the United States/Canada show average results, though even then with only slight differences. The excellent results for Great Britain with regard to social networks (ranked first) and tolerance towards foreigners (ranked first) is hardly surprising. However, these criteria are not considered to be as critical as, for example, career and earnings opportunities.

When evaluating particular factors for each respective country, economic aspects such as career opportunities, salary and standard of living are very significant factors for all countries. The remaining socio-political determinants, such as hostility towards foreigners, duration of residence permit, language and social networks, are viewed as less important both for Germany and for the other countries considered.

The individuals who chose the United States/Canada and Great Britain evaluated salary, social networks, duration of stay (not significantly for Great Britain) and language significantly higher than did those students who chose Germany. There are no significant differences between these countries and Germany with respect to the remaining criteria — hostility towards foreigners, standard of living, self-employment and career opportunities.

Standard of living, possibilities for self-employment, career opportunities and duration of stay are only less important for Pakistan. For those who wish to stay in Pakistan, social networks take third place compared to all others. No significant differences were measured in our country comparison for the factors language/culture and hostility towards foreigners; for the other factors the mean values differ significantly at the 1% level.

In sum, economic aspects such as career opportunities, salary and standard of living are the most decisive factors of an attractive location for potential migrants. Self-employment opportunities represent another positive factor for Germany in comparison with the other country options considered here. On the other hand, Germany is the only country for which tolerance towards foreigners is not viewed as the least important criterion. Overall, however, this criterion is considered to be not very important.

6. Outlook and Implications

In this analysis the quantification effects of the determinants or elasticities have not yet been estimated. In future research these effects will be carried out with the help of econometric techniques such as discrete choice models.

One conclusion to be drawn for economic policy recommendations and implications is that salary, career opportunities, social networks and language are particularly important aspects of locations that attract potential migrants. In order to be internationally competitive, government authorities might also want to consider, in connection with wage policy, whether a few tax breaks and incentives for the newly arriving IT specialists, at least for the first years, might increase Germany's attractiveness as a location relative to other industrialised countries. As a result of such measures these highly qualified specialists would then have more income available. From the current starting salary of EUR 51,000 (a condition of the Greencard), immigrants must pay for further language courses and higher enrolment costs for children in German-language schools. As is well known, highly qualified IT specialists earn considerably more in the United States than in Germany. Hence, earned income alone provides little incentive for the top talents to come to Germany. On the other hand, business is expected to pay competitive wages like those in the United States, a situation which up to now would represent a location disadvantage in Germany for small and medium-sized businesses.

Career opportunities was also named as one of the most important reasons for a desire to migrate. Quick integration of persons living here is essential, particularly for those working in the high-tech industry. Prospects should be offered for career advancement in various branches of the economy so that the best specialists are motivated to produce innovative work for Germany and help create competitive products. Opportunities for advancement should be facilitated in both the private sector and public administrations.

The university students who selected the United States/Canada said that they consider a permanent visa an important factor in the decision to migrate. For those IT specialists who have already arrived in Germany through the Greencard scheme, this institutional barrier — that is, the five-year restriction currently in effect or recently introduced — should be eased for reasons of competitiveness and integration. With the possibility of an indefinite stay, immigrants in Germany will have a more long-term perspective and higher chances of integration. It would then also be possible to build up social networks. In addition, naturalisation could be made easier for foreigners who have special knowledge and skills and already live in Germany, in order to ensure better integration.

Language and cultural barriers for new immigrants could be reduced by offering supplementary language courses at universities or Goethe-Institutes in the respective source countries. In this way, the migrants could acquire basic language skills early on and bring this knowledge along, thereby facilitating quick integration.

Although hostility towards foreigners was not found to be a significant factor, detailed information on the “Greencard” immigrants should be provided to native residents. This information should clearly explain to the public the predominantly economic reasons for the employment of IT specialists, and thereby also making the advantages of immigration more evident to native residents.

7. Literature

- Bartel, A. P. (1989), 'Where do the new U.S. immigrants live?' *Journal of Labor Economics*, 7, 371–391.
- Bauer, T., Epstein, G. I. and Gang, N. (2000), 'What are migration networks?' IZA Discussion Paper No. 200, Bonn: IZA.
- Bauer, T. and Zimmermann, K. (1995), 'Modelling international migration: Economic and econometric issues', in: R. van der Arf and L. Heering (eds), *Causes of International Migration. Proceedings of a Workshop*, Luxembourg, 14–16 December 1994, Eurostat, pp. 95–115.
- Blahusch, F. (1992), *Zuwanderer und Fremde in Deutschland. Eine Einführung für soziale Berufe*, Freiburg: Lambertus.
- Borjas, G. J. (1987), 'Self-selection and the earnings of immigrants', *American Economic Review*, 77 (4), 531–553.
- Borjas, G. J. (1994), 'The economics of immigration', *Journal of Economic Literature*, 32 (4).
- Breidenbach, B. von (1982), *Italiener und Spanier als Arbeitnehmer in der Bundesrepublik Deutschland. Eine vergleichende Untersuchung zur europäischen Arbeitsmigration*, Munich: Kaiser, Mainz: Grünewald.
- Chiswick, R. B. (1978), 'The effect of Americanization on the earnings of foreign-born men', *Journal of Political Economy*, 86 (5), 81–87.
- Cobb-Clark, D. and Crossley, T. F. (2001), 'Gender, comparative advantage and labor market activity in immigrant families', IZA Discussion Paper No. 293, Bonn: IZA.
- DeVoretz, D. and Maki, D. (1983), 'The immigration of Third World professionals to Canada: 1968–1973', *World Development*, 11, 55–64.
- European Information Technology Observatory (EITO) (2000), *EITO 2000*, Frankfurt:
- Faist, T. (1997), 'Migration und der Transfer sozialen Kapitals oder: Warum gibt es relativ wenige internationale Migranten', in: L. Pries (ed.), *Transnationale Migration*, Baden-Baden: Nomos-Verl.-Ges., pp. 63–83.
- Feithen, R. (1985), *Arbeitskräftewanderungen in der Europäischen Gemeinschaft. Bestimmungsgründe und regionalpolitische Implikationen*, Frankfurt/New York: Campus-Verlag.
- Fertig, M. and Schmid, C. M. (2001), 'First- and second-generation migrants in Germany – What do we know and what do people think?' IZA Discussion Paper No. 286, Bonn: IZA.
- Fiedler, K. (2000), 'Elitenmigration- migrationsbedingungen für hochqualifizierte Informationstechnologische-Arbeitskräfte in Indien am Beispiel der Green-Card Initiative', Dissertation, Lehrstuhl für Soziologie, Universität Hohenheim.

- Fischer, P. A. and Staubhaar, T. (1996), *Migration and Economic Integration in the Nordic Common Labour Market. Anniversary Issue: 40 Years of the Nordic Common Labour Market*. Copenhagen: Nordic Council of Ministers.
- Fleischer, B. M. (1963), 'Some economic aspects of Puerto Rican migration to the United States', *Review of Economics and Statistics*, 45, 245–253.
- Gatzweiler, H. P. (1975), *Zur Selektivität interregionaler Wanderung. Ein theoretisch-empirischer Beitrag zur Analyse und Prognose altersspezifischer interregionaler Wanderung* (vol. 1 of *Forschungen zur Raumentwicklung* series), Bonn: Bundesforschungsanstalt für Landeskunde und Raumordnung.
- Han, P. (2000), *Soziologie der Migration*, Stuttgart: Lucius & Lucius.
- Hoffmann, A. (2001), 'Schröder spielt die Red-Green Card. Kanzler schlägt Sondervisa für ausländische Fachkräfte vor', *Süddeutsche Zeitung*, 46 (25 Feb. 2001), p. 1
- Huang, W. C. (1987), 'A pooled cross-section and time series study of professional indirect migration to the United States', *Southern Economic Journal*, 54, 95–109.
- Institut der deutschen Wirtschaft Köln (2001), 'Green Card, Meist gut angekommen', Cologne: Author.
- Janssen, M. (1998), 'Mobilität Höherqualifizierter auf internationalen und grenzüberschreitenden Arbeitsmärkten. Ergebnisse einer empirischer Untersuchung in Deutschland und den Niederlanden', in: P. de Gijzel (ed.), *Mobilität und Kooperation auf grenzüberschreitenden Arbeitsmärkten: Deutschland – Niederlande*, Osnabrück: Institut für Migrationsforschung und Interkulturelle Studien, pp. 77–100.
- Körner, H. (1999) "'Brain Drain" aus Entwicklungsländern', in: P. Marschalack (ed.), *IMIS-Beiträge, Nr. 11*, Osnabrück: Institut für Migrationsforschung und Interkulturelle Studien, pp. 55–64.
- Marr, W. L. (1975), 'Economic determinants of migration, Canada 1950–1967', *Nebraska Journal of Economics*, 14, 47–62.
- Neugart, M. (2000), 'The supply of new engineers in Germany', WZB Discussion Paper FS I 00-209, Berlin: Wissenschaftszentrum Berlin.
- Nielsen, H. S., Rosholm, M., Smith, N. and Husted L. (2001), 'Qualifications, discrimination, or assimilation? An extended framework for analysing immigrant wage gaps', IZA Discussion Paper No. 365, Bonn: IZA.
- Regets, M. C. (2001), 'Research and policy issues in high-skilled international migration: A perspective with data from the United States', IZA Discussion Paper No. 366, Bonn: IZA.
- Schipulle, H. P. (1973), *Ausverkauf der Intelligenz aus Entwicklungsländern? Eine kritische Untersuchung zum Brain Drain*, Munich: Weltforum-Verlag.
- Stalker, P. (2000), *Workers without Frontiers: The Impact of Globalization on International Migration*, Boulder, CO: Rienner.
- Treibel, A. (1999), *Migration in modernen Gesellschaften. Soziale Folgen von Einwanderung, Gastarbeit und Flucht*, 2d ed., Weinheim/Munich: Juventa-Verlag.

- Unabhängige Kommission Zuwanderung (2001), *Zuwanderung gestalten – Integration fördern: Bericht der Unabhängigen Kommission "Zuwanderung"*, 4 July 2001, Berlin: Bundesministerium des Innern.
- Vogler, M. (1999), 'Determinanten der Zuwanderung aus Entwicklungsländern', *Nomos Universitätsschriften, Wirtschaft Band 47*.
- Vogler, M. and Rotte, R. (2000), 'The effects of development on migration: Theoretical issues and new empirical evidence', *Journal of Population Economics*, 13, 485–508.
- Wagener, H. W. (2000), 'Indiens Aderlaß in Wissenschaft und Technik', *Frankfurter Allgemeine Zeitung*, 67 (20 March 2000), p. 10.
- Wimmex AG (2001), *6 Monate Greencard in Deutschland – Eine Zwischenbilanz*, in collaboration with the Bundesanstalt für Arbeit, Munich:
- Winkelmann, R. (2001), 'Why do firms recruit internationally? Results from the IZA International Employer Survey 2000', IZA Discussion Paper No. 331: Bonn, IZA.
- Zimmermann, K. F. (1994), 'Ökonomische Konsequenzen der Migration für den heimischen Arbeitsmarkt', *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 129, 283–301.
- Zimmermann, K. F. (1996), 'Ein Zuwanderungsgesetz ist längst überfällig', *Handelsblatt*, 15 May 1996, B32–B33.

Bücher des Forschungsschwerpunkts Markt und politische Ökonomie

Books of the Research Area Markets and Political Economy

(nur im Buchhandel erhältlich/available through bookstores)

Andreas Stephan

Essays on the Contribution of Public Infrastructure to Private: Production and its Political Economy

2002, dissertation.de

Hans Mewis

Essays on Herd Behavior and Strategic Delegation

2001, Shaker Verlag

Andreas Moerke

Organisationslernen über Netzwerke – Die personellen Verflechtungen von Führungsgremien japanischer Aktiengesellschaften

2001, Deutscher Universitäts-Verlag

Silke Neubauer

Multimarket Contact and Organizational Design

2001, Deutscher Universitäts-Verlag

Lars-Hendrik Röller, Christian Wey (Eds.)

Die Soziale Marktwirtschaft in der neuen Weltwirtschaft, WZB Jahrbuch 2001

2001, edition sigma

Michael Tröge

Competition in Credit Markets: A Theoretic Analysis

2001, Deutscher Universitäts-Verlag

Tobias Miarka

Financial Intermediation and Deregulation: A Critical Analysis of Japanese Bank-Firm-Relationships

2000, Physica-Verlag

Damien J. Neven, Lars-Hendrik Röller (Eds.)

The Political Economy of Industrial Policy in Europe and the Member States

2000, edition sigma

Jianping Yang

Bankbeziehungen deutscher Unternehmen: Investitionsverhalten und Risikoanalyse

2000, Deutscher Universitäts-Verlag

Horst Albach, Ulrike Görtzen, Rita Zobel (Eds.)

Information Processing as a Competitive Advantage of Japanese Firms

1999, edition sigma

Dieter Köster

Wettbewerb in Netzproduktmärkten

1999, Deutscher Universitäts-Verlag

Christian Wey

Marktorganisation durch Standardisierung: Ein Beitrag zur Neuen Institutionenökonomik des Marktes

1999, edition sigma

Horst Albach, Meinolf Dierkes, Ariane Berthoin Antal, Kristina Vaillant (Hg.)

Organisationslernen – institutionelle und kulturelle Dimensionen

WZB-Jahrbuch 1998

1998, edition sigma

Lars Bergman, Chris Doyle, Jordi Gual, Lars Hultkrantz, Damien Neven, Lars-Hendrik Röller, Leonard Waverman

Europe's Network Industries: Conflicting Priorities - Telecommunications

Monitoring European Deregulation 1

1998, Centre for Economic Policy Research

Manfred Fleischer

The Inefficiency Trap

Strategy Failure in the

German Machine Tool Industry

1997, edition sigma

Christian Göseke

Information Gathering and Dissemination

The Contribution of JETRO to

Japanese Competitiveness

1997, Deutscher Universitäts-Verlag

Andreas Schmidt

**Flugzeughersteller zwischen globalem Wettbewerb und internationaler Kooperation
Der Einfluß von Organisationsstrukturen auf die Wettbewerbsfähigkeit von Hochtechnologie-Unternehmen**

1997, edition sigma

Horst Albach, Jim Y. Jin, Christoph Schenk (Eds.)

**Collusion through Information Sharing?
New Trends in Competition Policy**

1996, edition sigma

Stefan O. Georg

**Die Leistungsfähigkeit japanischer Banken
Eine Strukturanalyse des Bankensystems in Japan**

1996, edition sigma

Stephanie Rosenkranz

Cooperation for Product Innovation

1996, edition sigma

Horst Albach, Stephanie Rosenkranz (Eds.)

Intellectual Property Rights and Global Competition - Towards a New Synthesis

1995, edition sigma

David B. Audretsch

Innovation and Industry Evolution

1995, The MIT Press

Julie Ann Elston

US Tax Reform and Investment: Reality and Rhetoric in the 1980s

1995, Avebury

Horst Albach

**The Transformation of Firms and Markets:
A Network Approach to Economic Transformation
Processes in East Germany**

Acta Universitatis Upsaliensis, Studia Oeconomiae
Negotiorum, Vol. 34

1994, Almqvist & Wiksell International (Stockholm)

DISCUSSION PAPERS 2001

Fredrik Andersson Kai A. Konrad	Globalization and Human Capital Formation	FS IV 01 – 01
Andreas Stephan	Regional Infrastructure Policy and its Impact on Productivity: A Comparison of Germany and France	FS IV 01 – 02
Tomaso Duso	Lobbying and Regulation in a Political Economy: Evidence from the US Cellular Industry	FS IV 01 – 03
Steffen Huck Kai A. Konrad Wieland Müller	Merger and Collusion in Contest	FS IV 01 – 04
Steffen Huck Kai A. Konrad Wieland Müller	Profitable Horizontal Mergers without Cost Advantages: The Role of Internal Organization, Information, and Market Structure	FS IV 01 – 05
Jos Jansen	Strategic Information Revelation and Revenue Sharing in an R&D Race <i>(A revision of FS IV 99-11)</i>	FS IV 01 – 06
Astrid Jung	Are Product Innovation and Flexible Technology Complements?	FS IV 01 – 07
Jonas Björnerstedt Johan Stennek	Bilateral Oligopoly	FS IV 01 – 08
Manfred Fleischer	Regulierungswettbewerb und Innovation in der chemischen Industrie	FS IV 01 – 09
Karl Wärneryd	Rent, Risk, and Replication – Preference Adaptation in Winner-Take-All Markets	FS IV 01 – 10
Karl Wärneryd	Information in Conflicts	FS IV 01 – 11
Steffen Huck Kai A. Konrad	Merger Profitability and Trade Policy	FS IV 01 – 12
Michal Grajek	Gender Pay Gap in Poland	FS IV 01 – 13
Achim Kemmerling Andreas Stephan	The Contribution of Local Public Infra-structure to Private Productivity and its Political-Economy: Evidence from a Panel of Large German Cities	FS IV 01 – 14
Suchan Chae Paul Heidhues	Nash Bargaining Solution with Coalitions and the Joint Bargaining Paradox	FS IV 01 – 15
Kai A. Konrad Harald Künemund Kjell Erik Lommerud Julio R. Robledo	Geography of the Family	FS IV 01 – 16
Tomaso Duso Lars-Hendrik Röller	Towards a Political Economy of Industrial Organization: Empirical Regularities from Deregulation	FS IV 01 – 17

Kai A. Konrad	Investment in the Absence of Property Rights – The Role of Incumbency Advantages	FS IV 01 – 18
Roman Inderst Christian Wey	Bargaining, Mergers, and Technology Choice in Bilaterally Oligopolistic Industries	FS IV 01 – 19
Kai A. Konrad Helmut Seitz	Fiscal Federalism and Risk Sharing in Germany: The Role of Size Differences	FS IV 01 – 20
Klaus Gugler Dennis C. Mueller B. Burcin Yurtoglu Christine Zulehner	The Effects of Mergers: An International Comparison	FS IV 01 – 21
Kjell Erik Lommerud Odd Rune Straume Lars Sørgaard	Downstream Merger with Oligopolistic Input Suppliers	FS IV 01 – 22
Andreas Blume Paul Heidhues	Tacit Collusion in Repeated Auctions	FS IV 01 – 23
Roman Inders Christian Wey	The Incentives for Takeover in Oligopoly	FS IV 01 – 24
Klaus Gugler Dennis C. Mueller B. Burcin Yurtoglu	Corporate Governance, Capital Market Discipline and the Returns on Investment	FS IV 01 – 25
Sven-Olof Fridolfsson Johan Stennek	Why Mergers Reduce Profits and Raise Share Prices: A Theory of Preemptive Mergers	FS IV 01 – 26

DISCUSSION PAPERS 2002

Fredrik Andersson Kai A. Konrad	Human Capital Investment and Globalization in Extortionary States	FS IV 02 – 01
Lars-Hendrik Röller Christian Wey	Merger Control in the New Economy	FS IV 02 – 02
Talat Mahmood Klaus Schömann	Die Determinanten der Migrationsentscheidung von IT-Hochschulabsolventen aus Pakistan – Empirische Befunde zur Ausgestaltung der deutschen „Green Card“	FS IV 02 – 03
Talat Mahmood Klaus Schömann	The Determinants of the Migration Decision of IT- graduates from Pakistan: Empirical Evidence for the Design of a German "Green Card"	FS IV 02 – 03a

Bei Ihren Bestellungen von WZB-Papers schicken Sie bitte unbedingt einen an Sie adressierten Aufkleber mit sowie je paper eine Briefmarke im Wert von 0,51 Euro oder einen "Coupon Reponse International" (für Besteller aus dem Ausland)

Please send a self addressed label and postage stamps in the amount of 0.51 Euro or a "Coupon-Reponse International" (if you are ordering from outside Germany) for each WZB-paper requested

Bestellschein

Order Form

Absender / Return Address:

Wissenschaftszentrum Berlin
für Sozialforschung
Presse- und informationsreferat
Reichpietschufer 50

D-10785 Berlin-Tiergarten

**Hiermit bestelle ich folgende(s)
Discussion paper(s):**

**Please send me the following
Discussion paper(s):**

Bestell-Nr. / Order no.	Autor/in, Kurztitel /Author(s) / Title(s) in brief