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Assessment of Possible Migration Pressure and its Labour Market Impact Following EU Enlargement to Central and Eastern Europe

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EXECUTIVE SUMMARY

In 1998, the European Union opened negotiations with six Central and Eastern European countries seeking membership. These countries consisted of the Czech Republic, Estonia, Hungary, Poland, Slovenia, and Cyprus. Some current members are apprehensive, believing that they will lose from this expansion. This report scrutinizes the grounds for such anxiety. It evaluates the size and the structure of future East-West migration flows based on economic theories and empirical results forthcoming from economic literature. A broader analysis of the East-West migration potential is given in the complementary report by the University College, London. The current report also analyses concerns that cheaper workers from Central and Eastern European EU-candidate countries will flood the current EU and reduce the wages of native workers and/or push them out of their jobs.

It is very difficult to estimate the potential migration flow from East to West. Studies attempting to estimate the size of the migration potential have arrived at very different conclusions. Newspapers and politicians have speculated that about 20-40 million East Europeans will emigrate. Estimations based on opinion polls in the sending countries suggest that between 13 and 27 million people are planning to move to the West, whereas more modest predictions expect about 5 million people to migrate to Western Europe. Using different evaluation methods, this report concludes that at least 3% of the eastern population can be expected to migrate to the West within the next 15 years. This would imply an immigration flow of about 3 million people or of about 0.81% of the population of the EU in 1995. Existing surveys in the potential sending countries indicate that the short-term migration potential might be higher. Due to existing migration networks, this inflow will largely be a problem for Germany and Austria.

Basically, economic theory does not offer any definitive predictions concerning the labour market impacts of immigration. Whether the native population can expect gains or losses from immigration depends, among other things, on the size and the structure of the immigration flow and the labour market institutions in the receiving countries (i.e. wage flexibility). Most existing empirical studies on the impact of immigrants on the wage and employment of natives find only small negative effects. In some cases the effects are even positive.

Based on data for the EU, the UK, and Germany, simulating an economic model of the labour market effects of immigration shows that, in the worst case scenario, immigration of 1% of the EU-population in one year would imply income losses for the EU member countries of about 34.461 billion ECU or about 0.7% of the EU GDP in 1993. For the UK, the equivalent

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figure is 2.027 billion ECU (or 0.26% of the UK GDP in 1996) and for Germany, the maximum simulated loss is 8.975 billion ECU (0.65% of the German GDP in 1996). These losses would appear in a scenario of rigid wages and the immigration of exclusively unskilled workers. In the case where mainly skilled workers immigrate, one could actually expect gains from immigration. A 1% increase in the EU labour force in one year, due to the immigration of skilled workers, could be expected to increase the income of natives by about 367.092 billion ECU or about 6.9% of EU GDP in 1993. A similar increase in the UK and German labour force, could be expected to increase the income of natives by about 4.205 billion ECU (0.53% of UK GDP) in the UK and by 19.192 billion ECU (1.38% of the German GDP) in Germany. Simulations, however, also show that immigration always has large effects on the income distribution in the receiving country.

Only in the long-run does the EU have several options regarding migration policy towards the potential members. Considering Article 8a of the Single European Act, a laissez-faire system of unrestricted labour mobility between the old and the new member countries seems to be unavoidable. However, as in the case when Spain and Portugal became EU-members, a temporary restriction of migration from the countries seeking EU membership might be a realistic option. In this case, a selection of migrants with higher skills may be beneficial. If unskilled and skilled workers are complements in production, substantial gains may also be reached through the improvement of the employment possibilities of unskilled native workers. These points suggest that a temporary, selective immigration policy towards the new member countries should be seriously considered. There are several possibilities for the form of such a selective immigration policy. A discussion of these options reveals that a point system, such as that used in Canada or Australia, is impractical. From an economic point of view, an auction system, in which temporary immigration visas are auctioned to native firms, is superior to all other policy options. An alternative, and from a political standpoint, the most feasible strategy would be a selective temporary immigration policy based on bilateral agreements as executed currently by the German government.

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1. INTRODUCTION

In 1998 the European Union opened negotiations with six Central and Eastern European countries seeking membership. Based on the capacity of these countries to bring their economic, political, and legal systems into line with EU norms, the European Union divided the candidates for EU membership into two groups. The first group consists of the Czech Republic, Estonia, Hungary, Poland, Slovenia, and Cyprus. With this group of countries the EU began preparatory talks in March 1998. The second group consists of Bulgaria, Latvia, Lithuania, Romania, and Slovakia. These countries must bring their economies closer to EU standards, before opening talks with them would be worthwhile for the EU. In principle, all EU members favour the idea of extending the EU. However, some current members fear that they will lose from this expansion. More specifically:

• countries like Ireland and Spain are concerned that they will lose regional aid from the EU;

• France is worried about loosing subsidies for the agricultural sector;

• and finally there are fears of potentially large-scale immigration of job seekers from entering countries into the current EU-member countries. In particular, countries with direct borders to the potential new EU members, such as Austria and Germany, have expressed this latter fear.

This report analyses the fear that cheaper, unemployed worker from Central and Eastern European EU-candidate countries will flood the current EU, reducing the wages of native workers or pushing them out of their jobs. It is evident that EU wages are higher than in the applicant countries. Unemployment in the Czech Republic, Estonia, and Hungary, however, is lower than the EU average. Similar fears were voiced when Greece, Spain, and Portugal applied for EU membership. Yet, despite the economic differences between these countries and the richer North, the expected mass migration did not occur. It is therefore not clear per se whether the current EU members have to fear mass migration from the East to the West, when the Eastern European candidates become EU members.

In Section 2 of this report, we describe the size and structure of past and current migration flows from Central and Eastern European countries to the current EU members, in order to give a first indication of the migration problem. We then give an overview of the theoretical literature and the empirical evidence on the economic and social determinants of migration. An understanding of the determinants of international migration is the first important step for the assessment of possible migration pressures from the East to the West. In section 2.3 we evaluate the size and structure of future East-West migration based on four different methods. First, we use estimates

of the size of East-West migration following the opening up of Central and Eastern European countries in the beginning of the 1990s. Second, we qualitatively evaluate the future East-West migration pressure, based on the economic and demographic situation in Eastern and Western Europe. Third, we use a survey of the applicant countries to evaluate future migration flows. Finally, we use econometric methods in order to study the determinants of internal migration in the current EU. The results of this econometric analysis are then used to predict future East-West migration.

Section 3 analyses the labour market effects of East-West migration. In the first part, we review the theoretical framework used in economics to analyse the labour market effects of immigration. This review considers not only the standard economic model, which assumes full employment, but also economic models, which take into account the possibility of labour market rigidities, i.e. the possibility of unemployment. The latter model is more suitable for European labour markets. The second part gives a detailed survey of the existing empirical evidence concerning the effects of immigration on wages and employment of natives. In the final part, we use the theoretical models outlined in Section 3.1., data from the EU and the size of the expected migration flow from the applicant countries (evaluated in Section 3.2), in order to simulate the likely labour market effects of the immigration of workers to current EU member countries.

In Section 4 of this report, we discuss the policy implications of our analysis. We first argue that there is a need for a common EU immigration policy and then discuss alternative options for such a policy. In the second part, we discuss the advantages and disadvantages of different migration policies, i.e. a scenario of immediately free labour mobility and a scenario in which the labour mobility between the membership candidates and the current EU member countries is restricted for an adjustment period, as was the case when Spain and Portugal joined the EU. The discussion also considers different strategies for a temporary, selective immigration policy towards the potential EU entrants. Section 5 of this report concludes and gives a short outline of additional problems to be addressed in future research.

2. EVALUATION OF POTENTIAL MIGRATION FLOWS FROM CENTRAL AND EASTERN EUROPE TO THE EU

2.1. The size and structure of current migration flows from Central and Eastern Europe to the EU

2.1.1. Current Migration to the EU

In this section we discuss the migration experience of EU member countries. We focus not only on immigration from Eastern and Central European countries but also on the internal migration experience of the 15 EU countries. We use experience with internal migration within the EU to infer potential future immigration flows from Eastern European countries following a potential enlargement. Table 1 shows the stock of foreign population living in the EU member states in 1993. In total, approximately 17 million foreigners live in the respective EU countries, of which about 4.9 million people or 1.3% of the total EU population come from within the EU and about 12 million people or 3.3% of the total EU population come from outside the EU. The main receiving countries for both foreigners from the EU and migrants from outside the EU, are Germany, France, and the United Kingdom. Approximately 4.0 million foreigners from outside the EU originate from Turkey and the former Yugoslavia, 2.9 million from Africa, 1 million from America, 1.9 million from Asia, and 1.1 million from Central and Eastern Europe. The main receiving country for people from the EU is Germany, followed by France and the United Kingdom. People from areas outside the European Union predominantly go to Germany. Even Asia has a larger immigrant population in Germany than in the United Kingdom.[1] Among the major European immigration countries, Germany attracts mostly Turks, people from the former Yugoslavia, and migrants from Central and Eastern European countries. France receives Africans, while the United Kingdom mainly attracts migrants from EU member states and Asia. Figure 1 shows that Germany, Switzerland, and Belgium have the highest shares of foreigners, followed by France, Austria, and Sweden.

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[1] Many Asians, however, carry UK passports.

According to Table 1, approximately 67% of all immigrants from Central and Eastern Europe reside in Germany, followed by Austria, Italy, France, the United Kingdom, and Greece. Roughly 41.2% of all Central and Eastern European migrants come from Poland, 20.7% from Romania, 8.4% from the former Czech and Slovakian Federal Republic (CSFR) and Hungary, and 7.5% from Bulgaria. Figure 2 shows the share of migrants from Central and Eastern European countries in relation to the total population in each of the respective EU countries. According to this figure, Germany and Austria have the largest shares of foreigners from Eastern Europe followed by Sweden, Finland, and Switzerland.

Figure 1:
Share of foreign population in Western European Countries, 1993
(in % of total population)

■	> 8.0%	(3)
■	from 4.0% to 8.0%	(4)
■	from 2.0% to 4.0%	(4)
■	from 1.0% to 2.0%	(5)
□	< 1.0%	(1)
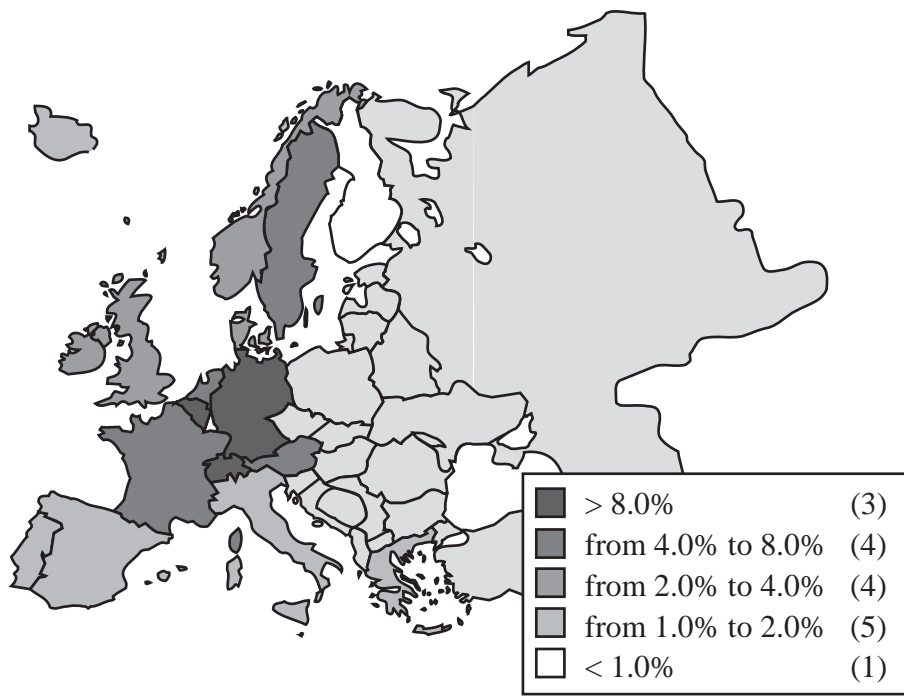
Source: Eurostat (1995), own calculations.

The numbers in Table 1, however, do not include *Aussiedler*, immigrants of German origin from East Europe. Ethnic Germans automatically receive German citizenship and, therefore, disappear from the official statistics on immigrants.[2] As a consequence of the collapse of the socialist regime, the inflow of *Aussiedler* in West Germany jumped from 78,523 in 1987 to

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[2] An extensive discussion of the migration of ethnic Germans is given by Schmidt (1994), and Bauer et. al. (1999).

202,673 in 1988, 377,055 in 1989, and 397,073 in 1990. Consequently, the German government altered the entry procedures for *Aussiedler* in 1990, requiring them to apply for entry before arrival. In the meantime, Germany has also introduced an immigration quota for a maximum of 220,000 ethnic Germans per year and now requires the passing of a German language test in order for an immigrant to be eligible for *Aussiedler* status. These measures led to a reduced immigration flow: between 1991 and 1995 *Aussiedler* immigration was about 220,000 per year, falling to 177,751 in 1996 and 134,419 in 1997. In total, between 1950 and 1997, 3.8 million ethnic Germans migrated to West Germany. From 1988 to 1997, 65.4% of the *Aussiedler* came from the former USSR, 24.7% from Poland, and 9.2% from Romania. At the end of 1997, 98% of the ethnic Germans came from the former USSR, while the shares of ethnic Germans from Poland and Romania decreased to 0.5% and 1.3%, respectively. In total, between 1950 and 1993, 3.068 million *Aussiedler* migrated to West Germany. Adding this number to those reported in Table 1, it appears that about 91% of all Central and East European migrants in the EU live in Germany.

Figure 2:
Share of foreign population from Central and Eastern European Countries in Western European Countries, 1993 (in % of total population)
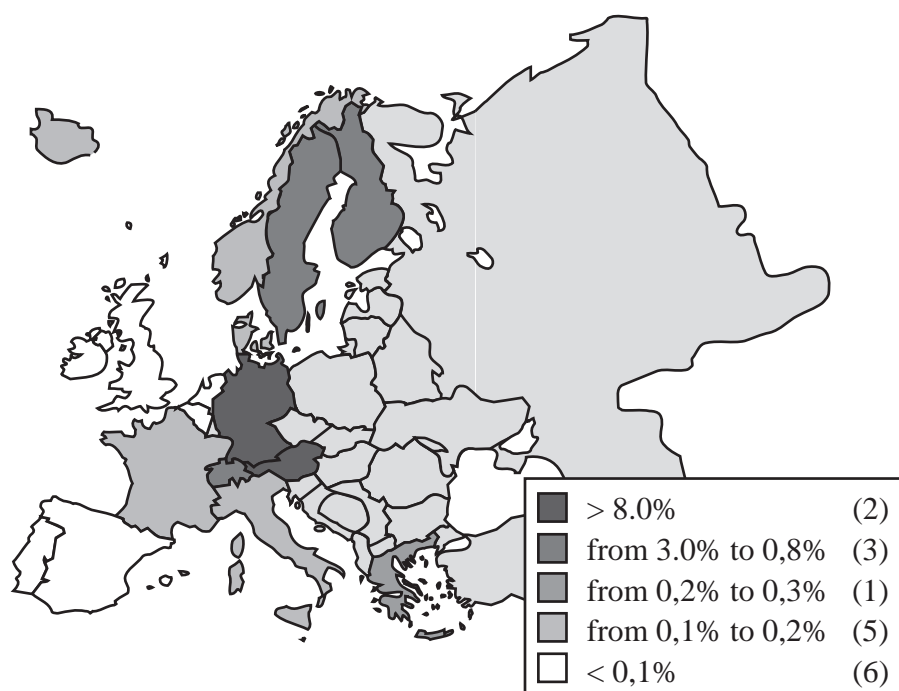
Source: Eurostat (1995), own calculations.

Table 1: Stock of foreign population in 1993 (in thousands)*

	Total	EU 15	Africa	America	Asia and East Europe	Central CSFR	Bulgaria	Former	Hungary	Poland	Romania
Belgium	909.3	54.3	190.2	20.2	25.3	7.2	-	0.6	0.7	4.8	-
Denmark	180.1	40.5	9.5	8.2	43.3	8.0	0.2	0.4	0.3	5.0	1.0
Germany	6495.8	1719.2	283.9	168.8	594.7	716.2	59.1	63.7	61.4	285.6	167.3
Greece	200.3	64.7	19.6	29.2	39.1	29.4	4.4	1.2	0.9	10.7	3.9
Spain	393.1	181.8	71.3	89.3	33.6	6.3	0.6	0.4	0.2	3.2	0.7
France	3596.6	1321.5	1633.1	72.8	227.0	63.0	1.0	2.4	2.7	47.1	5.1
Ireland	89.9	66.8	-	8.9	-	-	-	-	-	-	-
Italy	923.6	160.3	284.4	148.7	158.0	63.6	5.7	4.8	5.0	21.2	16.4
Netherlands	757.4	189.0	203.3	49.6	61.4	11.9	0.6	0.8	1.2	5.4	1.9
Austria	517.7	79.4	8.5	9.5	25.7	64.4	3.6	11.3	10.6	18.3	18.5
Portugal	121.5	32.7	52.0	29.4	4.8	0.8	0.2	0.1	0.1	0.2	52
Finland	46.3	12.2	3.9	2.7	5.8	17.4	0.3	0.2	0.4	0.7	0.3
Sweden	499.1	187.0	25.4	38.2	88.9	33.2	2.1	1.7	3.5	16.4	5.7
UK	2020.0	768.0	204.0	280.0	454.0	46.0	3.0	3.0	3.0	21.0	-
EU 15	16873.9	-	2990.3	957.1	1853.6	1067.6	80.9	90.6	90.0	439.4	220.8
Norway	154.0	57.7	11.3	18.0	45.1	4.8	0.3	0.2	0.2	2.9	0.3
Switzerland	1243.6	826.6	23.9	33.0	47.8	22.4	0.8	5.7	4.5	5.4	2.7

*: *Source:* Eurostat (1995).

2.1.2. Temporary Migration From East and Central Europe: The Case of Germany

Even though most EU member states have tightened their restrictions on permanent immigration, the demand for temporary workers is growing. Given the purpose of this report, we will not give a detailed description of the different legislations in current EU member states regarding temporary migration. A detailed discussion of the characteristics of and the legislation on temporary migration in Australia, Canada, France, Germany, the Netherlands, Switzerland, the United Kingdom, and the United States is given by OECD (1998). Rather, we concentrate our discussion on the bilateral agreements for temporary migration, which Germany has signed with several Central and East European countries (CEEC), and the immigration from these countries to Germany, which has occurred under these agreements.

The following goals were at the core of the bilateral agreements between Germany and the CEEC-countries concerning temporary migration:
- to bring the CEEC-countries up to Western European standards;
- solidarity with CEEC-countries;
- to impart skills to firms and workers with modern technology in order to foster economic development in the countries of origin;
- to decrease the immigration pressure from these countries;
- and to promote economic co-operation with these countries.

Following these goals Germany created three different categories under which workers from CEEC-countries could temporarily work in Germany. Table 2 describes the basic legislative characteristics of these categories.

Germany has signed bilateral agreements with several Central and Eastern European countries regarding the immigration of *Werkvertrags-arbeitnehmer*. According to these bilateral agreements, Eastern European firms are allowed to employ their own workers in project-linked work arrangements co-ordinated under contracts with German firms. The workers immigrating under this category are allowed to stay until the project is finished but not longer than 3 years. After a worker has stayed in Germany as a *Werkvertragsarbeitnehmer*, he must stay in his country of origin at least as long as he has been in Germany in order to return to Germany again. The wage of the *Werkvertragsarbeitnehmer* must be the same as that of similar German workers. However, since the social security contributions of these workers are paid by their firm from the country of origin according to the rules of this country, the wage costs of *Werkvertragsarbeitnehmer* are lower than those of comparable Germans. The number of workers who can work under these treaties is limited by quotas, which are adapted each year according to the labour market situation in Germany. If the number of

Werkvertragsarbeitnehmer from a particular country exceeds the respective quota, Germany does not allow the immigration of additional workers, and the quota will be blocked the following year. Furthermore, work permits are not granted in districts in which unemployment is significantly higher than the national average.

Figure 3: Workers employed in Germany under a contract for services, 1988-1996
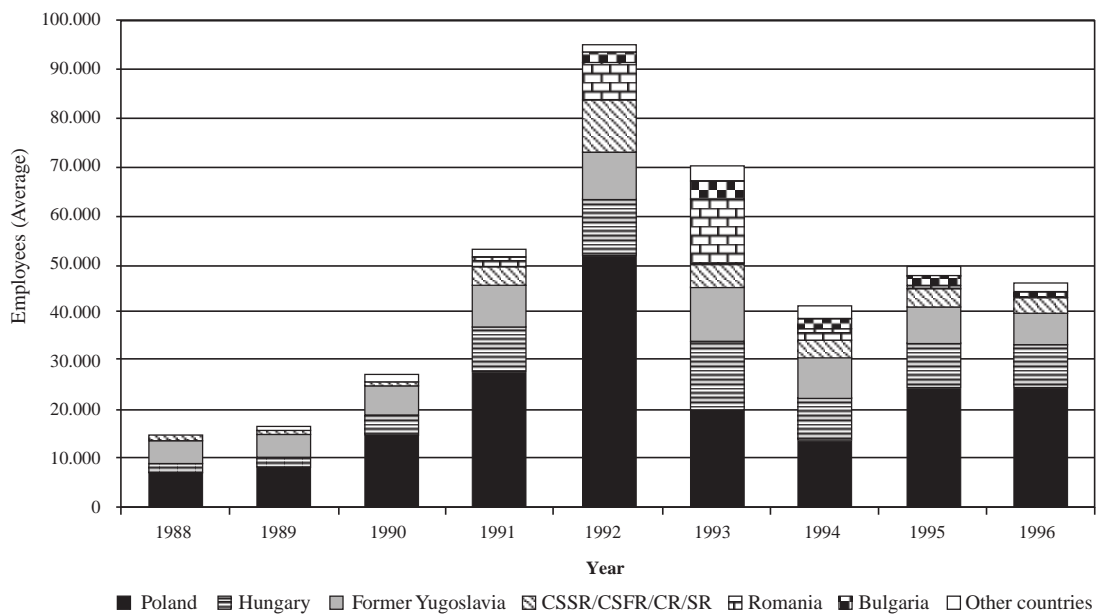
Source: Lederer (1997), own calculations.

Figure 3 shows the development of *Werkvertragsarbeitnehmer* employ-ment in Germany since 1988. It appears that the employment of *Werk-vertragsarbeitnehmer* increased sharply from 14,500 in 1988 to 95,000 in 1992. After 1992, the number of *Werkvertragsarbeitnehmer* decreased to about 46,000 in 1996. This decrease is mainly a result of the steady cut backs of the quotas. Figure 3 also reveals that in most years Polish Werkvertragsarbeitnehmer constituted almost 50% of all workers employed in Germany under these bilateral agreements, followed by workers from Hungary and the former Yugoslavia.

Table 2:
Characteristics of bilateral agreements between Germany and CEEC countries concerning temporary immigration

Categories	Countries	Conditions	Quotas	Length of Stay
Workers employed under a contract for services (*Werkvertragsarbeitnehmer*)	Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Republic of Macedonia, Romania, Russian Federation, Slovak Republic, Slovenia, Turkey, Former Yugoslavia	• Restrictions on activity • No possibility for family reunification • No possibility for changing status • Seconded by employer in the country of origin • Work permission (except for workers carrying out maintenance, reparation or installation of machines furnished by a foreign company if they stay less than 3 months)	• By economic sector and by country • Adjusted annually according to the labour market situation in Germany	• 2 years • 3 years in exceptional cases
Guest workers (*Gastarbeitnehmer*)	Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovak Republic, Switzerland	• Restrictions on activity • No possibility for family reunification • No possibility for changing status • Age limit: 18 – 40 years	• By country	• 12 – 18 months
Seasonal workers	Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia.	• Restrictions on activity • No possibility for family reunification • No possibility for changing status • Availability of domestic workers is grounds for refusal • Request must be made by German employer • Minimum Age: 18 years	• None. Verification whether similar unemployed natives are available is required.	• 3 months

In addition to the *Werkvertragsarbeitnehmer*, Germany initiated *guest worker* programs with several CEECs. These are also regulated under bilateral agreements. The aim of this program is to improve the professional and linguistic skills of the participants. The participants have to meet the following requirements: (i) completion of vocational training, (ii) basic knowledge of the German language, and (iii) fall eighteen and forty years old. These *guest workers* can stay in Germany for a maximum of 18 months. They need a work permit, even though the programs are not dependent on the labour situation in Germany. They must be paid the same wage as a similar German worker and, in contrast to the *Werkvertragsarbeitnehmer*, their social security requirements follow the German standards. Figure 4 shows the development of migrants employed in Germany under the *guest worker* programs. From 1991 to 1993 the number of *guest workers* increased from 1,570 to 5,771 and slightly decreased thereafter to 4,341 in 1996. Most of the *guest workers* come from Hungary and the Czech Republic, followed by *guest workers* from Poland and Slovakia.

Figure 4: Guest workers employed in Germany, 1991-1996
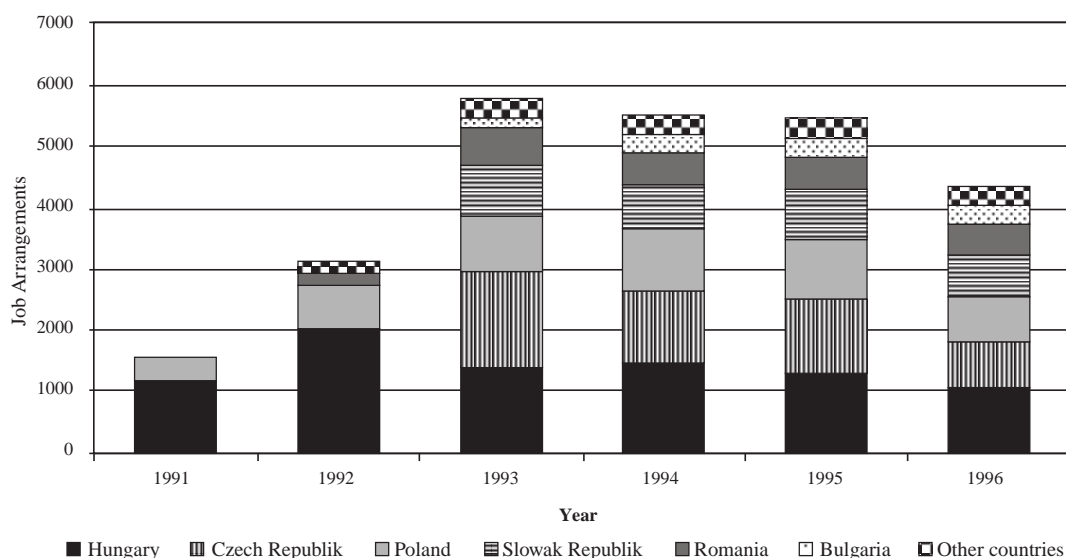
Source: Lederer (1997), own calculations.

Since 1991 foreign workers are able to obtain a German work permit for a maximum of 3 months. The requirement to get such a seasonal working permit is again a bilateral agreement between Germany and the country of a worker. Foreign seasonal workers are only allowed to work in agriculture, hotels, restaurants, and as showmen. They must be employed under the same

wage and working conditions as German workers and their employment requires the payment of social security contributions according to German standards. In addition, the employer has to provide seasonal workers with accommodations. In general, there is no quota on this type of employment. However, the German labour office has to check whether similarly unemployed native workers are available. Figure 5 shows the development of the employment of *seasonal workers* since 1991. Figure 5 shows that since 1992 the employment of *seasonal workers* has been between 130,000 and 220,000 per year. The decrease in seasonal workers in 1993 and 1994 can be explained by the introduction of an employment prohibition in 1993 of *seasonal workers* in the construction sector. Despite the poor employment situation within the German labour market, the employment of *seasonal workers* reached its peak in 1996 with about 221,000 workers. Most of the *seasonal workers* come from Poland; in 1996, for example, they constituted almost 90% of all *seasonal workers*.

Figure 5: Seasonal workers employed in Germany, 1991-1996
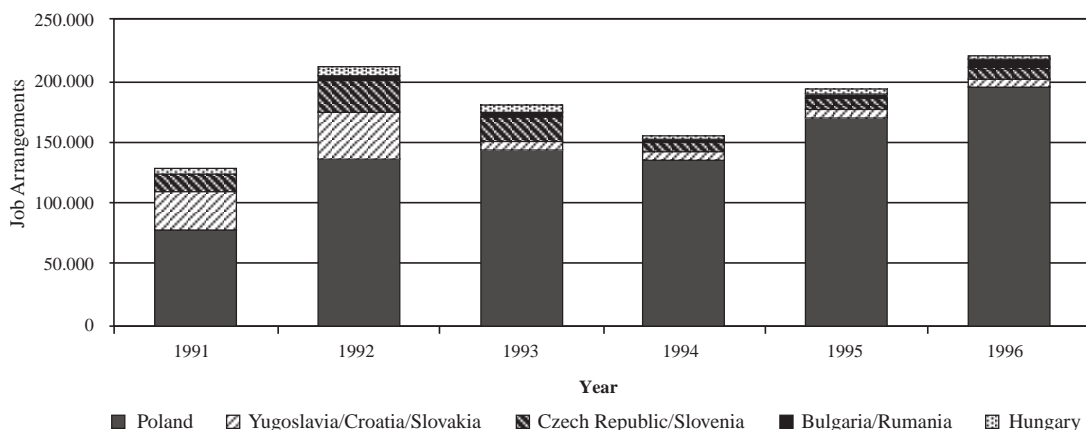
Source: Lederer (1997), own calculations.

Based on a representative survey of 500 Polish migrants working in Germany, Table 3 explores the motivations behind the demand for work in Germany as well as some socioeconomic characteristics of the migrants.[3] According to Table 3, the motivations to work temporarily in Germany are similar among the three categories of migrants analysed. The main reasons given are that they did not earn enough money in Poland and that they wanted to improve the family income. Note that more than 37% of the

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[3]   See Mehrländer (1997) for a detailed description of this survey.

seasonal workers had been unemployed in Poland. Based on the requirements of the bilateral agreements, most of the *Werkvertrags-arbeitnehmer* and *guest workers* work in construction, followed by manu-facturing. More than 89% of the *seasonal workers* are employed in agriculture. There are remarkable differences in the occupational status of the three categories. The majority of *Werkvertragsarbeitnehmer* and *guest* workers are skilled blue collar workers, whereas more than 90% of the *seasonal workers* are employed as unskilled blue collar workers. Finally, most of the temporary migrants work relatively long hours: 43% work 50 or more hours per week.

Table 3:
Socie-economic characteristics of temporary Polish migrants in Germany (1995)

	Werkvertrags-arbeitnehmer	Guest Worker	Seasonal Worker
Motivations to work in Germany:			
Was unemployed	22.6	23.9	37.4
Did not earn enough	56.7	48.6	43.1
Economic situation in Poland	23.1	26.6	23.7
Improvement of Family Income	40.9	30.3	41.7
Industry:			
Agriculture	1.0	9.2	89.1
Manufacturing	25.0	26.6	2.8
Construction	63.0	50.5	-
Service (including Hotels and Restaurants)	9.7	11.0	8.1
Other	1.3	2.7	0.0
Occupational Status			
Unskilled Blue Collar Worker	17.8	16.5	90.1
Skilled Blue Collar Worker	76.9	72.4	8.1
Unskilled White Collar Worker	2.4	1.8	0.5
Skilled White Collar Worker	2.9	9.2	0.5
Average Weekly Working Time			
20 – 39 hours	12.5	34.9	13.3
40 – 49 hours	44.3	55.1	65.9
50 –59 hours	23.1	7.3	13.2
60 or more hours	19.7	2.8	5.7
Observations	208	109	211

Source: Mehrländer (1997); own calculations.

2.2. Reasons to migrate: A survey of the theoretical and empirical literature

This section reviews economic theories of labour migration as well as the existing empirical evidence on the determinants of labour migration.[4] We consider internal as well as international migration theories. In general, the main difference between these two approaches is the legal restrictions of international migration. Since there are no legal restrictions on labour migration within the EU[5] , migration flows between EU member countries can be interpreted as internal migration. In section 2.3. of this report, we use this approach for the evaluation of the potential future migration flows from the East European countries into the EU.

2.2.1. The theory of migration
(a) The Neoclassical approach

The neoclassical approach to migration analysis can be traced back to Smith (1776) and Ravenstein (1889). The basic assumption of this model is that individuals maximise their utility subject to a budget constraint. The central argument evolves around wages. Migration mainly occurs because of geographical differences in the demand and supply of labour markets. Regions with a shortage of labour relative to capital are characterised by a high equilibrium wage, whereas regions with a large supply of labour relative to capital are faced with low equilibrium wages. This wage differential causes a migration flow from low wage to high wage regions. In response to this migration flow, the supply of labour in the high wage region increases; subsequently, the wage in this region falls. Similarly, due to migration, the supply of labour in the low wage region decreases and the wages in this region rise. The migration flow ends as soon as the wage differential between the two regions reflects the costs of movement from the low wage to the high wage region. As a result, the model argues, labour migration emerges from actual wage differentials between regions, i.e. the larger the wage differential the larger the migration flow.

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[4]   Recent surveys are given by Stark (1991), Greenwood (1985), Massey et. al. (1993), Molho (1986), Shields and Shields (1989), Straubhaar (1988), Bauer and Zimmermann (1998).

[5]   An overview of the immigration policies in Europe is given by Straubhaar and Zimmermann (1993) and Zimmermann (1994, 1995a).

This early approach was extended in various ways. In order to explain rural-urban migration in less developed countries, Todaro (1968, 1969) and Harris and Todaro (1970) dropped the neoclassical assumption of full employment in the sending and the receiving region and included consideration of the probability of employment in the destination region by migrants.[6] With this extension it is possible to explain the observed large migration flows from rural to urban regions, although the urban regions are often characterised by a scarcity of jobs. The prospect of finding a high-paying job in urban regions causes labour migration out of rural areas, even though this migration could lead to unemployment. Contrary to the pure neoclassical theory, migration, in this extended model, is determined by expected rather than actual earnings differentials. The key variable for migration is earnings weighted by the probability of finding employment in the destination region. Several modifications of the basic Harris-Todaro-model have been developed to make it more realistic.[7] However, these modifications do not change the basic findings of the original model.

Of particular importance for the evaluation of future migration flows between CEEC countries and the current member countries of the EU after the planned enlargement is the effect of free trade on migration flows. According to the standard neoclassical trade model, increasing trade is a substitute for international migration.[8] According to this model, the removal of trade barriers leads to a specialisation in the production of goods, for which a country has relatively abundant supply of input factors and thus a comparative cost advantage. Assume two countries, a developed country with many skilled workers relative to unskilled workers, and a developing country with many unskilled workers relative to skilled workers. Assume further that there are two goods, one that is produced by skilled workers and one that is produced by unskilled workers. Producers in both countries have the same technology. In this setting, trade is determined by the factor endowments of the two countries: the developed (developing) country will

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[6]   A review of this framework and its empirical evidence is given by Todaro (1980).

[7]   Bhagwati and Srinivasan (1974) introduce wage and production subsidy programs. Cordon and Findlay (1975) consider capital mobility between the rural and urban regions; Fields (1975) uses quantity instead of wage adjustments in the urban labor market; Stiglitz (1974) studies endogenous wage determination, and Calvo (1978) introduces trade unions in the urban labor market. Schmitz , Stilz and Zimmermann (1994) investigate more closely how the process of wage and employment determination is influenced by a labor union in the receiving country.

[8]   See OECD (1996) for a theoretical and empirical discussion of the effects of trade on international migration.

import the good produced by unskilled (skilled) workers, and specialise in the production of the good produced by skilled (unskilled) workers. Trade between these two countries will decrease the wages of unskilled workers in the developed country and increase the wages of skilled workers, and vice versa in the developing country. In the long-run, the factor prices for skilled and unskilled workers across the two countries are equalised. In general, the basic trade model states that trade or the mobility of production factors between countries will result in equalised factor prices, i.e. equalised wages and interest rates in the countries involved in free trade. If factor prices are equalised, however, the incentive to migrate disappears. Therefore, trade can be seen as a substitute for international migration.

(b) Human Capital Theory

Sjaastad (1962) introduced the human capital model to migration research. This model, which probably became the most influential and widely used approach, treats migration as an investment decision of an individual.[9] Depending on their skill levels, individuals calculate the present discounted value of expected returns of their human capital in every region, including the home location. Migration occurs, if the returns, net of the discounted costs of movement, are larger in a potential destination region than the returns in the country of origin. The costs of movement not only include money costs like travel expenses, differences in the costs of living, and foregone earnings while moving, but also psychological costs arising, for example, from the separation from family and friends. It should be noted that every individual evaluates the returns and costs in a different way, depending on personal characteristics such as age, gender, and schooling. For example:
• According to the human capital model, the likelihood of migration decreases with age, reflecting the smaller expected lifetime gain from moving for older people.
• Individuals with higher education should exhibit a higher migration pro-bability, because an individual's greater ability to collect and process infor-mation gained through higher education, reduces the risks of migration.
• The risks and costs of movements are expected to rise with distance, because information about labour market conditions will be better for closer locations.

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[9]   In two recent papers, Burda (1995) and Bauer (1995) extend the human capital model of migration by introducing uncertainty about the wage differential between sending and receiving countries and the costs of migration, respectively. They conclude that with uncertainty about the real gains of migration, it may be rational for an individual to delay migration and to wait for new information even in a situation where the expected migration income gain is greater than the costs of moving. Therefore, these models could give a theoretical explanation of the coexistence of large income differentials and low migration flows.

The human capital model is not only helpful in modelling permanent migration but also in dealing with temporary migration, which is very important for countries with a guestworker system like Germany or Switzerland. There are several explanations for temporary migration.[10] Subsequent migration could be the result of:

• decreasing costs due to information obtained from the first move.
• a higher preference for consumption in the country of origin if compared to consumption in the receiving country (Djajic and Milbourne, 1988; Dustmann, 1994)
• an unsuccessful prior move (Grant and Vanderkamp, 1985).

A further cause of large, subsequent migration could be that the economic conditions of other locations improve. In general, it is expected that an increase in immigration causes a decline in wages of the receiving country. In the case of rigid wages due to union behaviour or minimum wages, immigration could also lead to increased unemployment in the destination country. Both declining wages and increasing unemployment in the receiving country might, therefore, make it beneficial for individuals to move on to another region or to return home. Rising wage and employment possibilities in the sending country, due to the emigration of labour, may also improve the incentives for return migration.

In essence, the main contribution of the human capital approach is that one should not only pay attention to aggregate labour market variables like wage and unemployment differences but should also consider the importance of the heterogeneity of individuals. Empirical studies should take into consideration the socioeconomic characteristics of migrants. In contrast to the standard neoclassical framework, individuals within the same country can display very different propensities to migrate, because the rate of remuneration on specific human capital characteristics is different in the destination and receiving country. The human capital approach concludes that the probability of obtaining a job in the destination country depends on the skill level of the migrants and their incentives to invest in destination-specific human-capital.

(c) Asymmetric Information about Worker Skills

So far, we have only considered models with a symmetric information pattern. In other words, it is assumed that employers in the destination region have all relevant information regarding the abilities of immigrants. With asymmetric information, however, the theoretical propositions may change substantially (Stark, 1991). A possible asymmetric information pattern

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[10]   See Dustmann (1996) for an overview.

occurs when migrants have full information concerning their abilities, but employers within the destination region cannot observe the immigrants' true skill levels. In this case it is efficient for the employers to offer all immigrants a wage reflecting the productivity of the average immigrant. If the assumption of imperfect information on the part of employers is combined with the assumption of heterogeneous workers, i.e. of workers who differ in their skills and abilities, the following two polar cases are obtained: the first is characterised by a positive discounted wage differential for migrants with low skill levels. In contrast to the case of symmetric information, asymmetric information results in a migration pattern characterised by a reduction in the quantity and quality of migration or, alternatively, having no effect at all. In the second case, there are migration incentives for high-skilled workers through a positive wage differential for them. Either migration of all workers in a region or migration marks this case by none when introducing asymmetric information.

In the long-term, it is realistic to assume that the employer will learn about the true skill level of the immigrants, so that the immigrants will receive a wage reflecting their true productivity. This leads to an increased quantity and quality of migrants. Furthermore, the wages of low-skilled migrants will increase. This prospect of higher wages in the future results in a rising migration of high-skilled individuals and, hence, in a rising short-term wage for the low-skilled persons remaining in the home country. A change in the skill composition of the migration flows could also be observed, if the employers of the destination country would make efforts to receive more information about the skill levels of the immigrants. Alternatively, it is possible that migrants may invest in signalling devices, such as certificates. It can be shown that the skilled migrants have the highest probability of investing in such signals. Furthermore, signalling results in an U-shaped migration pattern with respect to skill levels, meaning that only the lowest and the highest skilled individuals will migrate.

To summarise, allowing for asymmetric information in models of labour migration results in a rather unclear picture of migration: it depends on the initial migration incentives for workers with different skill levels, the time horizon of the analysis, investments by employers in information gathering, as well as investments by migrants in signalling their true skill level.

(d) Family Migration
In the theories discussed above, migration theory focuses on treating migration as a problem of individual decision-making. A different approach challenges many of the foregone conclusions by postulating that families or households typically make migration decisions.

Mincer (1978) examines the influence of an increased labour force participation of wives on the migration decision of families. Household size and the number of working family members increase the sources of costs and benefits from migration. Those family members who do not move on their own initiative often have to face reduced earnings and employment possibilities in the labour market of the destination country. Therefore, a family will only migrate, if the gains of one family member internalise the losses of the other family members. Mincer (1978) shows that increases in the labour force participation rates of women lead to increased interdependence of the partner's migration decision, which results in both less migration and more marital instability. Increased marital instability, in turn, encourages migration as well as an increase in women's labour force participation. Furthermore, migration should decrease with increasing family size.

A different starting point was chosen by the new economics of migration.[11] This approach models migration through the risk-sharing behaviour of families. In contrast to individuals, households are able to diversify their resources, such as labour, in order to minimise risks to the family income. This goal is reached by sending some family members to work in foreign labour markets, in which wages and employment conditions are negatively or weakly correlated with those in the local region. In case of an economic deterioration in the local labour market, this strategy enables a family to secure their economic well-being through the remittances of family members working abroad. With this kind of model, it is possible to explain migration flows in the absence of wage differentials.

A feature of this new approach is the assumption that families not only evaluate their income in absolute terms but also in relation to other households (Stark, 1991). In the 'relative deprivation approach', migration occurs in order to improve the income of a household in relation to a reference household. Therefore, not only do the income differentials between the regions of origin and destination matter for the migration decision but also the income distribution in the original location. According to this theory, high income inequality in the home country results in stronger, relative deprivation, which, in itself, causes higher migration rates. This approach is also applicable to models with individual decision-making.

The new economics of migration changes the evaluation of the migration decision by emphasising the family as a decision making unit. This unit not only wants to maximise income but also seeks to minimise risks to the family income and to overcome labour market restrictions in the country

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[11] See Stark (1991) for an overview.

of origin (even if this is not combined with a increased family income). It should be noted that these models are mainly applicable to countries in which it is not possible to secure family income through private insurance markets or governmental programs, as is possible in EU-countries.

(e) Network Migration

A dynamic view of migration is given by the network approach.[12] According to this framework, migration may become a self-perpetuating process, because the costs and risks of migration are lowered by social and information networks. Due to a lack of information about the labour market in the region of destination, the first person moving faces high costs and risks. After the migration of the first individual, the monetary and psychological costs of migration are substantially lowered for the relatives and friends of this individual in the original location. Furthermore, existing network ties lower the risks associated with migration to a foreign region, because individuals can expect help from previously migrated people to find a job in the destination country. This reduction of costs and risks leads to a higher net return from mobility and, thus, to a higher migration probability. A new migrant raises the number of persons in the region of destination who themselves hold social ties to the home country, which results in a self-perpetuating migration process. However, not all people in the sending region may be affected, hence this process may eventually stop. Another factor, which weakens this self-feeding process, is the rising wages in the sending country and the falling wages in the receiving country, which subsequently lowers the possible benefits of moving. These diminishing effects are very important for the stability of this model, because it would otherwise unrealistically predict the migration of whole countries.

Through emphasis on growing network relationships and the associated reduction in costs and risks, this model suggests a smaller correlation between wage differentials, employment prospects, and the migration decision than the neoclassical model. This approach relies not only on the migration decision of individuals or families at one point in time but also considers every migration decision of a person to alter the economic and social situation in which subsequent decisions are made. A change in relative economic conditions at one point in time will effect migration decisions in all future periods by starting additional network migration.

(f) A General View: Push- and Pull-Migration

A general view of labour migration can be given by the push- and pull-

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[12]   See Hugo (1981), Massey (1990a, 1990b), Massey and España (1987). A formal treatment is given by Bauer (1995), and Bauer and Gang (1998).

framework, which integrates the previously discussed theories. Zimmermann (1995a) defines demand-pull migration and supply-push migration in line with shifts in the aggregate demand and supply curves of the receiving economy. Assume a standard price-output diagram like Figure 6(a) with an upward-sloping supply curve. If aggregate demand increases from D0 to D1, output and prices (or wage) rise. With rising wages, it is beneficial to allow immigration in order to avoid inflation and to obtain a further increase in output. Hence, the supply curve shifts downward from S0 to S1, and the distance AB in Figure 6(a) is pull migration. Conversely, an inflow of migrants without a change in demand shifts the supply curve downwards; prices fall, while output rises. Hence, the distance AC in Figure 6(a) is push migration. A different case of push migration occurs, if, due to a supply shock, (a reduction of native labour supply, for instance), the supply curve shifts upwards (say from equilibrium point C to A in Figure 6(a)). This is (at least partly) compensated by immigration, so that the equilibrium moves again down the aggregate demand curve.

To summarise, push-supply migration affects the aggregate supply curve alone, while pull-demand migration deals with migration (and hence a shift of the supply curve) that responds to a shift in the demand curve. All internal factors affecting aggregate demand are considered to be determinants of pull migration, while all internal or external factors affecting the aggregate supply and that are also associated with migration are defined to be determinants of push migration. This is a particular way to define push and pull, namely to stress the economic context of the inflow of workers.

In the case of a vertical aggregate supply curve (see Figure 6(b)), the supply and demand curves of labour are only affected by real wages. If the trade unions (or other institutional constraints) fix real wages above the equilibrium level, for instance at A1 in Figure 6(c), this results in unemployment of about A1A2. Immigration (or push migration) shifts the labour supply curve and increases unemployment and government deficits due to payments of unemployment compensation. This, in turn, affects aggregate demand and increases prices, while leaving output constant. Hence, there is stagflation caused by the immigration of workers or (more precisely) by push migration.

In practice, push migration arises from various sources. Among them are positive economic conditions in the receiving countries relative to the sending regions as measured by variables such as unemployment, wages, working conditions, social security benefits, and the structure of the economy. Demographic determinants such as size and age distribution of the working population also effect the labour supply decisions of migrants. Family migration and inflow of asylum seekers and refugees are also

considered to be push migration. Family migration as chain migration may also be affected by family reunification policies in destination countries. In one sense, this could be considered pull migration. However, it affects the supply-curve of the receiving economy alone, hence, this is defined to be push-supply migration. Only if reunification policies were changed, in response to changes in aggregate demand, would this be considered pull-demand migration.

Figure 6:
Push and pull migration and the economy

(1a)

AB: Pull-Migration

AC: Push-Migration

(1b)

(1c)
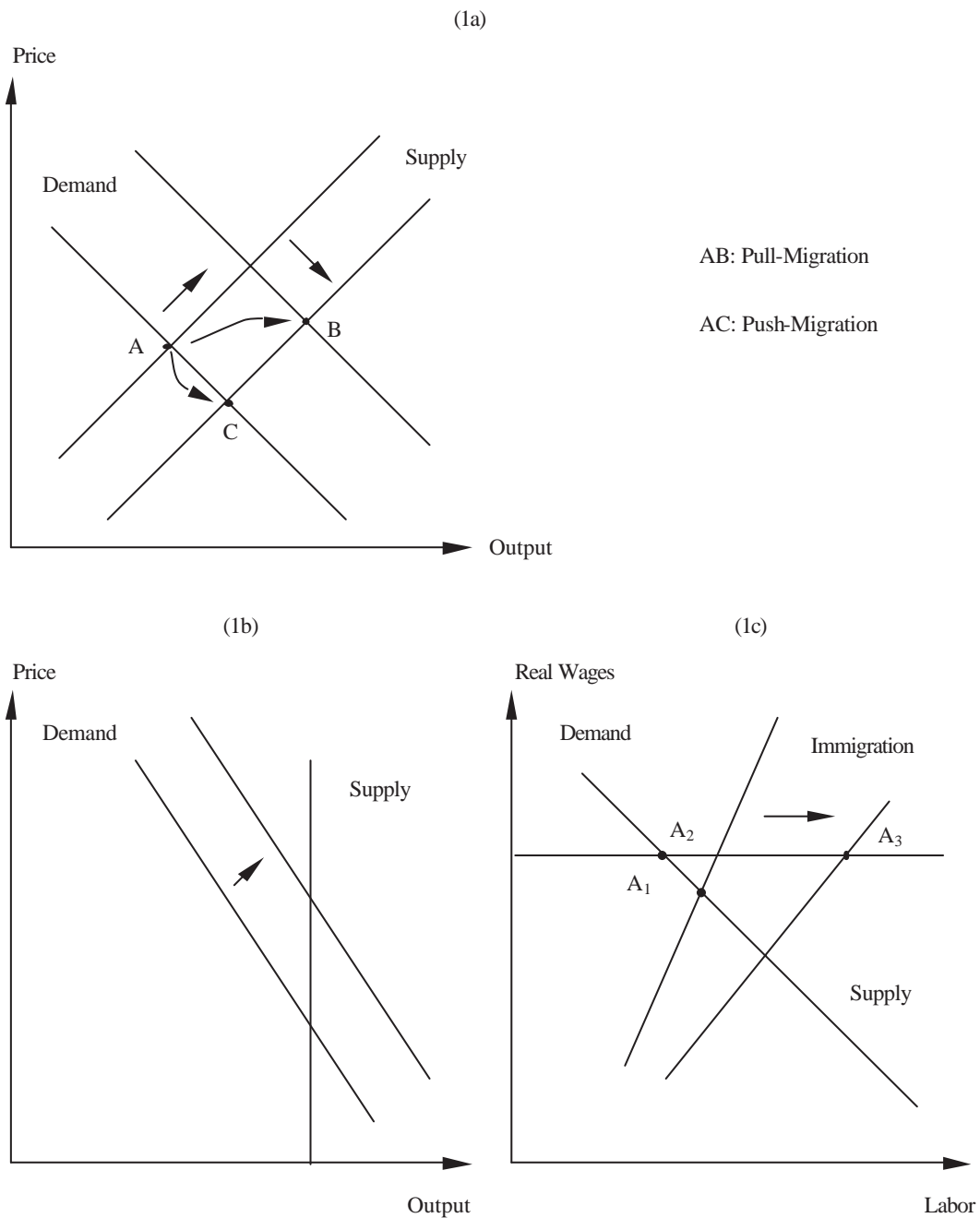
2.2.2. Empirical studies on migration

In recent decades extensive econometric investigations of the determinants of migration and return migration have been undertaken for developed and developing countries.[13] For the purpose of this study, we review research analysing internal migration as well as international migration, with particular emphasis on studies for EU member states. We point out the most important general, empirical findings. We do not discuss single contributions in detail and omit special methodological problems.[14] The review of empirical studies on migration in this section will make clear that the international migration issue is not yet sufficiently empirically analysed. Economic research papers are scarce and rather selective in their treatment of the relevant question. At best, they deal with a two-country framework and make no attempt to investigate the common problems of a group of countries such as the EU. It is further difficult to differentiate between the theoretical models outlined in the last section, since most of the theoretical approaches have similar predictions about important determinants of migration. However, the following review will show that there is strong empirical evidence that migration is largely determined by the search of individuals for better economic conditions.

(a) Aggregated Data Research

Most empirical studies of migration use data aggregated on the level of a country or a region due to a lack of available individual data sets or insufficient computer facilities. Typically, this is either cross-section data or time-series data. Cross-section studies are mainly applied to internal migration research, whereas international migration research concentrates on time-series data.

Before presenting the main results with regard to the most important determinants of migration, we will discuss some of the problems regarding the measurement of migration. Commonly used definitions of the dependent variable are net migration, gross migration, and the rate of migration.[15] The rate of migration is the number of migrants moving from the origin to the destination country weighted by the population living in the country of origin at the beginning of the period of the respective analysis. This concept takes into account that countries with a large population also have a higher number of potential migrants. Net migration

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[13] For a survey of the earlier literature, see Krugman and Bhagwati (1976). Greenwood (1985) reviews the empirical findings for the developed countries and Todaro (1980) for the developing countries. The latter reviews especially those papers related to the Harris-Todaro-model.

[14] See Bauer and Zimmermann (1998) for a more detailed analysis.

[15] A discussion about the right choice of the dependent variable is given by Krugman and Bhagwati (1976).

is defined as the absolute difference between emigration and immigration in a region. Gross migration is either defined as the number of emigrants in the country of origin or the number of immigrants in the destination region. The use of the net migration measure is compounded with problems, if emigration and immigration flows are correlated. In other words, a migration model using net migration flows as a dependent variable cannot separate the various push and pull factors which are responsible for the gross migration flows in both directions. This could result in biased empirical results.[16] Therefore, it is often better to use gross migration flows or gross migration rates as a dependent variable instead of net migration.

Migration studies using time-series data often face the problem that they are unable to discriminate between labour migrants and non-labour migrants. Because economic reasoning does not motivate the migration decision of non-labour migrants, the inclusion of both types of migrants could lead to biased estimation results. For example, a positive effect of income on migration for labour-migrants may be weakened by a conflicting behaviour of non-labour migrants.[17]

In order to summarise the main results of the empirical studies included in this survey, we pull together the signs of the coefficients on the most common variables investigated in Table 4. It is striking that nearly all studies have found a statistically significant positive effect of income or wages in the destination region or the income or wage differential between the sending and the receiving region, and a negative effect of wages and income in the sending country. Allowing for a non-linear influence of the income level on migration, Faini and Venturini (1994) find a positive coefficient on the income level of the sending country and a negative influence of its square, suggesting the existence of a hump-shaped pattern of migration in response to the home country's income. This result seems to indicate that, in the early stages of development, increases in the sending country's economic well-being lead to more, rather than less, migration to the extent that it helps to relax the financial and educational constraints preventing many would-be migrants from moving abroad. These results, however, confirm the findings of earlier empirical studies and hold for internal as well as international investigations. Furthermore, they are in line with most of the theoretical models considered in section 2.2.1.

Findings with regard to unemployment or employment rates as proxies

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[16]   Variables which have the same effects on the flows in both directions will result in upward-biased coefficients, and variables with different effects on the flows between the countries will result in downward-biased coefficients (Brosnan and Poot, 1987).

[17]   Graves (1979) shows in a study of internal migration in the U.S. that the income effect is significantly negative for retirees, which can be explained by a positive correlation with unmeasured prices.

for the employment opportunities in the regions of origin and destination are more ambiguous. Contrary to what is expected from the theory, some studies find a negative correlation between the employment opportunities in the destination region and the size of the migration flow, indicating that individuals are attracted to regions with a shortage of jobs (Kau and Sirmans, 1976; Fields, 1991; Katseli and Glytsos, 1989; Chies, 1994; Poot, 1995; Pissarides and McMaster, 1990; Puhani, 1999). Likewise, the employment opportunities in the sending regions have no clear effect on the migration decision.[18] One reason for the ambiguous results of unemployment variables could be the use of aggregate data. Initiating this argument, Greenwood (1985, p. 532) concludes: "Since higher unemployment rates are likely to be of most concern to the unemployed and perhaps of little or no concern to those who have a job when they move, the effects of higher unemployment rates may well not be apparent in studies that attempt to explain population or labour force migration with aggregate data."

As outlined in the theoretical section, the Harris-Todaro-model concludes that the most important determinant of migration is expected income gains. The easiest way to test this hypothesis is to introduce income or wages into the analysis, not linearly, but rather weighted by the inverse of the unemployment rates. Confirming former studies, Bowles (1970), Straubhaar (1988) and Fields (1991) find a high, statistically significant influence of expected income gains on the migration flow, thus supporting the Harris-Todaro approach.

In nearly all studies, the distance from the origin to the destination country shows a statistically significant negative influence on migration flows, supporting the theoretical considerations of the costs and risks of movement on the migration decision (Greenwood, 1970; Fields, 1991; Molle and van Mourik, 1989). Schwartz (1973) analyses the effect of age and education on the distance elasticity of migration for internal migrants in the U.S.. His results indicate that age has no effect on the distance elasticity of migration, whereas the level of education diminishes the elasticity. This result suggests that the generally expected negative influence of distance on migration is due to the lack of information. As expected from the network approach, the stock of migrants from a particular origin in a destination region has a positive effect on subsequent migration.

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[18] Fields (1991) tries to overcome these conflicting results by introducing turnover variables like the rates of new hires, quits, and layoffs in the specification of the migration equation. His findings show that individuals are attracted by regions with high rates of new hires and low rates of quits and layoffs, which is in line with neoclassical and human capital theory. Furthermore, there is some empirical evidence that employment rates are more important in determining the migration decision than are wages or income levels (Levy and Wadycki, 1973; Greenwood, 1975, 1981; Waldorf and Esparza, 1988).

Table 4:
Signs of the coefficients in econometric studies on migration using aggregate data

Country		Y in j	Y in i	rel. Y	U in j	U in i	rel. U	S	Age	D	MS in j
Internal Migration	**In**										
Greenwood (1970)	U.S.		+							-	+
Bowles (1970)	U.S.	+						+	-		
Navratil and Doyle (1977)	U.S.	0			-			+	+	0	
Kau and Sirmans (1976)	U.S.		+	+	+	+		0	0	0	+
Eriksson (1989)	Finland	+	+	+			-				+
Fields (1991)	U.S.	+	0		+	0				-	
Pissarides and McMaster (1990)	UK		+			-				+	
Puhani (1999)	France, Germany, Italy		0			-					
International Migration	**To**										
Lundborg (1991a)	Sweden	+	-		-	0					+
Waldorf and Esparza (1988)	Germany			0			-				
Molle and van Mourik (1989)	Europe			+	0						
Geary and Ó Gráda (1989)	U.K.			+	+		+				
Eriksson (1989)	Sweden		+	+	+	+					+
Hartog and Vriend (1989)	Netherlands	+		-	-						
Katseli and Glytsos (1989)	Germany	+		+	+	-	-				+
Chies (1994)	Germany		-	+	-	+	0		-		+
	France		-		-						+
Faini and Venturini (1994)	Europe		+	+	-	+					+
Poot (1995)	Australasia		+	+	-	0				-	

Notes: Y: Income or wages; U: Employment opportunities, S: Education, D: Distance between destination and sending country; MS: Network variables or lagged migration; j: Receiving country; i: Sending country. If a variable encourages statistically significant migration from i to j, it receives a + sign; if it discourages at a significant level, it receives a - sign; if the effect is insignificant, 0 is used.

Predominantly, the findings with respect to the influence of mean education and to the age of the total population on migration flows are in line with the human capital theory. A more sophisticated analysis on the effect of these variables has shown that migration is increasing with higher mean education and decreasing with the mean age of the population in the sending region (Bowles, 1970; Lundborg, 1991b; Schwartz, 1976). These results, however, should be treated with care. Given the specific socioeconomic characteristics of an individual such as age, schooling, and work experience, migration in the human capital model is typically an individual decision dependent on the expected benefits of moving. The use of aggregate data may mask important parts of the individual migration decision.

Zimmermann (1995a) explores the strength of push- and pull-migration to Germany from the major recruitment targeting countries. He argues that determinants of migration decisions, such as relative wages and relative unemployment rates, should not matter when immigration is largely driven by policy measures accounting for economic motives of the receiving countries, as in Europe's case. Within such a framework, migration flows should be determined by labour demand and not by labour supply factors. Zimmermann (1995a) estimates standard OLS regressions of net immigration from the main recruitment countries of Italy, Greece, Portugal, Spain, Turkey, and Yugoslavia to Germany, including constant, real growth rates of German gross national product, lagged net immigration, and a time trend. Real growth was assumed to capture the pull factors, whereas lagged net immigration (as a measure of persistence and network migration) and the time trend (as a proxy of unobserved variables operating in the sending and receiving country) are assumed to capture the push factors. Since regression results are likely to be affected by the German recruitment stop of 1973, the paper allows for different parameters until and after 1973.

Measured by the respective coefficient, immigration responded strongly to the German business cycle and dropped after 1973.[19] Furthermore, Zimmermann's analysis (1995a) reveals that the coefficients for lagged migration were significant for all sending countries and remained relatively stable after 1973. The constant did not change after 1973 for all countries, indicating that the switch in the immigration policy is either neutralised by other factors or operates only through changes in the other coefficients. These results indicate that there are elements of push and pull migration before and after the policy change. Nevertheless, this distinction was

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[19]   Using micro data on German firms, Bauer and Zimmermann (1996) show that this finding can be explained by increased employment adjustment costs of guestworker employment due to the recruitment stop of 1973. According to their findings, the temporary employment of guestworkers acts as buffer for native employment. This buffer function of the guestworker employment decreased after the recruitment stop due to increased adjustment costs of guestworker employment.

confirmed by the fact that the cyclical variability of immigration largely decreased after 1973 in most of the analysed sending countries. Using Yugoslavia and Turkey as examples, Zimmermann (1995a) shows that the lagged migration coefficient dominates the immigration process to Germany.

(b) Micro Data Analysis

Since the early 1980's several surveys of individuals have been conducted. This data opens up the possibility of overcoming the problems of aggregate data and of testing the relevance of individual and local characteristics. Among the most widely used data sets in migration research are the Panel Study of Income Dynamics (PSID), the National Longitudinal Surveys (NLS) and the Census Public Use Microdata Samples (PUMS) for the U.S., or the Sozioökonomische Panel (SOEP) for Germany. Since these data sets in general have no information regarding the economic and social situation of immigrants before their emigration, it is not surprising that most of the empirical research concentrates on internal migration. Only a few data sets have been collected in the sending countries that could identify the destination country of immigrants (Lucas, 1985, Taylor, 1986, Ó Gráda, 1986, Stark and Taylor, 1991, and Adams, 1993).[20]

The main results of these studies are summarised in Table 5 by providing the signs of the estimated coefficients. We will also discuss studies not mentioned in Table 5, which have analysed some of the determinants in a more detailed manner. All studies, which only allow for a linear relationship between age and the probability of a geographical move have found a significantly negative coefficient for the age variable. By considering a non-linear relationship between age and migration, Taylor (1986), Stark and Taylor (1991), and Adams (1993) have found an inverted U-shaped age-migration pattern, with individuals between 20 and 33 years of age showing the highest probability to emigrate. Goss and Paul (1986) demonstrate that it might be very important not only to control for age but also for general job skills. As a proxy for these skills, the authors included the years of labour market experience in the regression equation and found a highly significant coefficient. Goss and Paul (1986) conclude that studies, which do not control for the general labour market experience might underestimate the negative impact of age on the migration decision.[21]

Education exhibits a positive correlation with the probability of migration in all studies of internal migration. In contrast to these results, and with the exception of Ó Gráda (1986), insignificant or significantly negative

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[20]   Normally, the dependent variable is constructed as a discrete variable, which takes the value 1 if an individual changes the location between two censuses, and 0 otherwise. This construction requires the use of binary choice models, such as the probit or the logit model, for estimation.

coefficients have been found in the international migration context. For migrants from Botswana to South Africa, this could be traced back to the apartheid system which reserved skilled jobs for white people and, therefore, reduced the returns of schooling for skilled black migrants (Lucas, 1985). The explanation for migration from Mexico to the U.S. and out of Egypt to is similar. Due to the prevalence of low-skilled labour markets for migrants in the destination countries, migration for high-skilled individuals is not beneficial (Adams, 1993; Stark and Taylor, 1991).

Other important personal characteristics explaining the migration of individuals are marital status, house ownership and the existence of a network in the receiving country. The empirical findings support Mincer's (1978) proposition that married persons should exhibit a smaller migration probability than unmarried individuals. Unexpected results have been found with respect to the variables indicating whether or not an individual owns a house. Only Goss and Schoening (1984) and Goss and Paul (1986) have obtained the expected negative coefficient reflecting the higher costs of movement for these migrants. Contrary to the findings of studies using aggregate data, the network variable only seems to be important for international migration. Nevertheless, more detailed studies support the conclusion that the network variable is one of the most important determinants of migration decisions.

Compared to employed persons, unemployed individuals do not suffer an earnings loss while moving. A higher likelihood of migration for the unemployed can, therefore, be derived due to the smaller monetary costs of movement. This prediction has been strongly supported by the significantly positive coefficient of pre-move unemployment in the works of Navratil and Doyle (1977), Schlottmann and Herzog (1984), and Goss and Schoening (1984). The insignificant coefficient in the study of Burda (1993) on the readiness of migrating from East Germany to West Germany may be attributed to the socialist system in the former German Democratic Republic, in which full employment was secured by the government.

The unemployment-migration relationship was the subject of detailed studies by Da Vanzo (1978), Goss and Schoening (1984), and Herzog and Schlottmann (1984). Using data from the first five waves of the PSID, Da Vanzo (1978) shows that families whose heads are unemployed are more likely to migrate. These estimates indicate that local economic conditions mainly determine the migration decision of the unemployed but have no impact on employed persons. Furthermore, compared to individuals holding a job, the unemployed are more responsive to the economic determinants of the migration decision such as local unemployment rates. This result may

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21   A survey of empirical studies regarding network migration is given by Gurak and Caces (1992).

explain the ambiguous findings regarding local unemployment rates in studies using aggregate data. Da Vanzo (1978) and Herzog and Schlottmann (1984) have calculated that individual unemployment doubles the likelihood of internal migration. Controlling for unemployment duration, Goss and Schoening (1984) find a decreasing migration propensity with time, suggesting that regressions excluding this variable will overstate the migration probability of unemployed persons.

Since the 1980´s, several empirical studies have included household variables in their regression equations to test propositions of the family migration approach. None of the studies considering household size as an independent variable has found a significant influence on the migration decision. This finding is not compatible to Mincer's (1978) approach. However, in a detailed analysis of internal family migration in the U.S., Shields and Shields (1993) obtain interesting results, which strongly support the theory of Mincer (1978). They reveal that the higher the wife's wage rate, the lower the family migration propensity. Furthermore, the authors have estimated a wife's education has a positive impact on migration. This depicts exactly what theory predicts; namely that higher general human capital implies that migration will less likely result in a loss of household income.

Household heads are less likely to migrate than other family members, particularly in the case of international migration. This result not only reflects different opportunity costs between the international and internal migration of family heads but also suggests that there are larger moving costs due to family responsibilities (Stark and Taylor, 1991). Taylor (1986), Stark and Taylor (1991), and Bilsborrow, McDevitt, Kossoudji, and Fuller (1987) have estimated a positive impact of the number of adults in a family on the migration probability of an individual. An extensive analysis of internal and international migration in Ilocos Norte, a rural province in the Phillipines, gives further support for the new economics of migration (Root and Jong, 1991). They found that higher education of adult members in a family, combined with few real estate, results in increased migration of some family members, whereas network relationships are more important for families who migrate as a whole.

Table 5:
Signs of coefficients in econometric studies of individual migration

Country	Age	Age squared	S	M	U	PM	Net	HO	HH	HY	HS
Internal Migration	**in**										
Navratil and Doyle (1977) — USA	-		+		-	+	+				
Schlottmann and Herzog (1981) — USA	-		+		-						
Herzog and Schlottmann (1984) — USA	-		+		-	+	+				
Goss and Schoening (1984) — USA	-		+			+	0		-		
Goss and Paul (1986) — USA	-		+				+		-		
Hunt and Kau (1985) — USA	-		0	0							-
Taylor (1986) — Mexico	+	-	+			+	+	0	0	0	0
Stark and Taylor (1991) — Mexico	+	-	+			+	+	0	0	0	0
Molho (1987) — Britain	-		0		-					-	-
Burda (1993) — Germany	-	-	+		-	0	0		0		+
International Migration	**from**										
Lucas (1985) — Botswana	-		-		-				-	-	0
Ó Gráda (1986) — Ireland	0	-	+								
Taylor (1986) — Mexico	+	-	0				+	+	0	-	0
Stark and Taylor (1991) — Mexico	+	-	-				+	+	0	-	+
Adams (1993) — Egypt	+	-	0								+

Notes: S: Years of Schooling; M: Married; U: Unemployed before moving; PM: Prior migration experience; Net: Network Variables; HO: Homeowner; HH: Household Head; HY: House-hold Income; HS: Household Size. If a variable encourages statistically significant migration from i to j, it receives a + sign; if it discourages at a significant level, it receives a - sign; if the effect is insignificant, 0 is used.

2.3. Evaluation of the size and structure of future East-West migration

2.3.1. Existing estimations of the size and structure of future East-West migration

It is very difficult to estimate the potential migration flow from East to West Europe. Studies trying to estimate the size of the migration potential have arrived at very different conclusions. Newspapers and politicians have speculated that about 20-40 million East Europeans will emigrate. Estimates based on opinion polls in the sending countries suggest that between 13 and 27 million people are planning a move to the West (Coleman (1993)), whereas more modest predictions expect about 5 million people to migrate to Western Europe (see IOM (1991)). Assuming that 5-40 million would move to the EU between 1999 and 2003, this would imply an average inflow of 0.2-2.1% of the EU-population size in 1996. Note however, that these predictions include the former USSR, in other words, not only those countries waiting for EU membership. Immigration to Germany in the last decades has always remained at approximately 1%[22] Hence, at the lower end of these predictions, migration would not seem to be a potential burden.

This view is shared by a recent study of the OECD (1998). It concludes that the prospect of sizeable migration flows from Eastern to Western Europe is more fantasy than reality and that it should not be overemphasised in the agenda for the EU's enlargement. This assessment is based on the following arguments and considerations:

• The OECD expects that within the membership process, the free movement of persons will be postponed beyond the date of a particular country's entry into the EU, as was the case in the membership process of Greece, Portugal, and Spain.

• Further, the OECD expects that temporary restriction on the movement of persons will be accompanied by bilateral agreements between current member countries and the countries applying for membership. Austria and Germany have already signed such bilateral agreements with several CEEC countries.[23]

• The requirements for becoming a member of the EU could reduce the incentives to migrate. The procedure towards convergence in the key economic and social indicators as well as the harmonisation of labour standards could lead to a reduction in the existing differences in the standard of living and working conditions and, there fore, reduce the incentives to migrate.[24]

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[22] See Schmidt and Zimmermann (1992) for a discussion of the German migration experience since World War II.

[23] In the last section, we gave a detailed description of the bilateral agreements in Germany.

[24] However, over-hasty implementation of social and economic standards to reach congence between the CEEC-Countries and the current EU member countries could reduce the job prospects in the CEEC countries and, thus, increase the incentives to migrate.

Migration flows following the membership of some CEEC countries may not necessarily lead to emigration flows directed towards the current EU member countries. According to the OECD (1998), it is quite likely that a large part of any migration flow will be directed towards the new member countries, which are relatively more developed.

Figure 7:
Estimations of future migration pressures from the East using the approach of
Layard et. al. (1992)
(in 1,000)
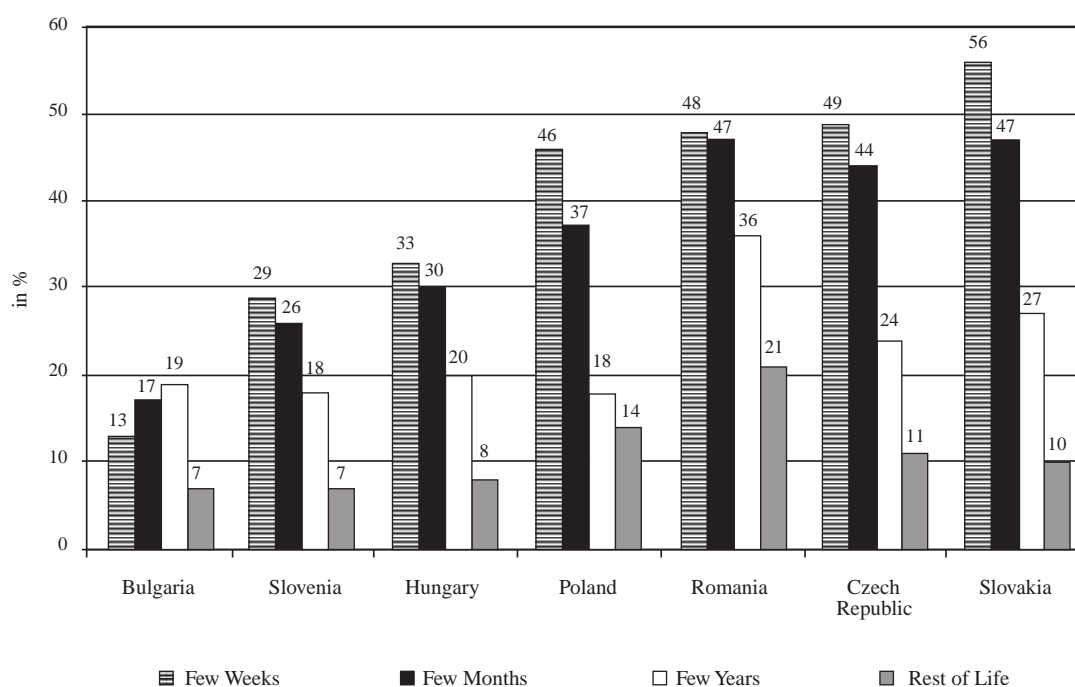
Source: Economic Commission for Europe (1997), own calculations.

In order to obtain an initial idea of how many people could migrate from Eastern to Western Europe after the socialist regimes in Eastern Europe dissolved, Layard et. al. (1992) used the migration flows from Southern Europe to Western and Northern European countries and North America in the 1950s and 1960s and the migration of Mexicans to the United States in the 1970s and 1980s as a point of reference. According to the authors, these migration flows provide a minimum estimate of those people in the East who would want to migrate to the West. They conclude that at least 3% of the Eastern population hopes to migrate to the West within the next 15 years.

Figure 7 shows the expected migration flows from the countries standing in line for EU membership, assuming that 3% of the 1995 population in these countries will migrate within the next 15 years. This would imply an

immigration flow from these countries of about 3 million people or about 0.81% of the 1995 EU-population. In other words, accepting the 3%-rule of Layard et.al. (1992), the EU should expect about 200,000 immigrants or 0.05% of the 1995 EU population per year after a possible enlargement. Given the fact that yearly immigration to Germany in the last decade has always been around 1% (Schmidt and Zimmermann, 1992), this number seems to be negligible.

2.3.2. Evaluation based on surveys in the sending regions

In 1998 the International Organization carried out a comparative study of the migration potential in 11 countries of Central and Eastern Europe. The survey is based on a representative sample of 1,000 individuals in 10 of these countries and 1,200 individuals in the Ukraine. These individuals where asked whether they wanted to emigrate and for how long, to which country they would like to emigrate, what they have done to prepare migration, and what their motivations for leaving or staying would be. In this sub-section, we briefly summarise the results of this study and compare them to our own survey conducted during this project.

Figure 8 shows the percentage of individuals answering that they would emigrate "very likely" or "likely" as well as the intended duration of migration. Figure 8 illustrates that there is a large potential of short-term migration, i.e. migration for a few weeks or few months, especially in those countries bordering the EU. In Slovakia 56% of the respondents and nearly every second respondent in Poland, Romania, and the Czech Republic answered that they are "most likely" or "likely" to emigrate for a few weeks. The numbers of individuals planning to migrate for a few months are only slightly lower. Compared to short-term labour migration, the number of people who want to work abroad for a longer time period or permanently is significantly lower, with the exception of Bulgarians who have a higher potential to emigrate for at least a few years. Between 20% and 27% of the people in these countries plan to migrate for a few years, with only 7-14% planning to emigrate permanently. In Romania, however, 21% of the surveyed individuals plan to emigrate permanently.

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[22] See IOM (1998) for a detailed description of the survey.

Figure 8:
Individuals in Central and Eastern Europe who would like to work abroad and their intended migration duration
(Percentage answering "very likely" or "likely")
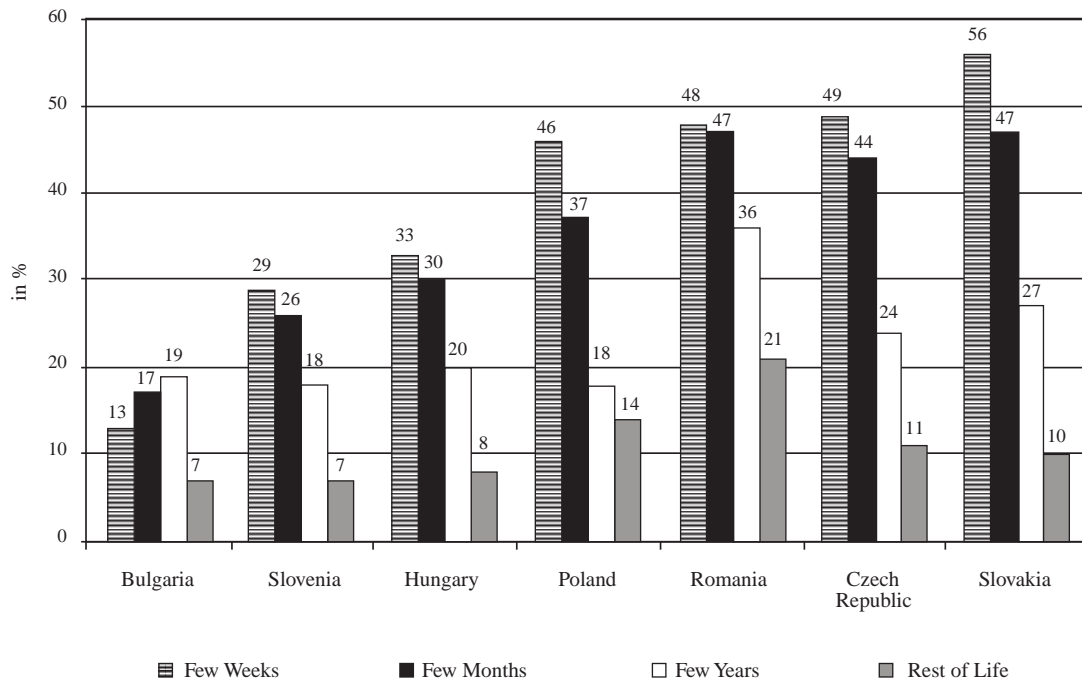
Source: IOM (1998), Charts 3-6. Note: Categories are non-exclusive.

Table 6 shows the target countries indicated by the respondents of the IOM-survey. The numbers without brackets refer to the percentage of people who want to work in the respective countries, while the numbers in parentheses refer to the percentage of individuals in the survey who plan to emigrate to the target countries permanently. It appears that Germany and Austria are by far the most important target countries for both temporary and permanent migrants from Central and Eastern Europe. Migrants from the Czech Republic and from the Ukraine were interested in moving to almost all EU-countries. These numbers confirm the importance of existing networks for the direction of migration flows. As we have discussed in section 2.1., most migrants from Central and Eastern Europe live in Germany and Austria. The results of the IOM-survey indicate that existing networks are important for the choice of the target countries' potential migrants. This conclusion is confirmed by the fact that one of the most important reasons for migration among the individuals in the IOM-survey was the experience of people who have already migrated. Along with the experience of former migrants, the idea that living conditions and wages were better abroad was by far the most important reason for leaving the home country. The IOM-study also indicates that young and highly educated individuals have the highest propensity to work abroad.

Table 6: Target countries for migrants in Central and Eastern European Countries (Percentage of whole sample)

Country	Germany		Austria		France		Britain		Scandinavia		Other EU	
Poland	36	(15)	4	(3)	5	(5)	6	(7)	5	(5)	4	(5)
Czech Republic	38	(5)	26	(6)	17	(6)	24	(5)	17	(10)	4	(5)
Slovakia	17	(0)	8	(1)	2	(1)	4	(0)	1	(1)	3	(1)
Hungary	25	(10)	13	(6)	2	(2)	3	(2)	2	(2)	1	(1)
Slovenia	1	(0)	4	(0)	1	(0)	2	(0)	1	(0)	1	(0)
Croatia	43	(26)	9	(6)	3	(2)	4	(2)	6	(7)	6	(6)
Romania	12	(5)	1	(1)	2	(2)	1	(1)	1	(1)	2	(1)
Bulgaria	15	(5)	2	(1)	2	(1)	1	(1)	1	(1)	5	(2)

Source: IOM (1998), Table 1.

Notes: Figures in brackets indicate the percentages of people who want to emigrate; figures without brackets indicate the percentages of people who want to work abroad temporarily. For Slovenia there is no accurate information because the question was asked "to work or to emigrate in" rather than separating work and emigration.

It is well known that the desire to migrate is very different from actual migration. Therefore, the numbers reported in Figure 8 are likely to be much higher than the real migration flows that will occur. One way to get a clearer picture of the potential migration flows is to look at the actual steps taken by potential migrants in realising their plans. Table 7 shows the results of the IOM-study with regard to the migration preparations of the individuals surveyed. First, it should be noted that the numbers of individuals who have taken concrete steps towards emigration is by far lower than the number of people who plan to migrate (see Figure 8). Second, note that the types of respondents' preparations (learning the foreign language, obtaining qualifications, and obtaining information) are not necessarily good indicators for a move. At least the knowledge of a foreign language and higher qualifications improve the labour market possibilities in the home country as well and, therefore, might actually reduce the propensity to migrate. With the exception of the Poles, the number of individuals who have taken very concrete steps towards migration (applying for a job or work permit, selling property, and looking for a place to live) is very low in all countries.

Table 7: Preparations for emigration (in%)

	PL	CR	SK	HU	SLO	CRO	BUL	ROM
Learned foreign language	39	24	17	13	14	16	10	13
Obtained qualifications	21	17	9	10	13	12	7	9
Sold property	11	1	2	0	2	3	0	2
Obtained information	38	13	14	8	9	12	15	14
Applied for jobs	28	5	5	4	2	4	6	4
Found place to live	23	5	4	2	2	4	3	1
Applied for permit	24	3	3	3	2	3	5	2
Contacted people	16	3	2	6	2	5	7	4
Other	12	4	2	2	3	7	2	4

Source: IOM (1998), Table 2
Notes: PL: Poland; CR: Czech Republic; SK: Slovakia; HU: Hungary; SLO: Slovenia;
           CRO: Croatia; BUL; Bulgaria; ROM:Romania.

Three main conclusions can be derived from the results of the IOM-study for the migration potential from the East to the West after a potential EU-enlargement:

- First, the migration potential is by far lower than the numbers reported in newspapers or used by politicians.
- Second, the likely pattern of migration in the medium term is short-term labour migration to improve household earnings. The potential for permanent emigration lies between 1% and 2% of the population in the sending countries. Even though there are huge economic differences between the potential new EU-member countries and the current EU-member states (see the next section), the migration potential will very likely decline with the improvement of living standards in the Central and Eastern European countries. This conclusion is confirmed by the fact that the two most important reasons why individuals migrate are better living conditions and higher wages in the current EU-countries.
- Third, migration from the East to the West is most likely only a problem for Germany and Austria, to which most of the potential migrants aim to go.

In the process of writing this report, we have conducted a survey among 446 scientists and administrative persons in the potential sending countries.[26] These persons were sent a questionnaire via e-mail. This questionnaire and a Table with descriptive statistics are reported in Appendix A of this report. Unfortunately, the response to this survey was very low; we received only 20 responses to our questionnaire.

According to our survey an emigration of about 200.000 people or 2.7% of the respective country's population is expected on average. Germany and Austria are expected to be the most important receiving countries, followed by the UK. It is further expected that the migration flow mainly consists of temporary skilled labour migrants. Regarding the most important reasons for emigration, the respondents ranked the possibility to earn more money in the West highest, followed by better employment prospects and a better social security system. Even though these numbers are far from being representative due to the small sample size, the results of our survey are in line with the results of the IOM-survey described above.

2.3.3. Evaluation based on the economic and demographic situation in Eastern and Western Europe

The future of East-West migration largely depends on the political stability in the East and the economic and demographic development in Eastern and Western Europe. With respect to the political situation in the East, it can be observed that democratic structures and human rights have been developing at a rapid pace. Therefore, politically motivated migration may gradually disappear but it cannot be completely excluded in the future.

As we have discussed in section 2.2., economic theories of migration conclude that the economic conditions in the sending country in relation to the receiving country are important determinants for the individuals' migration decision. Table 8 exhibits some economic indicators of West and East European countries in 1993. The process of transforming the previously, centrally planned economies of Eastern Europe into market economies does not progress at the same rate in all transition countries.

The GDP growth rates in 1997 indicate that the economic situation in some Eastern countries has improved significantly. Following the standard migration theory (see section 2.2.1.), this should lower the migration pressure. On average, the GDP in Eastern Europe fell between 5.0% and 13% in 1991. Between 1993 and 1997 most of the East European countries experienced substantial growth in production. In 1996 and 1997, however, economic growth in all Eastern European countries once again decreased, while Bulgaria and Romania experienced negative growth rates. Due to the existing dependency of most of these countries on the Russian economy, the future economic development of these countries is difficult to predict. However, stronger economic connections with the EU might help to overcome dependency on the Russian economy and to stabilise economic development in these countries.

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[26]   82 in Estonia, 18 in Hungary, 43 in Latvia, 189 in the Czech Republic, 51 in Lithuania, 2 in Romania, 7 in Slovakia, 21 in Slovenia, 31 in Poland, and 2 in Bulgaria.

Table 8: Economic indicators of West, Central and Eastern Europe

(a) European Union

Real Growth

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Portugal	Spain	Sweden	United Kingdom	EU15
1991	3.4	1.6	1.4	-7.1	0.8	5.0	3.1	2.0	1.1	6.1	2.3	2.3	2.3	-1.1	-1.5	1.6
1992	1.3	1.5	1.3	-3.6	1.2	2.2	0.7	4.2	0.6	4.5	2.0	2.5	0.7	-1.4	0.1	1.1
1993	0.5	-1.5	0.8	-1.2	-1.3	-1.2	-1.6	3.1	-1.2	8.7	0.8	-1.1	-1.2	-2.2	2.3	-0.5
1994	2.5	2.4	5.8	4.5	2.8	2.7	2.0	7.3	2.2	4.2	3.2	2.2	2.3	3.3	4.4	3.0
1995	2.1	2.6	3.2	5.1	2.1	1.2	2.1	11.1	2.9	3.8	2.3	2.9	2.7	3.9	2.8	2.4
1996	1.6	1.3	3.2	3.6	1.6	1.3	2.4	7.4	0.7	3.0	3.1	3.2	2.4	1.3	2.6	1.8
1997	2.5	3.0	3.3	6.1	2.3	2.2	3.2	9.8	1.5	4.8	3.6	3.7	3.5	1.8	3.5	2.7

Inflation

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Portugal	Spain	Sweden	United Kingdom	EU15
1991	3.3	3.2	2.4	4.3	3.2	3.6	19.5	3.2	6.5	3.1	3.2	10.2	5.9	9.7	5.9	5.1
1992	4.0	2.4	2.1	2.9	2.4	5.1	15.9	3.1	5.3	3.2	3.2	9.4	5.9	2.6	3.7	4.5
1993	3.6	2.8	1.3	2.2	2.1	4.5	14.4	1.4	4.2	3.6	2.6	6.7	4.6	4.7	1.6	3.6
1994	3.0	2.4	2.0	1.1	1.7	2.7	10.9	2.3	3.9	2.2	2.8	5.4	4.7	2.4	2.5	3.1
1995	2.2	1.5	2.1	1.0	1.7	1.8	8.9	2.5	5.4	1.9	1.9	4.2	4.7	2.9	3.4	3.1
1996	1.9	2.1	2.1	0.6	2.0	1.5	8.2	1.7	3.8	1.4	2.0	3.1	3.6	0.8	2.4	2.5
1997	1.3	1.6	2.2	1.2	1.2	1.8	5.5	1.4	1.8	1.4	2.2	2.3	2.0	0.9	3.1	2.0

Unemployment Rate

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Portugal	Spain	Sweden	United Kingdom	EU15
1991	5.2	9.4	10.3	6.6	9.4	6.7	7.7	14.7	8.6	1.4	5.5	4.1	15.8	3.0	8.2	8.4
1992	5.3	10.4	11.0	11.7	10.4	7.7	8.7	15.1	8.8	1.6	5.4	4.2	17.9	5.3	10.2	9.6
1993	6.1	12.1	12.1	15.1	11.7	8.8	9.7	15.7	10.2	2.1	6.5	5.5	22.2	8.2	10.3	11.0
1994	5.9	13.1	12.0	16.6	12.2	9.6	9.6	14.8	11.3	2.7	7.6	6.9	23.7	7.9	9.4	11.5
1995	5.9	13.1	10.1	15.4	11.6	9.4	10.0	12.2	12.0	3.0	7.1	7.2	22.7	7.7	8.6	11.2
1996	6.3	12.8	8.7	14.6	12.3	10.3	10.3	11.9	12.1	3.3	6.6	7.3	22.2	8.1	8.0	11.3
1997	6.4	12.7	7.7	12.6	12.4	11.4	10.3	10.3	12.3	3.6	5.5	6.8	20.8	8.0	6.9	11.2

Source: OECD (1998)

(b) Central and Eastern Europe

Real Growth

	Poland	Czech Republic	Slovakia	Hungary	Slovenia	Rumania	Bulgaria
1991	-7.0	-14.2	-11.2	-11.9	-9.3	-12.9	-11.7
1992	2.6	-3.3	-6.5	-3.1	-5.5	-8.8	-7.3
1993	3.8	-0.6	-3.7	-0.6	2.8	1.5	-1.5
1994	5.2	2.6	4.9	2.9	5.3	3.9	1.8
1995	7.0	4.8	6.8	1.5	3.9	7.1	2.1
1996	6.1	4.4	7.0	1.1	3.5	4.1	-10.9
1997	5.5	1.0	5.0	3.0	3.5	-2.0	-7.0

Inflation

	Poland	Czech Republic	Slovakia	Hungary	Slovenia	Rumania	Bulgaria
1991	76.5	56.7	61.1	34.8	115.2	174.4	338.5
1992	43.0	11.1	10.0	23.0	201.3	210.4	91.2
1993	35.3	20.8	23.2	22.5	32.3	256.1	72.8
1994	33.2	10.0	13.4	18.9	19.8	136.8	96.0
1995	27.8	9.0	9.9	28.2	12.6	32.3	62.1
1996	19.9	8.8	5.8	23.5	9.7	38.8	123.0
1997	16.0	9.0	6.5	18.0	9.0	150.0	1100.0

Unemployment

	Poland	Czech Republic	Slovakia	Hungary	Slovenia	Rumania	Bulgaria
1991	9.2	2.8	7.1	5.4	8.2	-	11.1
1992	12.9	3.0	11.3	10.7	11.5	6.2	13.2
1993	14.9	3.0	12.9	12.8	14.4	9.2	16.3
1994	14.4	3.2	14.8	10.8	9.1	10.9	12.8
1995	13.3	3.1	13.1	10.3	7.4	8.9	10.8
1996	12.4	3.5	12.5	10.0	7.3	8.5	12.5
1997	11.5	4.5	12.5	9.0	7.0	10.0	14.0

Source: Sachverständigenrat (1996/97), p. 33 and Sachverständigenrat (1997/98), p. 30.

Figure 9: GDP per capita in 1995 (PPP US $)

Country	GDP per capita
EU	18144
CEEC	5694
Luxembourg	30596
Denmark	21502
Austria	20907
Begium	20852
Germany	20370
France	19956
Italy	19536
Netherlands	19341
United Kingdom	18360
Sweden	18201
Finland	17188
Ireland	16431
Spain	14216
Portugal	12841
Greece	11650
Slovenia	10725
Czech Republic	9513
Slovakia	7380
Hungary	6607
Turkey	5619
Poland	5478
Bulgaria	4620
Romania	4328
Estonia	4035
Lithuania	4014
Latvia	3261

Source: United Nations (1997), own calculations.

In all East European countries, the transition to a market economy was followed by a sharp increase in unemployment, which, at least officially, did not exist under central planning. In 1997, the unemployment rates in Eastern Europe varied widely from 4.5% in the Czech Republic to 14% in Bulgaria. In 1997, excluding Luxembourg, none of the EU countries had less than 5% unemployment. Only Slovakia and Bulgaria had a higher unemployment rate than the EU average. Thus, there seems to be little potential for large-scale movements from the East to the West resulting from employment differentials. Note however, that there are potential problems in comparing the unemployment figures in Table 8. These problems are due to different definitions of unemployment and different ways to measure unemployment. Despite high unemployment rates in the West, there is a demand for high-skilled technical and professional workers, especially in information technology, as well as for low-skilled service workers. For instance, CIS specialists in space technology, lasers, low-temperature physics and superconductivity, some fields of medicine, and computer software may be in great demand in the West (Coleman, 1993). If these high-skilled workers want to live permanently in the West, their emigration may lead to a brain drain in the East European countries. This will have negative consequences for their future economic development. In the case of temporary migration, however, these high-skilled workers may become acquainted with modern Western techniques and, therefore, help their source country after returning.

Another important factor encouraging migration in the short-term is the persistently high income differentials between the East and the West. Figure 9 shows the GDP per capita in the EU and Central and Eastern European countries adjusted for purchasing power parity in US$. This figure shows that the average income in all EU countries in 1995 was higher than the income in Eastern European countries. For instance, in 1995 the average income in the UK was 18,360 US$. In Slovenia the average income was 58.4% of the average income in the UK, and in the Czech Republic 51.8%. Note however, that in Portugal the average income was about 69.9% of the average income in the UK, and in Greece 63.5%. In other words, comparing the poorest EU countries with the richest East European countries, the wage differential and, hence, the incentives to migrate do not seem to differ greatly. At the lower end of the spectrum, however, people from Lithuania and Latvia receive only 21.9% and 17.8% of the average income in the UK, respectively. One of the main problems of the transition countries has been inflation. Table 8 shows the substantial differences in inflation rates between East and West Europe. All East European countries have higher inflation rates than the EU countries; in particular inflation in Bulgaria and Romania is a large problem. Policy measures against inflation may affect employment negatively and, therefore, increase the migration pressure.

In the long-run, differences in demographic developments may be an important driving force behind the upcoming era of push-migration (Zimmermann, 1995). Stagnating, ageing populations tend to attract migrants, while young and large populations generate more mobile individuals. As Table 9 predicts, the share of the population over the age of 65 will rise in all EU-countries. This ageing process is the lowest in the United Kingdom; the size of the over-65 group will increase from 15.7% to 19.4% between 1990 and 2025.The ageing process is the highest in Greece; the size of the same group will increase from 13.8 % to 22.2 % over the same period. Conversely, with the exception of Ireland, the working age (15-64) population share declines in all EU-countries by 2-5 percentage points over the same period. Table 9 indicates large differences in the demographic situation and future development among East European countries. Whereas Bulgaria and Hungary show similar demographic developments as the West European countries, all other East European countries are characterised by relatively smaller age groups beyond age 65 and relatively larger cohorts for ages 0-14. This difference in the demographic pattern between most of the East European countries and the EU countries may suggest a migration potential for young people in the East, due to labour shortages in the West, especially in occupations usually taken by young people (Coleman, 1993). In the long run there may even be a demand for young immigrants in Western Europe due to its ageing population. In the West there will be fewer and fewer people of working age to support each elderly person, leading to a substantial problem for the pension system in the future. Importing young skilled workers, who can help to alleviate such problems, might generate a major fiscal advantage for the ageing Western countries.

An interesting question in the East-West migration discussion is which countries are likely to attract which migrants? This will largely be a question of ethnic networks. As we have discussed in section 2.1. of this report, most of the migrants from Central and Eastern European countries end up in Germany. Due to historical connections with Hungary, the former CSFR, and Bulgaria, Austria seems to be another important receiving country for Eastern European emigrants. Following the theory of network migration and assuming that future migration streams will flow along existing ethnic networks. East-West migration is likely to be mainly a problem for Germany and Austria, whereas South-North migration will also affect other EU member countries.

To summarise, it is unclear to what extent the economic differences between East and West Europe will cause out-migration in the short-run. Previous experience with migration within the EU suggests that labour mobility is rather slow in adjusting wage and unemployment differentials.

Given this experience, the lower bound of the predictions (3% of the population in the potential sending regions) described in the last section seems to be the most likely scenario of future migration pressure from the East to the West. In the long-run, a shrinking population and an ageing labour force in Western Europe combined with a growing population in Eastern Europe may encourage migration from the East to the West.

Table 9: Demographic indicators*

Country	Total Population 1995 (Millions)	Total Population Growth 1994-2025 (%)	Age Structure			
			1990		2025	
			15-64	65+	15-64	65+
West European Countries						
Belgium	10.2	-1.0	67.0	14.9	62.6	21.7
Denmark	5.2	-1.9	67.2	15.6	63.1	21.7
France	58.1	5.9	65.7	14.0	62.2	21.2
Germany	81.6	4.1	68.7	14.6	64.1	20.5
Greece	10.5	-1.0	66.9	13.8	62.2	22.2
Italy	57.3	-2.8	68.6	14.1	63.3	22.3
Ireland	3.6	2.9	61.3	11.4	61.7	17.8
Netherlands	15.5	15.7	69.0	12.7	64.2	19.8
Portugal	9.8	2.0	66.0	13.1	64.3	18.9
Spain	39.2	3.6	66.9	13.4	63.7	20.2
United Kingdom	58.5	4.3	65.3	15.7	63.6	19.4
EU	371.9	3.3	67.3	14.5	63.4	20.7
Central and East European Countries						
Bulgaria	8.9	-1.1	66.5	13.0	64.6	17.8
Former CSFR	15.7	14.0	65.3	11.7	64.6	16.4
Hungary	10.5	-1.0	66.2	13.2	64.5	18.0
Poland	38.5	13.8	64.7	10.0	63.3	16.3
Romania	23.4	12.4	66.0	10.4	65.2	14.3
CIS	284.5	21.1	64.9	9.3	64.1	14.1

Source: Eurostat (1991), United Nations Population Fund (1994), United Nations Population Division (1992), own calculations.

2.3.4. Evaluation based on econometric results

A final method to evaluate the potential migration flows from Eastern Europe to the current EU member countries after a possible EU enlargement is to rely on an econometric analysis of the determinants of internal migration within the EU and to use the results in order to simulate the potential future migration flows from the East to the West. The main idea behind this approach is to infer the potential migration flows, resulting from a planned enlargement, from the migration experience of the EU with past enlargements. As a point of reference, we estimated the determinants of migration from Greece, Spain, and Portugal to the other EU member countries. Greece joined the EU in 1981; Spain and Portugal in 1986. In all three cases, migration from these countries to the other EU countries was temporarily restricted. In the case of Greece, free labour migration was introduced in 1988; this occurred in Spain and Portugal in 1992.

In order to analyse the determinants of migration from Greece, Spain, and Portugal to the other EU member countries, we collected data on the number of persons emigrating from these three countries to the other EU countries from 1985 to 1997, as well as the population, unemployment rates, and real GDP per capita in the sending and receiving countries. The resulting panel data set is then used to estimate a log-linear equation using a fixed effects panel estimator. As dependent variable we used the emigration rate, defined as the number of persons emigrating in a particular year divided by the population of the respective sending country in the previous year. As explanatory variables we used the relative unemployment rate, defined as the unemployment rate in the sending country divided by the unemployment rate in the respective receiving country, and the relative real GDP per capita, defined as the real GDP per capita in the sending country over the real GDP per capita in the respective receiving country. These estimations were performed on three different samples: the total sample over the entire period from 1985 to 1997, a sub-sample of the period during which labour mobility between Greece, Spain, and Portugal to the other EU members was restricted (Greece: 1985-1987, Spain and Portugal: 1985-1991), and, finally, a sub-sample during which free mobility between all countries was allowed (Greece: 1989-1997, Spain and Portugal: 1992-1997). The data set, the estimation method, and the results are reported in Appendix B.

In the second step, we used the estimated coefficients reported in Appendix B together with the relative unemployment rates and relative GDP per captia between the CEEC countries and the current EU member countries (see Table 8 and Figure 9) to simulate the potential emigration rates from the CEEC countries to the EU. The results of the simulations are reported in Table 10.

Table 10:
Simulated emigration rates from East Europe to the European Union based on econometric results (in % of the population in the sending country)

	Total	Restricted Mobility	Free Mobility
Poland	1.83	1.29	6.11
Czech Republic	0.46	0.74	0.33
Slovakia	0.41	0.36	0.95
Hungary	1.05	0.94	2.20
Slovenia	0.15	0.22	0.13
Romania	6.54	4.06	27.73
Bulgaria	3.16	1.80	15.72

Notes: The estimation procedure and the estimation results are reported in Appendix B. The column Total refers to simulations based on the estimation results for the entire sample period from 1985 to 1997; the column Restricted Mobility refers simulations based on the estimation results for the sub-period during which mobility between the three sending countries and the other EU countries was restricted (Greece: 1985-1987; Spain and Portugal: 1985-1991); the column Free Mobility refers simulations based on the estimation results for the sub-period during which free mobility between the sending countries and the other receiving countries was allowed (Greece: 1989-1997; Spain, Portugal: 1992-1997).

Table 10 shows that the largest emigration rates can be expected from Poland, Romania, and Bulgaria, mainly as a result of their relatively high income disadvantage. Among the countries with which the EU has already started preparatory talks about possible EU membership, the simulated emigration rates range between 0.2% of the population in Slovenia and 2% of the population in Poland. Table 10 further depicts important differences between a scenario of restricted and a scenario of free labour mobility. With the exception of the Czech Republic and Slovenia, the simulated emigration rates are significantly higher in a scenario of free labour mobility.[27] In the case of restricted labour mobility, the simulated emigration rates range between a minimum of 0.22% of the Slovenian population and a maximum of 4% of the Romanian population. Especially in the countries with a relatively high earnings disadvantage (Poland, Romania, and Bulgaria), the

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[27]   In the case of the Czech Republic and Slovenia, the simulation results are driven by the relative unemployment rate, which is not statistically significant different from 0 in the scenario of free labor mobility.

simulated emigration rates increase significantly in a scenario of free labour mobility. In Poland, for example, the simulated emigration rates increase from 1.3% in a scenario of restricted labour mobility to 6% with free labour mobility.

Due to several reasons, one should interpret the simulation results with care. First, in our estimations we were not able to control for important determinants of migration such as distance and network migration, both of which could bias our estimation results. Second, the simulated emigration rates are long-run predictions; short-run emigration rates may be higher. Third, we were unable to differentiate between temporary and permanent emigration. Finally, the observed income differences between the CEEC-countries and the EU-countries are much higher as it was the case when Greece, Spain, and Portugal joined the EU. For example, when Greece, Spain and Portugal joined the EU, the relative real GDP compared to the EU average ranged between 59.6% in Greece 75.5% in Spain. In 1997 the real GDP of the countries applying for membership range between 23% in Rumania and 59% in Slovenia of the EU average (see Figure 9). With regard to the relative unemployment rates, the situation of the East European countries comes closer to the situation when the Southern European countries joined the EU (see Table 8). Therefore, the simulation results in Table 10 are out-of-sample predictions, which could suffer from a large error. Overall, the results from this section support our earlier conclusions, namely that it is reasonable to expect long-run emigration rates from the East to the West of between 2-3% of the population in the sending region.

2.4. Summary

In this section we evaluated the potential migration flows from Central and Eastern Europe to the EU after a potential enlargement. In the first two parts of this section, we described the current migration situation vis a vis Central and Eastern Europe and provided a survey of the existing theoretical and empirical literature on the determinants of international migration. This review revealed that economic differences between sending and receiving countries as well as existing migration networks are very important in explaining migration flows. In the second part of this section, the potential migration flows towards the East after an EU enlargement were evaluated and based on four different approaches: (i) we used estimates of the size of East-West migration following the opening of the Central and Eastern European countries in the early 1990s; (ii) we employed surveys conducted in the potential sending countries; (iii) based on the economic and demographic situation in Eastern and Western Europe, we gave a qualitative evaluation of the migration pressure; and (iv) we used econometric and

simulation methods to study the determinants of internal migration in the current EU in order to predict future East-West migration.

The four evaluation methods lead us to the following conclusions:

- In the long-run, it could be expected that about 2-3% of the population in Central and Eastern European countries will migrate to the West.
- Existing surveys in the potential sending countries indicate that the short-term migration potential might be higher.
- Due to existing migration networks, East-West migration will largely be a problem for Germany and Austria.
- The migration flows from the East to the West are expected to be primarily temporary.
- The migrants are expected to be relatively skilled.

3. THE LABOUR MARKET EFFECTS OF EAST-WEST MIGRATION

3.1. The theoretical framework

Because natives often fear the competition of foreign labour, the native labour market consequences of immigration have become one of the most discussed topics concerning migration. This debate has gained the increasing attention of employees, media, and politicians. Even the most simple theoretical model, however, does not result in a clear answer whether or not immigration leads to negative labour market effects on natives.[28] In the following section, we give a graphical exposition of the most simple theoretical model used in economics to derive the labour market effects of immigration. This simple model gives some intuition for the most important economic adjustments of the labour market in the receiving country, in response to the immigration of labour. Thereafter, we give a graphical explanation of a more complicated model. This model takes into account the possibility of labour market rigidities and is, therefore, more suitable for European labour markets than the basic model. We will use this model later in order to simulate the potential labour market effects of migration after a possible enlargement of the EU to the East.

3.1.1. A simple model of the labour market effects of immigration

Assume a simple framework, in which the country of origin produces a single good by means of capital and homogeneous labour. Figure 10 shows the labour market of the receiving country. Before immigration occurs, the labour market of the receiving country is in an equilibrium (i.e. labour demand equals labour supply) at point b with a wage w_1 and employment L_1. Immigration would lead to an outward shift of the labour supply curve from S_1 to S_2. This labour supply effect of immigration leads to a new equilibrium at point c, which is characterised by a higher total employment L_2 and a lower wage w_2. Note that the employment of natives has decreased from employment level L_1 to L_3. The employment level of foreigners is shown as the distance between employment level L_2 and L_3. According to this simple model, immigration leads to a lower employment level of natives and lower wages. How much the employment of natives and wages decrease crucially depends on the shapes of the labour demand and supply curve. If one considers a case, in which the labour demand and the labour supply curve are

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[28]　See Greenwood and McDowell (1986) and Bauer (1997a) for an overview of the theoretical litera-
ture on the labor market effects of immigration. Friedberg and Hunt (1995) reviewed the empirical
literature for the U.S.. See Zimmermann (1995a,1995b) for Europe.

both very steep, or, as economists say, very inelastic,[29] the demand and supply of labour react very slowly to a wage change. Given a particular amount of immigration, the reduction of wages will be the greater, the more inelastic labour demand and labour supply.

Figure 10:
Labour market effects of immigration in the
neoclassical model
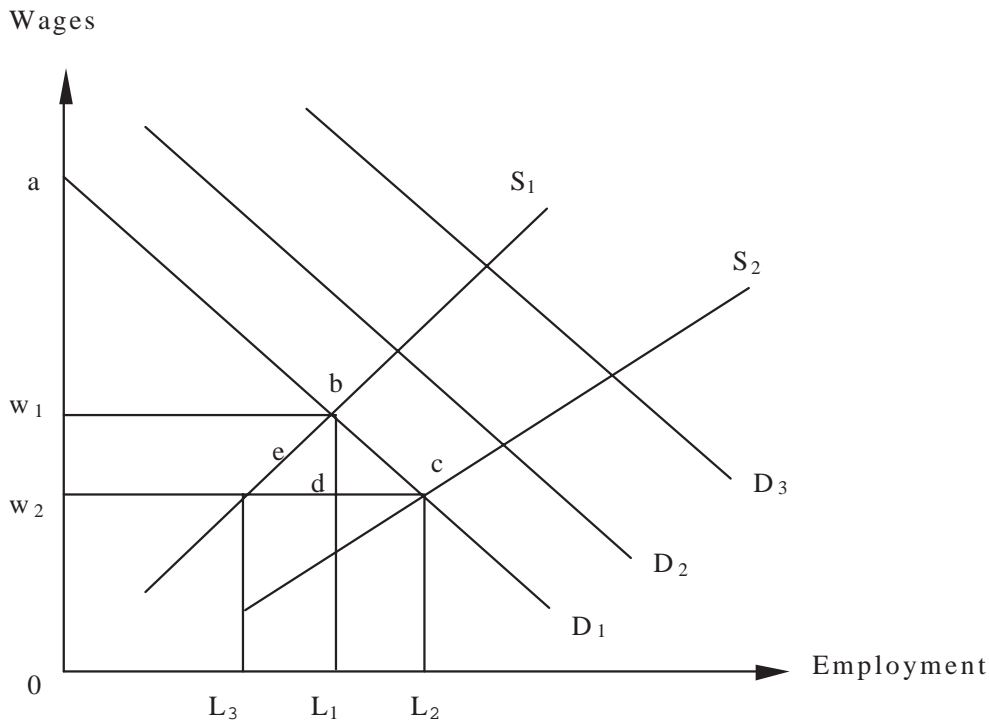
Figure 10 also allows us to analyse the income and distribution effects of immigration. Before immigration occurs, the country produces an output, which is described by the area $ab L_1 0$. The income of native workers can be described by the area $w_1 bL_1 0$ and the income of capital owners by the area abw_1. Immigration leads to an increase in the output of the country from $ab L_1 0$ to $acL_2 0$. The income of the immigrants is described by the area ecL_2L_3. Because of immigration, the income of native workers decreases to $w_2eL_3 0$, and the income of the capital owners increases to acw_2. To summarise,

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[29]   To describe the shapes of the demand and supply curves, economists use the concept of elasticities. For example, the labor demand elasticities could be interpreted as the percentage decrease of labor demand that occurs after a 1% decrease in wages. The labor supply elasticity shows the percentage increase of labor supply which occurs after a 1% increase in wages. If the supply curve is very steep, then a 1% increase in wages leads only to a small increase in the labor supply. In this case, economists say, supply is very inelastic. If the labor demand curve is very steep, than a 1% increase in wages leads only to small reduction in labor demand. In this case, labor demand is called relatively inelastic.

immigration leads to an increased output and to a redistribution of income from native workers to the owners of capital.

In using this model, it has been argued that the negative effects of immigration for native workers are overemphasised, since the model neglects indirect labour demand effects. First, immigrants are consuming goods; thus, the demand for goods increases. This increased demand leads to an increase in the demand for labour. In Figure 10 this increased demand for labour, induced by the consumption of immigrants, is shown as a shift of the labour demand curve to the right. Due to this shift, the employment of natives and wages increase. Whether the indirect effect is able to compensate the direct effects of immigration depends on how much the labour demand curve shifts to the right. If the increase in labour demand is substantial enough (see D3 in Figure 10), immigration could lead to an increase of wages and the employment of natives.

3.1.2. The effect of immigration in rigid labour markets

The simple model outlined above assumes that there is only one type of labour and that wages can fully adjust to changes in the labour market. In the European context, however, it is important to consider imperfections in the labour market when analysing the effects of immigration. For example, wages may not be flexible downwards due to the behaviour of unions or due to minimum wages. In this section, we outline a model, which takes into consideration that labour is heterogeneous and that there might be wage rigidities in the labour market. As an example for the theoretical treatment of a rigid labour market in the context of migration, we use a theoretical model in which trade unions set the wages for unskilled labour. Even though this model seems to be quite special, it shows the employment and wage effects of immigration in rigid labour markets and could be easily applied to other sources of labour market rigidity such as minimum wages. We will further use the model in section 3.3. of this report to simulate the potential labour market effects of increased East-West migration after a potential EU enlargement.

If labour is homogeneous, the standard competitive framework predicts an increase in total welfare at the expense of labour, because the wage rate is lower after immigration. Perhaps due to the behaviour of unions wages may not be flexible downwards. (See Schmidt, Stilz and Zimmermann (1994) for a theoretical treatment of this issue.) If union behaviour remains unaffected by immigration, unemployment may rise substantially. On the other hand, the pressure of immigration may affect unions' wage-employment choice. If labour is heterogeneous, the key issue for the evaluation of the wage effects of immigrant labour is whether foreigners are substitutes or complements to

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native workers.[30] To simplify the analysis, we assume that there are only two types of labour: qualified or educated workers and less-qualified or less-educated workers. We will call the former skilled and the latter unskilled workers. One reasonable assumption is that skilled and unskilled workers are complements. Then one possible scenario is that immigrants are substitutes to unskilled natives and complements to skilled natives. Hence, increased immigration may depress wages and (possibly) increase unemployment of unskilled workers while inducing the reverse effects for the skilled natives. The opposite case may happen in a scenario with skilled immigration.

While a formal treatment is left to Appendix C, we briefly outline the main framework and provide some intuition. The economy is assumed to produce a single output according to production technology which utilises capital, skilled labour, and unskilled labour. Output price is considered to be pre-determined and both types of labour are complements (the standard case). Natives supply input factors at fixed levels. Immigrants are either perfect substitutes to unskilled natives or to skilled natives. They do not carry any capital with them and have no effect on the demand-side of the economy. The level of immigration relative to the native population is fixed by governmental rules. We concentrate on pure labour immigration. A monopoly union sets the wage in the market for unskilled labour; employers then choose the level of employment in this market, whereas competitive forces determine the market wage of skilled labour. Nevertheless, the union cares about the wages of the skilled workers, who are affected by the employment level determined in the market of the unskilled workers. This spill-over is generated by a standard neoclassical production technology.

The consequences of skilled or unskilled labour immigration in such a model can be studied by using Figure 11. The upper panel considers the case of unskilled labour immigration. While the market for skilled labour is controlled by competitive forces (see A_0 in Figure (11a)), the monopoly union sets a wage level higher than the equilibrium wage in the market for unskilled labour (see B_0 in Figure (11b)). This causes unemployment at level $\bar{L}-L_0$ for the unskilled. The union is concerned about the earnings and employment of both the skilled and unskilled workers. Since unskilled immigrants (see the shift of the labour supply curve in Figure (11b)) replace natives and, therefore, lower the employment level of unskilled native workers, the union accepts a lower wage level for the unskilled (B_1). Since both types of labour are complements, the increased unskilled employment (L_1) shifts the demand curve for skilled workers upwards (see Figure (11a)),

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30   Two types of labor are substitutes, if an increased employment of one type of labor decreases the demand for the other type. When the two types of labor are complements, an increase in the employment of one type of labor results in an increased demand for the other type of labor.

and the wage rate of skilled workers increases (see A_1 in Figure (11a)). As a result the unskilled wage falls and drives the economy in the direction of the equilibrium point of a competitive labour market. In general, native unemployment may rise or fall. However, according to equation (A8) in the parametric framework chosen in Appendix C, the employment effect for unskilled natives is negative.

The case of skilled labour immigration is more obvious. The increasing stock of skilled labour (see the shift of the supply curve in Figure (11c)) drives the equilibrium point down from C_0 to C_1. The demand for unskilled labour increases due to complementarity (see the shift of the demand curve in Figure (11d)) and results in a higher level of employment of unskilled workers, whether or not the union decreases or increases the unskilled wage. While it does not seem plausible that the union would increase the unskilled wage so strongly that native employment falls, the theoretical model in Appendix C predicts that wages would fall (see D_1 in Figure (11d) and equation (A9) in Appendix C). The increased level of unskilled employment shifts the demand curve for skilled labour upwards again (see C_2 in Figure (11c)). Hence, immigration of skilled workers will most likely cause a decrease in the wages of the unskilled and a decline in native unemployment.

The analysis of this section suggests that there are complicated issues determining whether one can expect gains from immigration and which group will receive them. In a competitive (equilibrium) framework in both labour markets, natives will receive total gains, but those workers who are substitutes to the immigrants will lose. In the union model outlined here, effects are similar in nature. If unskilled labour immigrates, there will be gains for skilled natives, but unskilled natives will receive lower wages and face higher unemployment. To what extent natives still receive gains on the whole depends on the specific situation. In the case of skilled labour immigration, both wages and unemployment will decline, and the total income of natives will increase.

How important are the derived effects? In the following section, we will survey the existing empirical evidence on the labour market effects of immigration in Europe. In section 3.3. we will use EU data to simulate the model outlined in this section. These simulations will carefully study the polar cases and provide some estimates of the potential effects.

Figure 11:
Labour market effects of immigration in the case of rigid wages

A. Immigration of unskilled workers

(a) Skilled workers

(b) Unskilled workers

B. Immigration of skilled workers
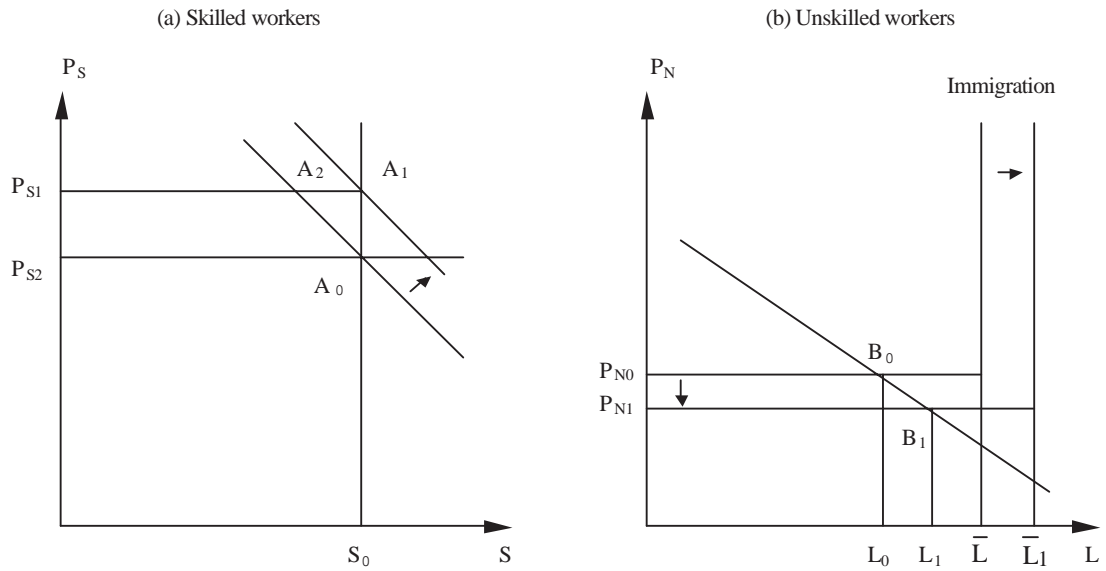
(c) Skilled workers

(d) Unskilled Workers
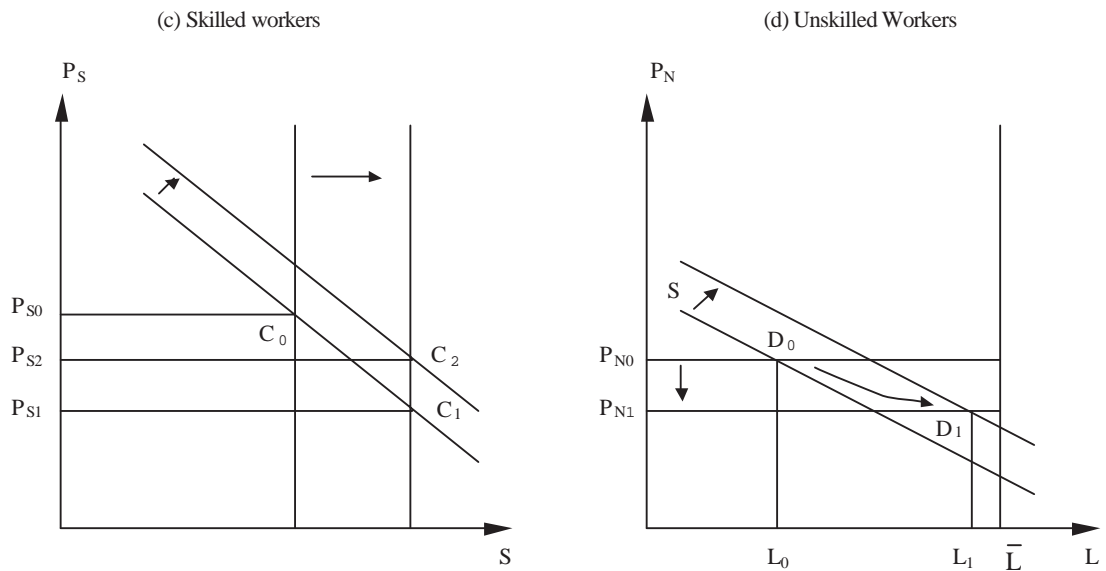
3.2. Empirical studies on the labour market effects of migration: A survey

3.2.1. The effect of immigration on native wages

Beginning with Grossman's analysis (1982), a large number on empirical studies on the wage effects of immigration in the US have been undertaken. A survey of this research is given by Borjas (1994). Most of these studies did not support the hypothesis that native Americans are strongly and adversely affected by immigration (Borjas, 1994). Compared to the United States, the empirical evidence for the European labour market is relatively scarce and not as clear cut. There are however some empirical results for Germany, Austria, and France. To our knowledge no similar studies exist for the UK.[31] Overwhelmingly, these studies conclude that the wage effects of immigration are negligible or non-existent and, in some cases, even positive. In this section we review the existing evidence for EU countries. A summary is contained in Table 11.

The first contribution to the native wage effects of immigration has been made by DeNew and Zimmermann (1994a, 1994b) and Haisken-DeNew and Zimmermann (1995). They employ a reduced form model of the labour market by regressing the effects of the foreigner share in an industry on individual log hourly wages. The sign of the estimated coefficient of this foreigner share variable determines whether immigrants are substitutes or complements to native workers, i.e. whether they have a negative or a positive effect on the wages of natives.[32] Overall, DeNew and Zimmermann (1994a) find that a 1% increase in the employment share of guestworkers decreases hourly wages of all natives by 0.35% (see Table 11). They also obtain significantly different effects of immigration on different groups of native workers. According to their results, a 1% increase in the share of guestworkers results in a decrease in wages of native blue collar workers by 0.45%, whereas the wages of white collar workers increase by 0.12%. The estimated coefficient for the latter group however, appears to be statistically insignificant. Examining the industry-specific effects of the foreigner share, it turns out that some industries gain. Overall, positive elasticities are found for natives working in Transportation (+0.07) and Wholesale/Retail (+0.023), whereas large negative elasticities are found for natives in

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[31]   See Hatton and Wheatley Price (1998) for a recent survey of the migration literature for the UK

[32]   To control for possible endogeneity, the foreigner share variable has been instrumen by industry dummies, industry value-added growth rates, and an overall and industry-specific time-trend. Regressions further include a number of individual and industry-specific control variables together with a set of dummies to control for fixed industry effects. The resulting equation has been estimated for various occupational groups by a random effects 2-stage GLS method using the German Socioeconomic Panel (GSOEP) from 1984 to 1989.

Investment (-0.56) and the Primary Sector (-0.43). DeNew and Zimmermann (1994) conclude that immigration measured by the share of foreigners in different industries have an overall but small effect on German wages.

In using the same framework and dataset but restricting the analysis to blue-collar workers, DeNew and Zimmermann (1994b) find smaller effects (see Table 11). The estimated elasticity of -0.16 suggests that the wages of native blue collar workers are reduced by 0.16%, if the employment share of guestworkers increases by 1%. Compared to the existing evidence in the U.S., even this elasticity is rather large. Furthermore, DeNew and Zimmermann (1994b) show that immigrants experience the highest negative effects of immigration, themselves. Disaggregating the foreigner industry share by industry and region and using the first nine waves of the GSOEP (1984-1992), Haisken-DeNew and Zimmermann (1995) have found significantly different effects in relation to their 1994 studies. Overall, the estimates exhibit a complementary effect of immigration. Looking at different occupational groups, Haisken-DeNew and Zimmermann (1995) find no significant immigration wage effects on native white collar workers, but a significantly positive wage effect on native blue-collar workers with more than 20 years of labour market experience.

Bauer (1998) replicates the studies of DeNew and Zimmermann using the 1994 wave of the Beschäftigtenstatistik, which is comparable to the U.S. Labour Force Survey. As can be seen from Table 8, his estimation of the overall wage elasticity is much smaller than those obtained by DeNew and Zimmermann (1994a, 1994b). Bauer (1998) further disaggregates native and foreign workers according to their occupational status and their skill level. The results of this analysis imply that native unskilled blue collar workers are complements to all immigration groups. Native skilled blue collar workers suffer from the immigration of foreign unskilled and skilled blue collar workers and can expect increasing wages in the case of an immigration of white collar workers. Bauer (1998) also reveals, however, that native white collar workers are substitutes to all groups of foreign workers. From a theoretical point of view, the latter result is hard to justify.

Pischke and Velling (1994) adopt a rather different approach. Unlike the studies review so far, they use an earnings function approach. They employ the change in the wage level as the dependent variable and the change in the number of foreigners in relation to the entire local population. They use the age group 15 to 64 in a labour market region as an exogenous variable. Pischke and Velling (1994) employ a data set from the German Federal Research Institute for Regional Geography and Regional Planning (Bundesforschungsanstalt für Landeskunde und Raumordnung) which separates Germany into 328 counties (Federal Planning Regions).[33] Pischke

Table 11: Elasticities of native wages with respect to a 1% increase of foreign employment

Study	Specifications		Elasticity
DeNew/Zimmermann (1994a)	Wage equation in levels; foreigner share in industries; Germany	All Natives - All Guestworkers	0.349
		Blue Collar Natives - All Guestworkers	-0.455
		White Collar Natives - All Guestworkers	0
DeNew/Zimmermann (1994b)	Wage equation in levels; foreigner share in industries; Germany	Blue Collar Natives - All Guestworker	-0.161
		Blue Collar Foreigners - All Guestworkers	-0.240
Bauer (1997a)	Wage equation in levels; foreigner share in industries; Germany	All Natives - All Guestworkers	0.082
Pischke/Velling (1994)	Wage equation in differences; foreigner share in regions; Germany	All Natives - All Guestworkers	0.033
Hatzius (1994)	Wage equation in differences; foreigner share in regions; Germany	All Natives – Guestworkers	0.579
		All Natives – Aussiedler	0.018
		All Natives – Übersiedler	0
Bauer (1997b)	Translog Production Function; Germany	6 groups of workers defined over education (skilled, unskilled) occupational status (blue collar, white collar), and nationality (foreigner, German)	0.035; -0.021
Winter-Ebmer and Zimmermann (1998)	Wage equation in differences; foreigner share in industries; Austria, Germany	Austria	-0.164; 0
		Germany	0; 1.027
Gang/Rivera-Batiz (1994a)	Translog Production Function; 4 European countries United Kingdom Germany	The Netherlands	0.022; -0.090
		France	-0.002; -0.108
			0.021; -0.081
			0.114; -0.046
Hunt (1992)	Wage equation in levels and differences; foreigner share in occupation; France		-0.139; -0.080
Dolado, Jimeno, and Duce (1996)	Wage equation in differences; foreigner share in regions; Spain	Two groups of natives (skilled, unskilled)	0.024; 0.036

and Velling (1994) estimate a positive and significant wage effect of immigration. A one percent increase in the share of foreigners leads to a maximum of a 3.29% increase in the wage level, implying a complementary effect of foreign labour (see Table 11). A possible problem with these findings is that the data set used also includes economically inactive foreigners such as asylum seekers, who generally have no work permit. Allowing for this, regressions for foreigners with Turkish nationality are estimated which yield similar results as the estimation for all foreigners. A one percent increase in the share of Turkish foreigners leads to a 1.88 percent increase in the wage level. Pischke and Velling (1994) add to the understanding of the native labour market consequences of immigration by analysing local labour markets. They are not able to separate between low qualified and high qualified labour. This, however, is important, for immigration is supposed to have a negative wage effect, particularly for low qualified labour. Furthermore, they study a boom period, which might bias their results.

For the period of 1984 to 1991, Hatzius (1994) applies a model similar to that of Pischke and Velling (1994) to a German regional panel dataset constructed from the GSOEP and other officially published data. In contrast to the studies surveyed thus far, he further controls for the state of technology, measured as the trend in total factor productivity and the stock of capital in a region. Hatzius (1994) also differentiates between foreign guestworkers, Aussiedler and Übersiedler, whereas the former studies only consider foreign guestworkers. According to his regression results, immigration does not seem to affect native unemployment. By contrast, native earnings are substantially affected. Hatzius' (1994) results imply that foreign guestworkers have a substantial negative impact on the earnings of natives, whereas *Übersiedler* appear to complement natives. Ethnic German immigration from Eastern Europe is unrelated to native earnings (see Table 11).

Bauer (1997) bases his empirical work on the estimation of a flexible production function, which allows for the calculation of the overall technical relationship between natives and foreigners, i.e. whether they are substitutes or complements. He treats foreigners and natives as different production factors and further differentiates natives and guestworkers according to their

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[33] hese county data are aggregated by the authors to 166 labour market regions for the years 1985 to 1989. In order to capture the composition of the local labour force, several variables are controlled for, such as the shares of employment in 12 different industries, the share of highly skilled workers, the share of unskilled workers, the share of part time workers, the share of female workers, and the share of workers older than 55. Furthermore, dummies for seven different regions of the country and the log of the population density in a region are used. Finally, the change in the share of foreigners in a region is instrumented with its first period level, due to the fact that foreigners may settle in regions with above-average growing labour markets. This leads to an endogeneity problem and an upward bias in the wage equation.

occupational status and skill, i.e. he uses low skilled blue collar, high skilled blue collar, and white collar natives and immigrants. The empirical results summarised in Table 11 show that white collar immigrants are substitutes for low skilled, blue collar and white collar natives. High skilled blue collar natives tend to be adversely affected by the increase in the supply of low skilled blue collar immigrants. Between all other native and foreign groups, Bauer (1997) reveals a complementary relationship. Since all immigration wage effects are calculated to be numerically negligible, Bauer (1997) concludes that fears of negative immigration effects on natives' wages lacks an empirical basis. He demonstrates a remarkable impact of immigration on foreign individuals' wages in the German labour market, however. Here, the elasticities range from a 1.78 percent increase in the wages of white collar foreign workers (caused by a ten percent increase in the inflow of high skilled blue collar foreign workers) to a 2.55 percent decrease in the wages of low skilled blue collar foreign workers (caused by a ten percent increase in the inflow of low skilled blue collar foreign workers).

Similar to Bauer's study (1997), Gang and Rivera-Batiz (1994a) also feature the use of production technology to estimate the effects of immigration on the labour market. In contrast to existing literature, the authors do not consider immigrants and native-born as separate production inputs. Rather, Gang and Rivera-Batiz (1994a) suggest that the labour market impact of immigrants is related to the specific skills they bring to the labour market of the receiving country.[34] Based on 6 waves (1986-1989) of the Eurobarometer, they estimate the technological relationship between natives and foreigners for four countries: The Netherlands, France, United Kingdom, and Germany. The results of Gang and Rivera-Batiz (1994a) imply slightly negative effects of immigration on the resident workers in the countries considered in the analysis. The estimated effects are very different, however, depending on the specific immigration group they are examining (see Table 11). For example, in The Netherlands a 1% increase of the population would lower the wages of Dutch workers by 0.09%, if this inflow consisted solely of Turks but would increase the wages by 0.02% if the migrants came from Surinam. In France and the United Kingdom, resident workers suffer the highest wage losses when the migrants come from Asia. A 1% increase in the population of these two countries due to the immigration of Asians would lead to a 0.11% reduction in the wages of French workers and a wage

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[34]   The authors have used three steps to evaluate the factor price elasticities between natives and immigrants. In the first two steps, they estimate factor price elasticities, differentiating the inputs of education, low-skilled labor and experience using a translog production function. In the third step, the authors calculate composite elasticities of complementarity between natives and immigrants using the average qualification of both labor groups regarding the three human capital inputs.

reduction of 0.08% in the United Kingdom. The immigration of Italians to France has nearly no effect on the wages of natives. In the UK and Germany, the immigration of Irish workers actually increases the wages of natives. The wages of German workers are adversely affected by the immigration of Portuguese migrants. Small substitution effects are found for immigrants from guestworker recruitment countries (Turkey, Portugal, Spain, and Italy). Gang and Rivera-Batiz (1994a) conclude that native individuals with human capital endowments divergent from those of immigrant's experience wage increases, while native individuals with human capital endowments similar to immigrating workers experience wage reductions.

Hunt (1992) uses data on Algerian repatriates in France to study the labour market effects of immigration. Even though France experienced a huge inflow (900,000 people or 1.6% of the total French labour force in 1968) of repatriates from Algeria in 1962, the estimates indicate that the average annual salaries of French workers were lowered, at most, by 1.3% (this number is based on an estimated elasticity of native wages with regard to a 1% increase in the share of foreigners). Using an approach similar to Pischke and Velling (1994), Dolado, Jimeno, and Duce (1996) find small, but positive, effects of immigration on the wages of Spanish workers (see Table 11). Winter-Ebmer and Zweimüller (1996) concentrate on the effects of immigration on Austrian blue collar workers. In their analysis they find that wages of natives correlate positively with foreigner shares on a regional, industry, or even firm level. Using a panel data set on industries, Winter-Ebmer and Zimmermann (1998) find that wages in Austria would decrease by 0.16% in response to an immigration of 1% of the Austrian labour force, whereas German workers seem to be complements to migrants, at least to those from East Europe.

To summarise this section, most existing empirical studies on the impact of immigrants on the wages of natives find only negligible negative effects. In some cases the effects are even positive. Following our analysis in section 2 of this report, one can assume that 3 million people (about 1% of the EU population 1995) will immigrate from the East within the next 15 years, i.e. 200,000 per year. In the first year after a potential enlargement, this inflow of 200,000 people would imply that the share of the foreign population in the EU would increase from 1.86%[35] to 1.91% or by 2.69%. The empirical studies surveyed in this section indicate that an increase in the share of foreigners decreases the wages of EU-natives in the worst case scenario by about 0.3%. Based on these numbers, one can calculate that the immigration of 200,000 East Europeans will decrease the wages of the workers in the current EU member countries at most by 0.81% of the current wage levels. Taking the per capita average available yearly income from dependent work

in the EU in 1996 (9,094 ECU) into account, this would be equivalent to an income reduction of 73,66 ECU in the first year after a possible enlargement. Note that this number is an upper bound for the wage effects for several reasons. First, assuming that 200,000 East Europeans immigrate every year implies that the percentage increase in the foreigner share declines from year to year, which in turn implies that the calculated wage effect in the first year represents a maximum.[36] Second, the calculated wage effect is the result of a partial analysis; this ignores effects that lower the potential wage effects of immigration such as labour supply effects and adjustment effects in the goods market. Finally, since we expect that most of these migrants will end up in Germany or Austria, the other current EU member states would experience a much smaller income reduction.

Several reasons may explain the small wage effects found in the existing empirical studies. First, binding wage floors (i.e. minimum wages or social security levels) might prevent natives' wages to fall. In such a case, immigration would lead to increased unemployment of natives without affecting their wages. In the next sub-section we will therefore review empirical studies on the employment effects of immigration. Second, immigration may induce natives to move out of the areas with a high percentage of immigrants to areas with a low share of foreigners. This would results in a decreased supply of native labour in those areas with a high foreigner share and an increased supply of native labour in regions with a low foreigner share. Overall, natives' wages would fall but by far less compared to a situation in which natives do not move in response to immigration. There is not much empirical evidence on the influence of the immigration of foreigners on the migration behaviour of natives. Evidence from the U.S. (Card, 1990) and France (Hunt, 1992), however, indicate that natives do not move to a great extend in response to the influx of foreigners.

3.2.2. Employment and Unemployment
The existence of rigid wages may be on reason for the small wage effects found in the empirical studies in the last section. If wages in European labour markets are rigid, it might be the case that immigration would actually increase the unemployment of natives without affecting their wages. According to the theoretical framework presented above, one might expect that the higher the substitutability of foreign workers for natives, the more likely an increase in immigration would lead to an increase in unemployment, if wages in the destination country are inflexible. Once again

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[35]   This share is based on numbers from 1993 (see Table 1).

[36]   After 10 years the calculated wage effect of the immigration of 200,000 East Europeans reduces to 0.64%.

using the reasonable simplification that skilled and unskilled workers are complements and that immigrants tend to be substitutes for low-qualified, native individuals and complements for high-qualified natives, increased immigration of low-skilled individuals may increase unemployment of low-skilled workers and may induce the reverse effect for the high-qualified. On the other hand, assuming that the labour market for high-skilled workers is flexible, immigration of high-skilled migrants may decrease unemployment of low-skilled natives without having employment effects on qualified natives. Similar to the existing studies on the wage effects of immigration, most European studies analyse the employment effects of immigration using German data. However, since such empirical studies are much more heterogeneous in their empirical approach and estimation methods than those surveyed in the last section, a summary of the results similar to Table 11 is not feasible.

A first attempt at analysing the employment and unemployment effects of immigration to Germany was made by Winkelmann and Zimmermann (1993). For the ten-year period 1974-1984, they estimate the effects of individual characteristics and industry-level variables on labour mobility measured by the number of job changes and the frequency of unemployment. Their analysis is based on 1,830 males, of whom 586 are foreigners. Females are excluded from the analysis in order to avoid having to model family formation. Immigration is evaluated as an exogenous variable by the share of foreign labour in 34 industries in 1974.[37] The estimation results of Winkelmann and Zimmermann (1993) show a significant but small immigration effect on the unemployment frequency of German workers. In order to examine the effects of an increased presence of immigrants in the labour market on the unemployment frequency of domestic workers, they simulate an increase in the share of foreign labour in all sectors by factors 2 and 4. The results of these simulations indicate that, all other things being equal, unemployment would rise substantially with immigration. In contrast to the seventies (Winkelmann and Zimmermann, 1993), Mühleisen and Zimmermann (1994) find no evidence that foreign labour induced unemployment in the eighties.[38] Their estimation results show no significant

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[37] Furthermore, years of schooling, schooling squared, dummies for family status, membership in a trade union, and the occupational status of the worker's first job (using the categories ordinary blue, qualified blue, ordinary white, and qualified white collar workers) are specified as control variables. Differences in the sectoral employment trends are captured by a variable measuring the growth of employment between 1974 and 1984.

[38] Their empirical application is based on a sub-sample of 1982 male individuals of the German Socio-Economic Panel, who were at least 19 in 1984 and at most 59 years old in 1989, and were not self-employed, in education, or a civil servant. Transitions between states of employment and unemployment are modelled as outcomes of binomial probit processes, where standard demographic variables like age, nationality, physical condition, years of schooling, job status, and previous employment or unemployment are contained.

indication that a larger share of foreigners in the labour force of specific industries causes unemployment.

Pischke and Velling (1994) offer two different ways to analyse the employment and unemployment effects of immigration. The first model follows their approach outlined in section 3.2.1. According to this approach, increased immigration yields small but insignificant negative effects on employment, while simultaneously yielding a large and significant positive effect on unemployment. There is some evidence, however, for a spurious effect in these estimation results, because the immigrant's impact on unemployment is not fully reflected in reduced employment. Pischke and Velling (1994) calculate that a one percent increase in the share of foreigners should increase the unemployment rate by two percent, which means that 430,000 additional foreigners would cause 500,000 additional unemployed individuals. Applying a similar approach, Hatzius (1994), whose analysis was discussed in the previous section, could not find statistically significant effects of immigration on native unemployment.

In their second model, Pischke and Velling (1994) analyse flow data for migration between labour market regions between the years 1986 and 1988. They examine the impact of foreign net-migration on employment and unemployment, distinguishing whether a foreign individual migrates from abroad or from another labour market region within Germany. For the years 1986 to 1987, the estimated coefficients on the foreigner-share variable in the employment and unemployment equation switch signs and tend to be insignificant. Apart from a significantly negative effect of gross foreign inflow from Germany in 1986, the coefficients on gross foreign inflow from abroad and gross foreign inflow from Germany are small and insignificant for the analysed period. To sum up the results of Pischke and Velling (1994), the impact of immigration on employment and unemployment in the 1980's are in line with the findings of Mühleisen and Zimmermann (1994), who also find no significant negative effects of immigration on unemployment. One has to keep in mind that both studies examine the impacts of immigration during a boom period in Germany, so an analysis of periods of recession would be a topic for future research.

Velling (1995) examines the impact of immigration on regional unemployment rates. Like Pischke and Velling (1994), he employs a data set from the Federal Research Institute for Regional Geography and Regional Planning and supplements it with data from the German Federal Labour Office. This results in a data set with longitudinal character, thus allowing for a deeper analysis of the native labour market consequences of immigration. Velling (1995) distinguishes between regional employment effects caused by immigration of Germans (including ethnic Germans), immigration of

individuals with EU nationality, and immigration of other foreign individuals. Furthermore, he separates the employment effects of increased immigration by seasonal workers or contract workers. According to the estimated results, a one percent increase in total immigration causes a 0.24 percent increase in average regional unemployment in Germany between 1988 and 1993, while a one percent increase in the inflow of Germans causes an increase in the average regional unemployment rate of 0.19 percent. The inflow of EU foreign workers or foreign workers with other nationalities causes unemployment effects smaller than 0.05 percent. These small effects are especially remarkable in the face of the large net inflow of foreigners and ethnic Germans to Germany in the years after the fall of the Iron Curtain. The employment effects of immigration defined by work permit workers (seasonal workers, contract workers) are even smaller and tend to be insignificant. Differentiating the effects of immigration on low qualified and high qualified labour yields larger effects of immigration on the employment of low-qualified workers when compared to high-qualified workers. Separating migrants into low-qualified and high-qualified individuals results in the expected complementarity of both groups of workers. That is, the inflow of low-qualified workers results in an increase in the unemployment of domestic low-qualified workers and a decrease in the unemployment of high-qualified workers and vice versa in the case of an inflow of high-qualified workers. Velling's (1995) results on the small employment effects of immigration are in line with other contributions. As with all other microeconometric examinations of the consequences of immigration on the native labour market, the datasets used only allow for the analysis of a rather short period of time.

Gang and Rivera-Batiz (1994b) utilise the West German subsample of the October/November 1988 Eurobarometer survey in order to study the influence of guestworkers on the employment probabilities of natives. They estimate the likelihood that a German resident will be employed relative to being unemployed on the share of foreigners in a region. To capture foreign presence, the authors use two different measures. The first is defined as the percentage of the foreign population in the Bundesländer; the second is based on the respondent's self-reported presence of foreigners in their neighbourhood. The results of Gang and Rivera-Batiz (1994b) show that there is no statistically significant effect on the employment probabilities of natives based on the share of foreigners in a Bundesland. Using the self-reported measure of foreign presence, they find that people living in neighbourhoods with many foreigners are more likely to be unemployed. The latter results can be interpreted in various ways: either unemployed natives misperceive the number of foreigners in their neighbourhood; hey live in

neighbourhoods with more foreigners; or the more localised, self-reported measure of foreigner presence captures the labour market effects better than the more aggregated share of foreigners in a Bundesland.

Compared to the existing empirical evidence on Germany, studies on the employment effects of immigration in other EU member states are rather scarce. In an econometric study using individual data for Austrian workers, Winter-Ebmer and Zweimüller (1997) conclude that increased immigration does not result in higher unemployment of Austrian manufacturing workers, although it does increase the duration of unemployment: an increase in the immigration share by 1 percentage point increases unemployment duration by approximately 5%, i.e. 5 days. Using industry data Winter-Ebmer and Zimmermann (1998) find that immigration to Austria has negative employment effects on natives, i.e. a 1 percentage point increase in the foreigner share in an industry decreases native employment growth by 0.13%. For Germany, they find that the overall foreigner share in an industry has a slightly negative effect on native employment growth. However, they also show that the share of foreigners from Eastern Europe fosters native employment growth. For Spain, Dolado, Jimeno, and Duce (1996) find little evidence that the inflow of immigrants is associated with negative effects on the employment of less-skilled natives. Estimates for France indicate that the inflow of Algerian repatriates in 1962 increased the 1968 unemployment of non-repatriates by 0.3 percentage points at most (Hunt, 1992).

To summarise, even though the empirical evidence on the employment effects of immigration is more contradictory than those on wages, the bulk of the evidence indicates that the employment effects of immigration in Europe are very small. Using the results of Hunt (1992) as an upper benchmark, an 1 % increase in the share of foreign workers in the EU increase the unemployment rate in Europe by approximately 0.2 percentage points. As in section 3.2.1., one can assume that immigration from Eastern Europe will increase the proportion of the Non-EU population in the first year after a potential enlargement from 1.86% to 1.91% or by 2.69%. From these numbers one can calculate that the expected immigration from Eastern Europe will increase the EU unemployment rate by 0.54 percentage points. In addition to the reasons already given in section 3.2.1., there are further arguments indicating that this number represents an upper bound of the employment effects of immigration. First, as Hunt (1992) notes, her estimates of the unemployment elasticity of immigration is biased upwards, because there is evidence that this number is also picking up some business cycle effects. Second, as we know from the discussion in section 2 of this report, most potential migrants from the East intend to migrate only temporary, which would mean that the numbers reported above are too high.

3.3. Simulating the potential effects of future East-West migration

In this section we evaluate the benefits of immigration using a simulation approach for the EU as a whole as well as for Germany and the UK. In the following simulations, we draw upon the theoretical models outlined in section 3.1. of this report. At first, a simple equilibrium model with full employment is used. This model is described in more detail in Appendix D and follows closely the work of Borjas (1995). In the second step, the calculations are then modified to deal with a situation, in which the market for unskilled labour is in disequilibrium, i.e. where the labour market is characterised by the unemployment of unskilled workers. Due to a lack of data, however, our calibration exercise cannot differentiate between skilled and unskilled labour but only between manual and non-manual work in the EU. Note that manual and non-manual work is only a rough approximation for skilled and unskilled labour, since in principle, both types of workers could be distinguished as skilled and unskilled. Instead of assuming unemployment of unskilled labour, we assume that unemployment occurs only in the manual sector. The calibration is based on 1993 EU data; for Germany and the UK, the data used for the simulations refer to 1996. The data sources and the assumptions underlying our simulations are reported at the bottom of Table 12. As a point of reference, we follow Borjas (1995) and calculate the gains of natives from immigration in a situation where all labour markets are in equilibrium, i.e. where the economy is characterised by full employment. For simplicity of calculation, we assume that during the year after enlargement, immigration is 1% of the 1993 European employment, which implies 1.477 million new workers.

Table 12 contains the calculated gains from immigration using two models: the simple equilibrium model with full employment and the disequilibrium model for different compositions of immigration. As a first point of reference, we will discuss the simple equilibrium model. Figure 12 demonstrates how these gains are calculated: if only unskilled migrants are accepted, the total benefit of immigration is given by the sum of the areas A, B and C; area B is allocated to immigrants, areas A and C to natives. It should be noted, that the benefits of immigrants refer only to their income in the receiving country. To calculate the net benefits of migration for the migrants, their forgone earnings in the sending country and the migration costs have to be subtracted from the numbers calculated in this study. As Table 12 indicates, if only manual workers immigrate and if the size of the immigration reaches 1 % of the native work force in one year, the natives'

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[39] See Bauer and Zimmermann (1997) for a detailed description of this approach.

total gain is calculated to be 0.322 billion ECU or 0.01% of the European GDP in 1993. The respective values for the UK and Germany are 0.063 and 0.114 billion ECU. Minimum gains in the EU are approximately 0.055 billion ECU, if 59% of the immigrants are non-manual workers. If, however, non-manual or skilled workers immigrate, the gains of the natives reach 0.181 billion ECU or 0.003% of the European GDP in 1993, 0.015 billion ECU (0.01% of the GDP) in the UK, and 0.032 billion ECU (0.01% of the GDP) in Germany (see Table 12 and Figure 12). In the case of skilled immigration, the gains of natives in Figure 12 are the areas E and F; the income of immigrants is I. A comparison of these numbers with the simulated gains from immigration in the United States implies that the gains are substantially smaller in the EU, if we assume equilibrium (Borjas, 1995). Note further that these findings are stable with respect to major changes in the assumed elasticities.

Figure 13 also shows the distributional effects of immigration in the equilibrium model for the EU. These effects could be quite dramatic. It appears that capital always benefits from immigration, and that these benefits increase with the share of non-manual immigrants. If skilled immigration of 1% of the total native labour force occurs, the gains of capital reaches 11.545 billion ECU or 0.22% of EU GDP in 1993. Non-manual, native workers show a positive immigration gain as long as no more than 40% of the immigrants are manual; manual native workers benefit from immigration, if more than 71% of the immigrants are non-manual. Both types of labour could lose much through immigration, depending on the share of immigrants who substitute them (see Table 12 and Figure 13). For instance, if 1% of the native work force immigrates in one year and all immigrants are non-manual, non-manual native workers would lose 0.9% of their initial income. The maximum loss of manual native workers is calculated to reach 25.042 billion ECU or 1.8% of their initial income, in the case of manual immigration.

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[40]   See Bauer and Zimmermann (1997) for a sensitivity analysis.

Figure 12:
Calculating the labour market effects of immigration: equilibrium model

A. Immigration of unskilled workers

(a) Skilled workers

(b) Unskilled workers

B. Immigration of skilled workers
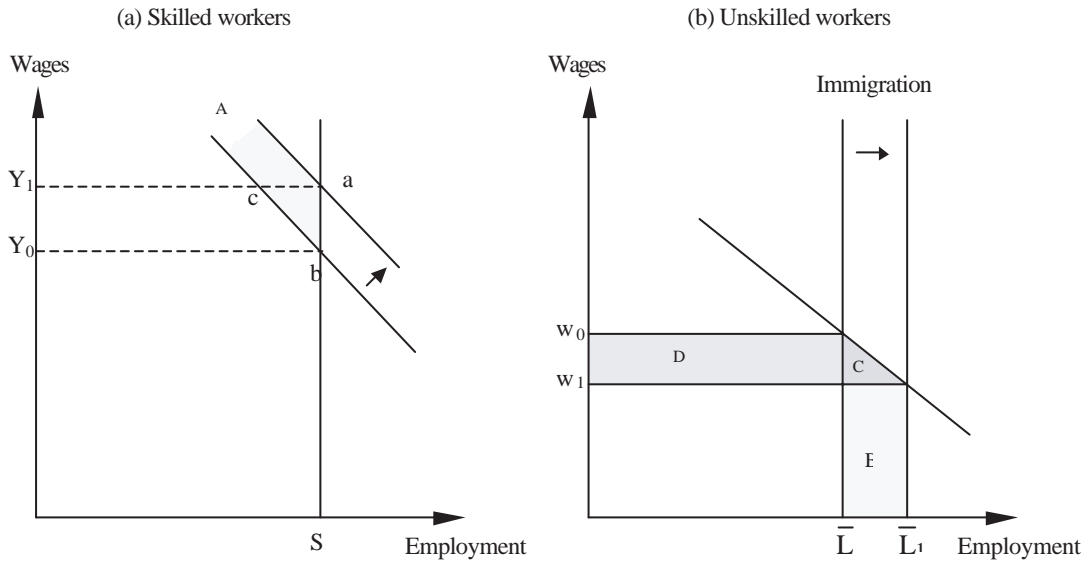
(c) Skilled workers

(d) Unskilled workers
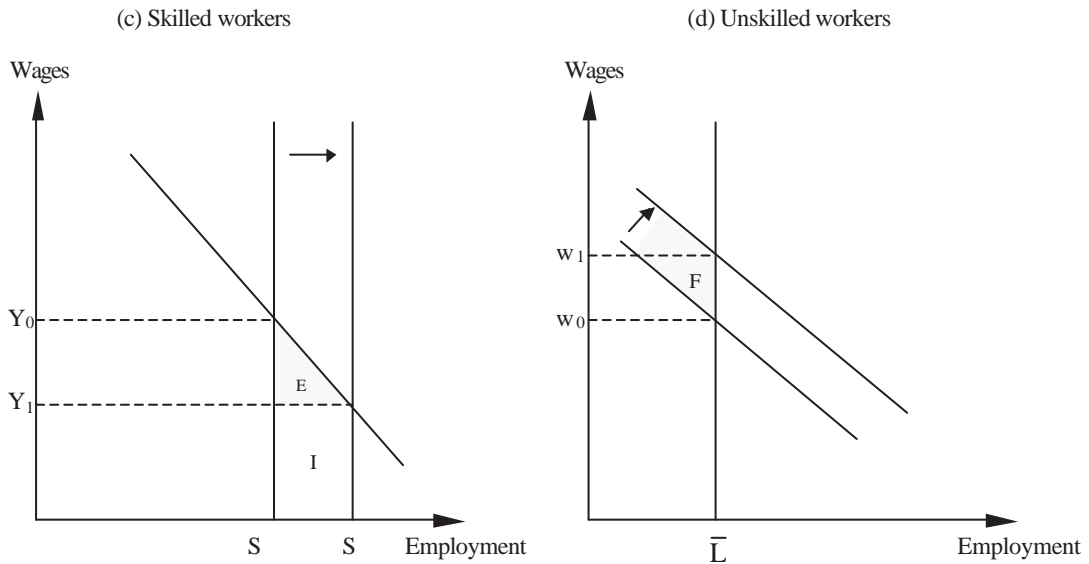
Table 12:

Simulated long-run labour market effects of EU enlargement towards Central and Eastern Europe in billions of ECU (% of GDP) due to immigration of 1% of the EU population in the year after enlargement

		Nativ	Immigrants	Total
	1. EUROPE			
	A. Immigration of manual workers			
(I)	Equilibrium	0.322	33.816	34.138
		(0.01)	(0.64)	(0.64)
(II)	Disequilibrium			
a)	Constant native unemployment	0.322	33.816	34.138
		(0.01)	(0.64)	(0.64)
b)	Immigration equals increase in native unemployment	-34.461	34.461	0.000
		(-0.65)	(0.65)	(0.00)
	B. Immigration of non-manual workers			
(I)	Equilibrium	0.181	39.628	39.810
		(0.003)	(0.74)	(0.75)
(II)	Disequilibrium			
a)	Constant native unemployment	0.181	39.628	39.810
		(0.003)	(0.74)	(0.75)
b)	Zero native unemployment	367.092	39.628	406.720
		(6.90)	(0.74)	(7.64)
	2. UK			
	A. Immigration of unskilled workers			
(I)	Equilibrium	0.063	2.568	2.631
		(0.01)	(0.32)	(0.33)
(II)	Disequilibrium			
a)	Constant native unemployment	0.063	2.568	2.631
		(0.01)	(0.32)	(0.33)
b)	Immigration equals increase in native unemployment	-2.027	2.027	0.000
		(-0.26)	(0.26)	(0.00)
	B. Immigration of skilled workers			
(I)	Equilibrium	0.015	5.456	5.471
		(0.002)	(0.69)	(0.69)
(II)	Disequilibrium			
a)	Constant native unemployment	0.015	5.456	5.471
		(0.002)	(0.69)	(0.69)
b)	Zero native unemployment	4.205	5.456	9.661
		(0.53)	(0.69)	(1.22)

Table 12: continued

2. GERMANY				
A. Immigration of unskilled workers				
(I)	Equilibrium	0.114(0.01)	6.958	7.072
		(0,01)	(0.50)	(0.51)
(II)	Disequilibrium			
a)	Constant native unemployment	0.114	6.958	7.072
		(0.01)	(0.50)	(0.51)
b)	Immigration equals increase in native	-8.975	8.975	0.000
	unemployment	(-0.65)	(0.65)	(0.00)
B. Immigration of skilled workers				
(I)	Equilibrium	0.032	10.622	10.654
		(0.002)	(0.76)	(0.77)
(II)	Disequilibrium			
a)	Constant native unemployment	0.032	10.622	10.654
		(0.002)	(0.76)	(0.77)
b)	Zero native unemployment	19.192	10.622	28.814
		(1.38)	(0.76)	(2.07)

Notes:
1. EU:
The data refer to the EU in 1993. GDP equals 5.323 trillion ECU; the share of national income accruing to manual workers is 25.7%, that of non-manual workers 45.3%, and that of capital 29%. The income shares are assumed to remain unchanged during immigration. The elasticity of factor price for manual workers is -0.743, that for non-manual workers is -0.547. The elasticity of the wage of manual workers with respect to a change in non-manual workers is 0.257, that of non-manual workers with respect to a change in manual workers is 0.453. Furthermore, 60.3% of the native labour force is non-manual; 39.7% is manual. Figures within parentheses refer to the share of gains/losses from immigration in GDP of the EU in 1993.
Sources:
EUROSTAT (1993), Europäische Kommission (1994); ILO (1994), Statistisches Bundesamt (1993b, 1994).
2. UK:
The data refer to the UK in 1996. GDP equals 792.296 billion ECU; the share of national income accruing to unskilled workers is 6.8%, that of skilled workers 55.4%, and that of capital 37.8%. The income shares are assumed to remain unchanged during immigration. The elasticity of factor price for unskilled workers is -0.932, that for skilled workers is -0.446. The elasticity of the wage of skilled workers with respect to a change in unskilled workers is 0.068, that of unskilled workers with respect to a change in skilled workers is 0.554. Furthermore, 80% of the native labour force is skilled; 20% is unskilled. Figures within parentheses refer to the share of gains/losses from immigration in GDP of the UK in 1996.
Sources:
Labour Force Survey (Spring 1996), Government Statistical Service (1999).
Germany:
The data refer to Germany in 1996. GDP equals 1.391 trillion ECU; the share of national income accruing to unskilled workers is 14%, that of skilled workers 56%, and that of capital 30%. The income shares are assumed to remain unchanged during immigration. The elasticity of factor price for manual workers is -0.860, that for skilled workers is -0.440. The elasticity of the wage of skilled workers with respect to a change in unskilled workers is 0.140, that of unskilled workers with respect to a change in skilled workers is 0.560. Furthermore, 72.9% of the native labour force is skilled; 27.1% is unskilled. Figures within parentheses refer to the share of gains/losses from immigration in GDP of Germany in 1996.
Sources:
EUROSTAT (1999), Statistisches Bundesamt (1998), Sachverständigenrat (1998).

Figure 13:
Immigration gains of the natives according to production factors
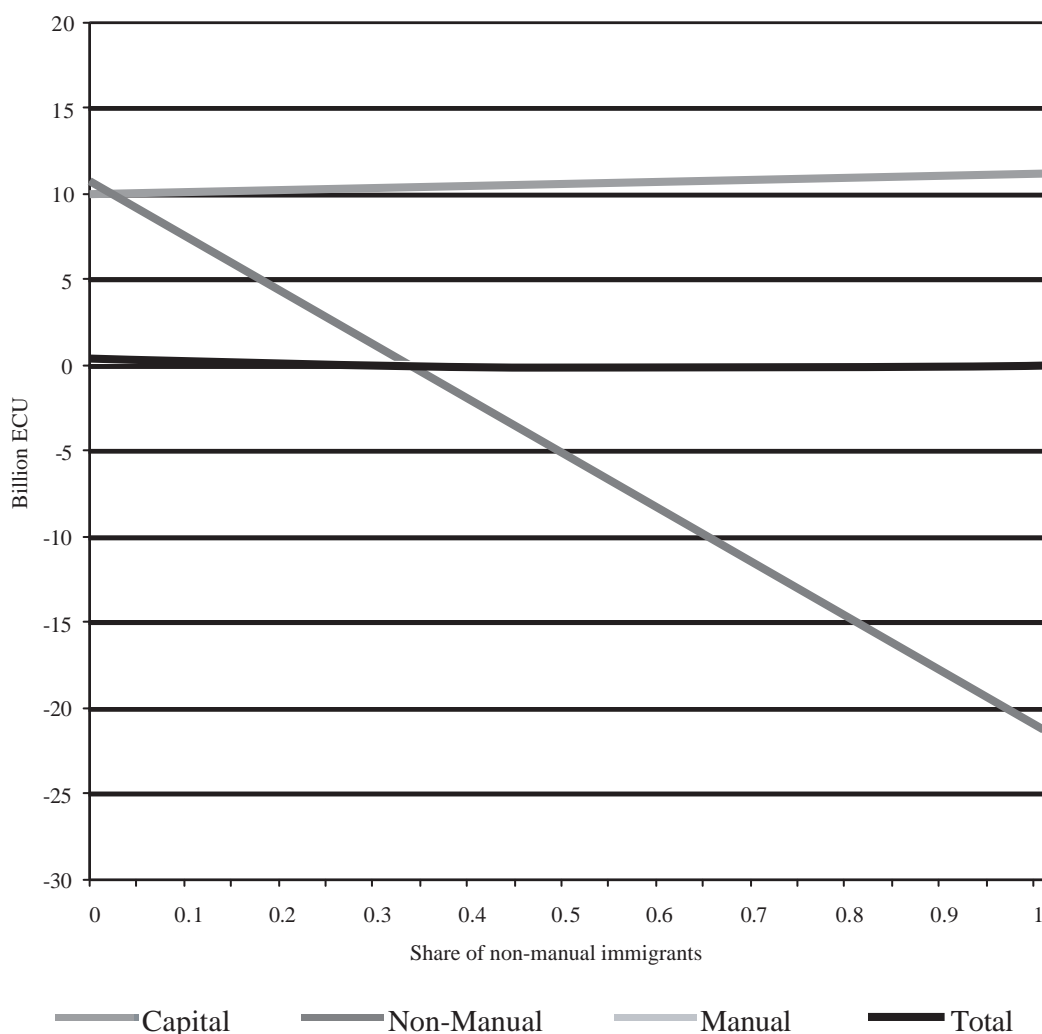
Table 12 also examines the change in calculated immigration gains, if unemployment of manual natives and the various union reactions to immigration are taken into consideration.[41] First, we consider a case in which 1% of the native work force immigrates in one year and all immigrants are manual workers. If the union lowers the wage of manual workers such that native unemployment remains constant, the immigration gain is the sum of areas A, B, and C in Figure 14 (scenario A II a in Table 12). The immigration benefits in this situation are the same as in the full employment model. Scenario A II b in Table 12 represents a situation in which the union keeps the wages of unskilled labour fixed and immigration leads to an equal increase in native unemployment. Hence, natives lose area D in Figure 14 or 34.461 billion ECU, if one considers the EU (calculated

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[41]   Appendix B gives the exact formulas for the calculations.

as w0 multiplied by the number of immigrants), which equals the income of the immigrants. In this case, UK natives lose 2.027 billion ECU (0.26% of the GDP), while German natives lose 8.975 billion ECU (0.65% of the GDP). In this extreme scenario, the total immigration gain is zero and the losses of natives are maximised. A more realistic scenario is a partial crowding-out of manual native workers. However, for the calculation of the gains and losses in such a scenario, further assumptions are necessary. As Bauer and Zimmermann (1997) show, the gains and losses in this scenario depend on the importance of manual employment in the objective function of the union. Calibrating the model for this intermediate scenario leads to gains and losses which are somewhere in-between the two extreme cases outlined above . Table 12 also examines the change in calculated immigration gains, if unemployment of manual natives and the various union reactions to immigration are taken into consideration. First, we consider a case in which 1% of the native work force immigrates in one year and all immigrants are manual workers. If the union lowers the wage of manual workers such that native unemployment remains constant, the immigration gain is the sum of areas A, B, and C in Figure 14 (scenario A II a in Table 12). The immigration benefits in this situation are the same as in the full employment model. Scenario A II b in Table 12 represents a situation in which the union keeps the wages of unskilled labour fixed and immigration leads to an equal increase in native unemployment. Hence, natives lose area D in Figure 14 or 34.461 billion ECU, if one considers the EU (calculated as w0 multiplied by the number of immigrants), which equals the income of the immigrants. In this case, UK natives lose 2.027 billion ECU (0.26% of the GDP), while German natives lose 8.975 billion ECU (0.65% of the GDP). In this extreme scenario, the total immigration gain is zero and the losses of natives are maximised. A more realistic scenario is a partial crowding-out of manual native workers. However, for the calculation of the gains and losses in such a scenario, further assumptions are necessary. As Bauer and Zimmermann (1997) show, the gains and losses in this scenario depend on the importance of manual employment in the objective function of the union. Calibrating the model for this intermediate scenario leads to gains and losses which are somewhere in-between the two extreme cases outlined above .

If only skilled immigration is considered, the union also has several possibilities to react to the resulting increased demand for unskilled workers. One extreme reaction is described by Scenario B II, where the union increases the wage in such a way that native unemployment remains constant. Figure 14 reveals that, in this case, the gains of the natives remain the same as in the full employment model (sum of area E and F). The other extreme case (scenario B II b in Table 12) is caused by a wage reduction,

resulting in zero unemployment. In this case, the natives´ gains from immigration are calculated as the sum of the immigration gain, if only skilled persons immigrate (areas E and F in Figure 14) plus the total immigration gain, if only unskilled immigration, equal to the number of unemployed natives, occurs (areas G and H in Figure 14). This case, which describes the maximum benefit from immigration for natives and in total, is estimated to result in a total immigration gain for the EU of 406.720 billion ECU (7.6% of the GDP) of which 367.092 billion ECU (6.90% of the GDP) is received by natives. In the UK the total gain would be 9.661 billion ECU (1.22% of the GDP) of which 4.205 billion ECU (0.53% of the GDP) would be received by natives. The respective numbers for Germany are 28.814 billion ECU (2.07% of GDP) for the total gain and 19.192 billion ECU (1.38% of the GDP) as gain for natives.

Due to various reasons, the losses from immigration calculated above could be seen as an upper bound and the gains as a lower bound. First, the calculations neglect the taxes and social security contributions paid by immigrants.[42] In general, immigrants are relatively young in comparison to the native population. It could, therefore, be expected that tax and social security contributions would increase the gains of natives.[43] Second, the above calculations neglect the indirect labour market effects, which result from an increased labour demand due to the consumption of immigrants. As we have outlined in section 3.1 of this report (see also Figure 10), these indirect labour market effects increase the gains that natives can expect from immigration.

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[42]   In Germany´s case, Bauer and Zimmermann (1997) show that these tax and social security contributions can be quite substantial.

[43]   See Riphahn (1998) for an analysis of immigrant participation in social assistance programs in Germany.

Figure 14:
Calculating the labour market effects of immigration: disequilibrium model

A. Immigration of unskilled worker

(a) Skilled workers

Wages

Y_1

Y_0

A

a

c

b

S   Employment

(b) Unskilled workers

Wages

Immigration

w_0

w_1

C

D   B

$\overline{L}$ $\overline{L}_1$ Employment

B. Immigration of skilled worker

(c) Skilled workers

Wages

Immigration

Y_0

Y_2

Y_1

d

a   E

c

b

I

S_0 S_1 Employment

(d) Unskilled workers

Wages

w_1

w_0

w_2

F

G

$\overline{L}_1$ $\overline{L}$ Employ

73
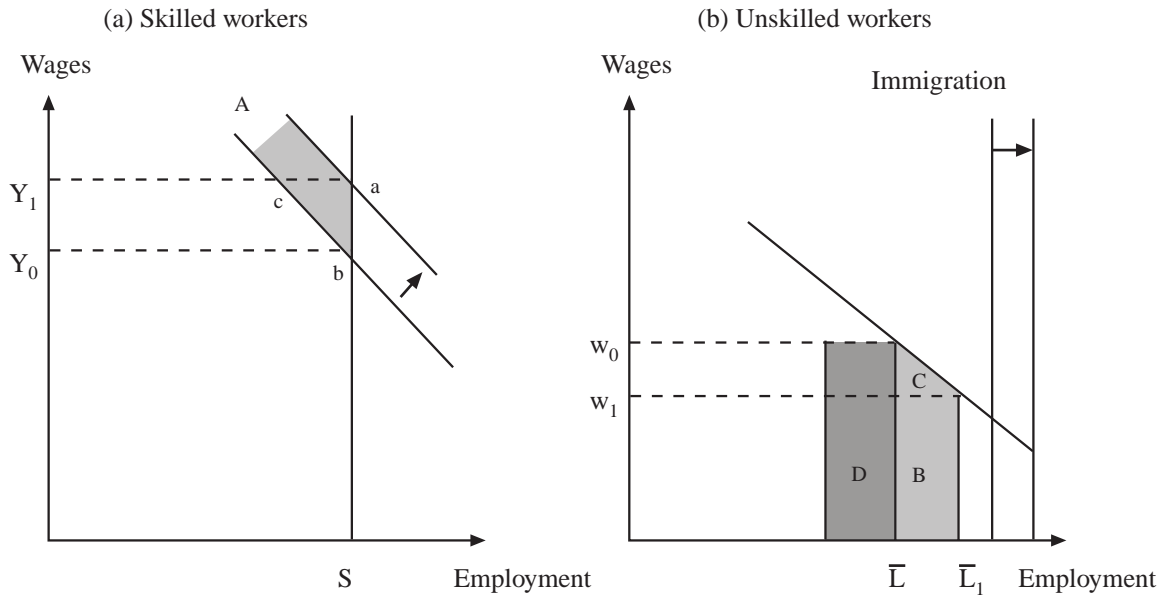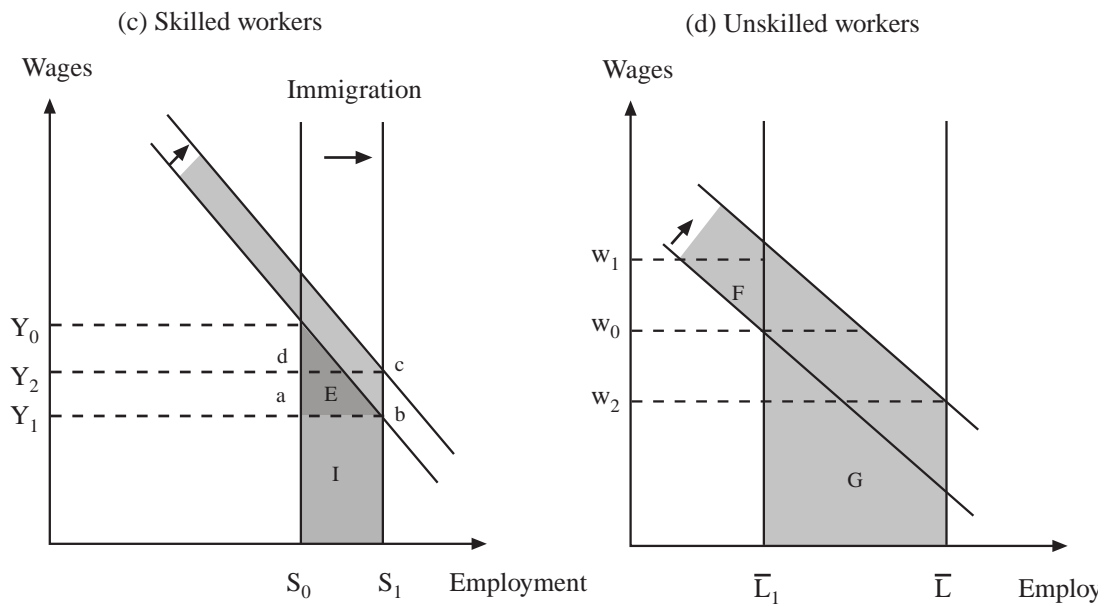
3.4. Summary

In this section we analysed the potential labour market effects of future East-West migration. From economic theory it is not clear whether natives of the receiving countries, on the whole, benefit or suffer from the immigration of workers. It is clear, however, that those natives who are in direct competition with the migrants in the labour market will suffer through lower wages and/or lower employment prospects, whereas those natives who are complements to the migrants will benefit from additional immigration. The owners of capital will always gain through immigration. Most existing empirical studies on the wage and employment effects of immigration find only negligible effects. Assuming a yearly immigration of 200,000 people from Eastern Europe, the wages of EU-natives will decrease in the first year after a potential enlargement at most by 0.81% of the current wage levels. Empirical studies on employment effects indicate that a similar immigration flow will result in an increase of EU unemployment in the first year after a potential enlargement by approximately 0.54 percentage points. In both cases these numbers represent an upper bound.

Simulating an economic model of the labour market effects of immigration after a potential enlargement, based on data for the EU, the UK, and Germany, show that, in the worst case scenario, immigration of unskilled workers of 1% of the current EU population in one year would imply losses of about 34 billion ECU or about 0.7% of the EU GDP in 1993. For the UK this number is simulated to reach 2 billion ECU (0.26% of the UK GDP in 1996); for Germany, the maximum loss is simulated to reach about 9 billion ECU (0.65% of the German GDP in 1996). It is further simulated that the EU on the whole as well as the UK and Germany will benefit from the immigration of skilled workers. The simulation further reveals that immigration always has substantial effects on income distribution.

4. POLICY IMPLICATIONS

4.1. The need for a common EU immigration policy

The need for a common EU migration policy is connected with the characteristics of a common European market, since the abolition of interior borders results in a dependency of each member state on the immigration policy of the other states. Once a foreigner enters EU-territory, the further migration of this person can no longer be controlled. As a result of free labour and product markets within the EU, individual member countries are unable to follow independent migration policies without potentially harming other members. Therefore, the EU should consider a unified migration policy.[44] An unified immigration policy is, however, just in the infancy stages. Since 1988, the EU's migration policy is marked by two different developments. First, since the original Treaty of Rome in 1957, internal migration within the EU has been steadily liberalised, concluding in Article 8a of the Single European Act. This Act requires the achievement of the free movement of people, capital, goods, and services by 1 January, 1993, implying the abolishment of controls on the interior borders of the EU.

Second, with respect to immigration from outside the EU, there have been increasing efforts to establish a unified and more restrictive policy. A development towards a joint EU migration policy started with the Schengen Accords of June 1985 (Schengen I), 19 June, 1990 (Schengen II), and the accord of Dublin on 15 June, 1990, continuing with the Maastricht Treaty of 1992. The main objectives of these initiatives are as follows: to eliminate internal border checks, to establish consistent and tighter external border controls, a unified visa policy, and the co-ordination of different national asylum policies. For the time being, the final step can be seen in the Treaties of Amsterdam in 1997. Concerning migration policy, Article 63 of this treaty declares closer co-operation in the fight against illegal migrants, the elaboration of joint norms regarding the acceptance of asylum seekers, the prerequisites for immigration and residence of immigrants from countries outside the EU, and the rights and conditions under which immigrants of one EU member country can reside in another member country. The Amsterdam Treaty explicitly states that there is no specific time schedule for the resolutions regarding these measures for a joint migration policy.

In general, there are two options for the migration policy of the current EU member countries towards the potential future members in Central and

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[44] A general analysis of migration policy issues is given by Straubhaar and Zimmermann (1993) and Zimmermann (1994). See Zimmermann (1994, 1995a, 1995b) for a comprehensive discussion of the immigration policies of the EU and its single members.

Eastern Europe. First, a laissez-faire system in which the migration of labour from the new member countries to the old member countries is unrestricted. According to Article 8a of the Single European Act, this policy seems to be unavoidable in the long-run. Second, the current EU member countries could decide to restrict free labour mobility from the East to the West temporarily, as was the case when Spain and Portugal became members of the EU. In the following section, we discuss the advantages and disadvantages of both strategies.

What are the options for a unified EU immigration policy? It is sometimes argued that free trade and free capital mobility could replace free labour mobility. A substantial part of the goods and services produced are nontradeable, however. In addition, competition from imports produced by cheap labour abroad may crowd out native workers and result in the loss of market sectors by the importing country. Foreign investment may have similar effects, and those, too, may be lasting. A further argument is that immigration pressure arising from differences in economic development could be best moderated by rapid economic growth in the countries of emigration. The implication here is that the current EU member countries could mitigate immigration from Central and Eastern Europe by larger transfers to these countries. The available evidence from developing countries suggests, however, that a faster rate of development destabilises the economic system at first and then creates new incentives for out-migration, at least in the short-run.

4.2. Options for a unified EU migration policy towards Central and Eastern European countries

Article 8a of the Single European Act requires free mobility of people, goods, and services. After a possible enlargement of the EU towards Central and Eastern European countries, these rights cannot be restricted for these countries in the long-run. However, as was the case when Spain and Portugal became members of the EU, it might be possible to restrict the free mobility of labour from the new to the old member countries during an adjustment period. If the membership of the Central and Eastern European countries is connected to a temporary restriction of migration, the question arises whether the current EU member countries should establish a selective immigration policy towards the East, and how such a selective policy should be organised. In the following section we discuss the advantages and disadvantages of both migration policy options, i.e. a laissez-faire system and a temporary and selective immigration policy.

4.2.1. Free labour mobility

Cost benefit considerations are at the centre of the economic analysis of immigration. In principle, a country should allow immigration, if the marginal productivity of the immigrants for the receiving country is higher than their marginal costs of integration. In a scenario of free labour mobility after a possible enlargement of the EU, the labour market would decide to what extent people immigrate. The free market would determine size and composition of the immigration flows. Employment possibilities and (real) wage reactions in the labour market alone would limit the demand for foreign labour, and, consequently, the attractiveness of immigration.

The discussion of the theoretical models in section 3.1. of this report has shown that the higher the ability to substitute foreign for domestic workers, the more severe the threat from immigration becomes. Difficulties tend to arise when an increase in immigration causes a decline in the wages of the domestic labour force or, if their wages are inflexible, an increase in domestic unemployment. Immigrants, however, often complement native workers in production, thereby increasing their productivity and their wages. Foreigners also create the ability to provide different products in the service sector. Furthermore, immigrants create demands for goods and services produced by natives and, thus, have multiplier effects. Section 3.2 of this report has shown that most empirical studies on the labour market effects of immigration find only negligible negative wage and employment effects of immigration, and they often confirm that immigration is mostly beneficial for the receiving countries.

Most of the studies in section 3 of this report, however, neglect the cost side of immigration. The benefits of migration can only be reaped, if the resulting adjustment costs are kept under control. Immigrants use public goods and, therefore, might have adverse effects on the consumption possibilities of public goods for natives. Immigrants have to adjust to the rules and habits of the receiving country's society; this adjustment process could be very costly. Finally, the theoretical models in section 3.1. and the simulations in section 3.3. of this report have shown that immigration may have large effects on the distribution of income. This redistribution of income, itself, may cause social frictions which have to be taken into consideration in the cost-benefit analysis of immigration. In principle, countries that expect substantial immigration costs can offset them by imposing entrance fees and migration taxes. Such entrance fees and migration taxes can also be used to control and smooth immigration flows. However, due to the requirements defined in Article 8a of the Single European Act such fees and taxes may not be applicable for intra-EU migration and, therefore, in the case of a possible enlargement of the EU, could only be used in the short-run.

4.2.2. Temporary selective migration policy

In a system of free labour mobility, the receiving country cannot control the composition of immigration. The discussion in section 3 of this report has shown that even though immigration from the Central and Eastern European countries is expected to have, at most, small negative effects on native workers, there is a high potential for large effects on the income distribution, possibly causing social frictions in the native population. The theoretical and empirical analysis in the last section has also shown that immigration could have positive effects on the wages and employment of native workers, if the receiving country could select those immigrants who are complements to domestic workers. Such a selective immigration policy could prevent income inequality from rising. Furthermore, given the need to survive in highly competitive international markets with highly innovative activity, industrialised countries may be tempted to consider a selective immigration policy, in order to attract workers with high qualifications needed in their industries. So far this has not been the case in Europe. Employment of foreigners in the EU is relatively weak in export-oriented, research-intensive industries. Foreigners are more attracted to industries that face strong import competition and employ lower qualified workers [45]. It must be stressed that a selective immigration policy towards potential new EU members could only be a temporary option for a strictly limited period of time. As in the case of entrance fees and migration taxes, a selective immigration policy is not in line with Article 8a of the Single European Act and, therefore, could be only imposed for an adjustment period such as in the case of the membership procedure of Spain and Portugal.

The discussion in section 3 of this report indicates that a selective EU immigration policy towards new members should restrict the immigration of unskilled workers and promote the immigration of skilled workers. This policy would lead to an increased supply of skilled workers, lowering the wages for this type of worker and decreasing the excess demand for skilled workers. If unskilled and skilled workers complement each other, the increased employment of skilled workers would increase the demand for unskilled workers, increasing the wages of the latter, or, in more rigid labour markets, decreasing their unemployment.

Two main questions remain with regard to a selective immigration policy. The first question is whether the receiving country should allow permanent or only temporary migration. Permanent migration normally implies that selected high-skill workers will immigrate together with their family. However, empirical evidence suggests that the family members may end up

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[45] See Straubhaar and Zimmermann (1993) and Zimmermann (1995a, 1995b) for a discussion of the composition of immigrants in Europe.

as unskilled workers, resulting in similar problems as an unregulated immigration regime. This problem could be avoided by allowing only temporary migration, since a government could then restrict the immigration of family members more easily.

Second, how should a selective migration policy be organised? In general, there are several possibilities.[46] The first possibility would be to adapt a point system, similar to those in Canada, Australia, and, more recently, in Switzerland.[47] Borjas (1991) shows that from 1960 to 1980 the Canadian point system was more successful in selecting better qualified workers, i.e. more immigrants from Europe, than the USA. The main deficiencies of this type of policy are:

(i) the existing management techniques of a point system are not able to address unexpected events, like recessions;

(ii) the time lag between collecting and analysing labour market data on occupational shortages and the actual landing of immigrants could lead to the selection of the wrong migrants;

(iii) there are no reliable empirical techniques to identify shortages in particular occupations;
and

(iv) it is difficult to control the immigration of close relatives of previous immigrants.

Furthermore, the costs of implementing a point system and the administrative expenses are relatively high when compared to other policy options. Since a selective immigration policy towards new EU members could be only temporary, these costs are probably too high to justify a point system.

An alternative policy option would be to follow the immigration policy of Germany and Austria towards the East, described extensively in section 2.1. of this report, by signing bilateral agreements with the new EU member countries which regulate temporary migration under different programs. Such a policy would have several advantages. First, compared to a point system, the implementation and administrative expenses are relatively low. Second, by carefully defining the programs, it could be guaranteed that mostly skilled workers would temporarily migrate to the current EU member countries. Third, the quotas defined in such bilateral agreement could be flexibly defined, as in the case of Germany, and be adapted to the respective labour market situation in the EU. This policy, however, also suffers from the deficiencies (i)-(iii) mentioned above for the point system.

The third possibility is to auction the right to immigrate to potential

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[46]   See Bauer (1998) and Bauer and Zimmermann (1999) for a detailed discussion.

[47]   See Bauer (1998), Rivera-Batiz, Sechzer, and Gang (1991), Borjas (1991), Abowd and Freeman (1991), and Weber (1987) for a discussion of the migration policy in the U.S., Canada, and Australia.

migrants or native firms. To economists, this idea is quite appealing, for an auction selects migrants according to their ability and willingness to pay. This selection mechanism would efficiently identify those migrants who have a large capacity to produce goods of high economic value while working in the receiving country. While a point system also discriminates among migrants by their economic value, auctions will, in addition, self-select those persons who have the best chance to be economically successful. In general, this holds true, irrespective of whether the immigration visas are auctioned to potential migrants or to native firms.

Bauer and Zimmermann (1999) have shown that, in the case of temporary migration, the most efficient immigration policy, in terms of selecting those immigrants who are of the highest economic value for the receiving country, is an auction of immigration visas to native firms. In such an auction, the EU would announce a quota for the total number of entry permissions from the new EU member countries every year. The immigration visas are only temporary. In this auction, such temporary immigration visas are given to those native firms who are willing to pay the highest price for the visas. The firms then select what type of migrants they, themselves, will employ. If the firms are required to pay migrants the same wage as they would pay a domestic worker, this system guarantees that the firms will employ foreigners only for occupations and tasks, for which they can not find domestic workers.

The main advantage of the auction system is that it does not suffer from the deficiencies of the point system and the bilateral agreements. Compared to other options of a selective immigration policy, the auction system is relatively inexpensive, and the costs pay their way through the receipts of the auction. If the receipts are higher than the costs, the surplus might be used to compensate those domestic workers who potentially suffer from immigration.

4.3. Summary

To summarise, the discussion in this section has shown that the EU has several options regarding migration policy towards the East only in the short-run, since, according to Article 8a of the Single European Act, a system of free mobility seems to be unavoidable. However, as in the past, migration restrictions could be implemented in the short-run. The analysis in section 3 of this report has shown that, in such a restricted migration regime, the EU should opt for a selective migration policy in order to avoid potential burdens for their native population. The discussion of different selective immigration

policies has shown that an auction system is superior to all other policy options. In the case of a potential EU enlargement, bilateral agreements regulating the temporary immigration from the new member countries are the second-best option.

5. CONCLUSION

This report has studied different perspectives and labour market implications of East-West migration following a possible enlargement of the EU towards Central and Eastern European countries. Western Europe, especially Germany, has seen a significant inflow of migrants in the last few decades. The analysis of the economic and demographic situation in the EU and the countries applying for membership indicates that further migration is largely unavoidable. Relying on the phenomenon of network migration, most of the migration pressure is expected to be directed to countries such as Germany and Austria. As a rule of thumb, it can be expected that about 2-3% of the population of the countries seeking EU membership will migrate within the next 10-15 years. This would imply an immigration flow of about 3 million people or 0.81% of the EU population in 1995. In other words, after a possible enlargement, the current EU countries should expect about 200,000 migrants or 0.05% of the EU population per year. Given that yearly immigration to Germany in the last decade has always been around 1%, this number seems to be negligible.

The issue, however, is whether immigration in the face of unemployment automatically causes problems for the labour market of the receiving countries. The conclusion of our analysis here is that this is not the case. Using the results of existing empirical studies on the labour market effects of immigration, a yearly inflow of 200,000 migrants will decrease the wages of the workers in the current EU member countries at most by 0.81% in current wage levels in the first year or by approximately 74 ECU. This effect decreases in subsequent years. Regarding unemployment, the results of existing empirical studies imply that a similar immigration flow will result in an increase of the EU unemployment in the first year after a potential enlargement by about 0.54 percentage points. Note that both the wage effect and the employment effect represent an upper bound. Simulating an economic model of the labour market effects of immigration after a potential enlargement based on data for the EU shows that, in the worst case scenario, immigration of 1% of the EU population in one year would imply income losses for the EU member countries of about 34.461 billion ECU or about 0.7% of the EU GDP in 1993. This case would take place in a scenario of rigid wages and the immigration of exclusively unskilled workers. In a scenario, in which mainly skilled workers immigrate, one could even expect gains from immigration. A 1% increase of the EU labour force in one year due to the immigration of skilled workers can be expected to increase the income of natives by about 367.092 billion ECU or about 6.9% of EU GDP in 1993. Simulations also show that immigration always has large effects on the income distribution in the receiving country.

Only in the long-run does the EU have several options regarding migration policy towards its potential new members. With regard to Article 8a of the Single European Act, a laissez-faire system of unrestricted labour mobility between the old and the new member countries seems to be unavoidable. However, as in the case when Spain and Portugal became members of the EU, a temporary migration restriction for countries seeking EU membership may be a realistic option. Even in this case, skilled immigration seems to be a valuable option. If unskilled and skilled workers are complements in production, substantial gains may be reaped through the improvement of the employment possibilities of unskilled native workers. This result, combined with the current excess supply of qualified workers in Eastern Europe and the need for further improvements in their own human capital in the process of transformation, suggests that a temporary, selective immigration policy towards the new member countries should be taken into consideration. There are several possibilities to organise such a selective immigration policy. A discussion of the options reveals that a point system such as that used in Canada or Australia is impracticable. From an economic point of view, an auction system, in which temporary immigration visas are auctioned to native firms, is superior to all other policy options. An alternative could be a selective temporary immigration policy based on bilateral agreements as executed currently by the German government.

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APPENDIX A

Survey
"Assessment of possible migration pressure following EU enlargement to Central and Eastern Europe"

We are undertaking this survey in order to collect the opinions and assessment of scientists regarding the effects of a more liberal migration policy by the current EU member countries to the potential future EU-member countries on future migration flows to Western EU countries. We would be very grateful if you could answer the following questions. The survey should not take more than 5 minutes to complete. We guarantee every participant of the survey that the responses are kept confidential and are used for scientific purposes only.

The European Union has now opened negotiations at the ministerial levels with six countries seeking membership, namely the Czech Republic, Poland, Estonia, Hungary, Slovenia, and Cyprus. Others are in line, including Latvia, Lithuania, Slovakia, Romania, Bulgaria, and Turkey. A major problem with enlargement to the East is the expected labour market consequences.

In the short-run, the issue is dominated by the problem of economic transition to a market economy in Eastern and Central Europe and by large income and unemployment differentials to the West. It is unclear to what extent these differences would cause out-migration in a more liberal setting. Even today there are both substantial illegal immigration and legal temporary labour immigration. Previous experience with intra Western European migration suggests that labour mobility is rather slow in adjusting wage and unemployment differentials. In the long-run, Western European societies are ageing considerably, and, hence, may seek additional workers to support their pension systems.

In answering the following questions, assume that immediately after the membership there will be free labour mobility. All questions refer to a period of 10 years after the date of membership.

A) The potential size of migration flows

1.) How would you assess the potential migration flows from your country to the Western EU-member countries in the 10 year following a possible EU enlargement and under a regime of free labour mobility?

Total number (in 100.000):
As a percentage of the current population of your country:
1 %:
2 %:
3 %:
4 %:
5 %:
5-10%:
more than 10%:

2.)   Could you please rank your assessment of the three most important receiving countries (in descending order, i.e. 1 = most important, 2 = second most important, 3 = third most important):
Austria:
Belgium:
Germany:
Denmark:
France:
Finland:
Great Britain:
Greece:
Ireland:
Italy:
Luxembourg:
Netherlands:
Portugal:
Spain:
Sweden:

B)   The structure of the expected migration flow:

3.)   Do you think that most of the expected migration flows will be permanent?
Yes: No:

Please give us your opinion on the share of permanent migrants to the expected total migration flow as well:
permanent migrants as a % of total migration flow:

4.) Do you think that the migrants would be mostly labour migrants?
Yes: No:

Please give us your opinion on the share of labour migrants the expected total migration flow as well:
Permanent migrants as a % of total migration flow:

5.) Do you think that most of the migrants will be skilled, i.e. will at least have finished secondary schooling?
Yes: No:

Please give us your opinion on the share of skilled migrants the expected total migration flow as well:
Skilled migrants as a % of total migration flow:

6.) What do you think are the most important reasons for people in Central and Eastern European countries to migrate to the West. Please rank the following reasons in descending order (1=most important, 6=least important):

- They could earn more money:
- They have a higher probability of finding a job:
- Lower accident rates at work:
- A better social security system:
- A more stable political situation:
- Existing networks of former migrants:

C) Please give us the following information, as well:.

- What is your nationality:

Thank you very much for your co-operation.

Table A.1.: IZA survey on potential migration flows from the East to the West

			Observations
Potential Migration Flows	Total (in 100.000)	1.884 (1.507)	16
	% of population of sending country	2.650 (2.059)	20
Receiving Countries:			
Most important receiving country	Austria	5%	18
	Germany	85%	
Second most important receiving country	Austria	60%	18
	Germany	5%	
	France	5%	
	UK	20%	
Third most important receiving country	France	10%	18
	UK	30%	
	Italy	25%	
	Netherlands	5%	
	Sweden	20%	
Structure of Expected Migration Flow:			
Expected migration flow is mostly permanent	"YES"	15%	20
	Share of permanent migrants (in % of total flow)	37%	19
Mostly Labour migrants	"YES"	70%	18
	Share of labour migrants: (% of total flow)	62%	17
Mostly Skilled migrants	"YES"	85%	20
	Share of skilled migrants: (% of total flow)	65%	19
Reasons to migrate (Mean of the rank 1-6):	• Earn more money	1.050 (0.220)	20
	• Find a job	2.800 (1.150)	20
	• Social security system	3.000 (1.150)	19
	• Networks	4.420 (1.26)	19
	• Political stability	4.440 (1.250)	18
	• Workplace security	5.280 (0.890)	18
Nation of respondent:	Czech Republic	45%	20
	Estonia	5%	
	Latvia	10%	
	Lithuania	5%	
	Romania	10%	
	Slovakia	15%	
	Slovenia	10%	

Source: Own calculations.

Appendix B

Estimation Results for the Simulation in Section 2.3.4.

As explained Section 2.3.4., we simulate the migration potential from East European countries to the EU using the migration experience from Greece, Spain, and Portugal to the EU member countries for the period from 1985 to 1997. The data used for the estimation is drawn from the statistical annex of Europäische Kommission (various issues): *Europäische Wirtschaft*, and from EUROSTAT (various issues): *Wanderungsstatistik*. The data set is available on request. Since data is not available for all years and for all receiving countries, a final panel data set of 323 observations is available for estimation.

Following the empirical literature on migration (see Section 2.2.2) we estimated the following log-linear equation using a fixed effects estimator:

$$\ln\left(\frac{\text{Emigration}_{srt}}{\text{Population}_{st-1}}\right) = \beta_0 D_s + \beta_1 \ln\left(\frac{\text{Unemployment Rate}_{st-1}}{\text{Unemployment Rate}_{rt-1}}\right) + \beta_2 \ln\left(\frac{\text{Real GDP}_{st-1}}{\text{Real GDP}_{rt-1}}\right) + \varepsilon_{srt},$$

where s refers to the sending country (i.e. Greece, Spain, and Portugal), r to the respective receiving country (i.e. the other EU countries), and t refers to the year. D_s refer to dummy variables indicating the respective sending countries (i.e. Greece, Spain, and Portugal). The equation has been estimated for the entire time period from 1985 to 1997, the sub-period during which mobility between the three sending countries and the other EU countries was restricted (Greece: 1985-1987; Spain and Portugal: 1985-1991), and the sub-period during which free mobility between the sending countries and the other receiving countries was allowed (Greece: 1989-1997; Spain, Portugal: 1992-1997).

The following Table shows the estimations results:

Table A.2.: Estimation results

Variable	Total	Time Period: Restricted Mobility	Free Mobility
Relative Unemployment Rate	-1.263	-1.676	0.500
(β_1)	(4.55)	(4.28)	(1.26)
Relative Real GDP (β_2)	-4.648	-3.864	-6.118
	(7.22)	(4.22)	(6.70)
Adjusted R^2	0.16	0.16	0.21
χ_1	60.66	30.00	44.14
χ_2	51.06	23.01	41.46
χ_3	10.67	7.87	4.96

Absolute t-values are reported in parentheses. With the exception of the coefficient on relative unemployment in the sub-period of free mobility, all coefficients are statistically significant at least at a 1% level. c1 shows the Likelihood-Ratio-Test statistic of a test of the model with fixed effects against a model which includes the constant term only. χ_1 shows the Likelihood-Ratio-Test statistic of a test of the model with fixed effects against a model which includes only the fixed effects. χ_3 show the Likelihood-Ratio-Test statistic of a test of the model with fixed effects against a model which includes only two control variables (i.e. the relative unemployment rate and relative real GDP). In most cases these tests favour the estimated model at least at a 1% level. For the equation in the sub-period of free mobility, χ_3 is only significant at a 10% level.

APPENDIX C

A theoretical model of the labour market effects of immigration

The model assumes an economy which produces a single output according to a constant-returns-to-scale production function with capital, skilled labour S, and unskilled labour L. The output price is considered to be pre-determined; both types of labour are q-complements (the standard case). Natives supply input factors at fixed levels. The level of immigration M is fixed by governmental rules. In order to simplify the analysis, it is assumed that immigrants do not carry any capital with them and have no effect on the demand-side of the economy. Two polar cases are considered: migrants are either perfect substitutes to the unskilled workers or to the skilled workers.

A monopoly union sets the wage w on the market for unskilled labour and employers then choose the level of employment in this market. Competitive forces determine the wage v for skilled workers. Nevertheless, the union cares for them. Employed unskilled natives are $N = \alpha L$, where $\alpha = \bar{N}/(\bar{N}+\bar{M})$, and $M = (1 - \alpha)L$. The objective function of the union is given by:

(A1) $\max_w \Omega = vS + wN^\beta, \, 0 < \beta < 1,$

where $\bar{S}$ and $\bar{N}$ are the fixed levels of skilled and unskilled natives, β is a weight for the employment of unskilled workers.

Profit maximisation of the firm implies that real wages are equal to marginal productivity. Suppressing the equation for capital, it follows:

(A2) $v = (\bar{S}, L)$
(A3) $L = L(w, \bar{S}).$

S is predetermined to the model, w is predetermined by the monopoly union, and v is fixed by a competitive market. v_s, $L_w < 0$ and v_L, $L_s > 0$. Second derivatives are assumed to be zero so that (A2) and (A3) are linear.

The union's problem is to maximise Ω with respect to w. Hence, the first-order condition implies

(A4) $\quad \dfrac{\partial L}{\partial w}\left[\dfrac{\partial v}{\partial L}\bar{S} + w\alpha^{\beta}(\beta-1)L^{\beta-1}\right] + (L + w\dfrac{\partial L}{\partial w})\alpha^{\beta}L^{\beta-1} = 0.$

Considering the situation before immigration ($\alpha = 1$), (A4) could be expressed as:

(A5) $\quad \eta_{Lw}\in_{vL}\bar{S} + wL^{\beta}(1+\beta\eta_{Lw}) = 0,$

where $\eta_{Lw} = \dfrac{\partial L}{\partial w}\dfrac{w}{L}$ and $\in_{vL} = \dfrac{\partial v}{\partial L}\dfrac{L}{v}$. Optimality requires

(A6) $\quad 1+\beta\eta_{Lw} > 0.$

At first we want to assume unskilled immigration, which affects (A5) by a variation of α. Comparative statics lead to:

(A7) $\quad \dfrac{\hat{w}}{\hat{\alpha}} = \dfrac{-(1+\beta\eta_{Lw})}{\eta_{Lw}[2-\eta_{Lw}(1-\beta)]} > 0,$

$\hat{w} = dw/w$ and $\hat{\alpha} = d\alpha/\alpha$. From $\dfrac{\partial\alpha}{\partial M} = -\dfrac{1}{N}$ (for $\overline{M}\_0$) and $\hat{M} = \dfrac{M}{N}$ (with ∂M_M

follows:

(A7') $\quad \dfrac{\hat{w}}{\hat{M}} = \dfrac{(1+\beta\eta_{Lw})}{\eta_{Lw}[2-\eta_{Lw}(1-\beta)]} < 0.$

One also obtains:

(A8) $\quad \dfrac{\hat{N}}{\hat{M}} = \dfrac{-(1-\eta_{Lw})}{2-\eta_{Lw}(1-\beta)} < 0.$

Skilled immigration can be modelled by a variation of $\bar{S}$. Hence:

(A9) $\quad \dfrac{\hat{w}}{\hat{\bar{S}}} = \dfrac{(1+\beta\eta_{Lw})-\beta\eta_{LS}+(1-\beta)\beta\eta_{LS}\eta_{Lw}}{\beta\eta_{Lw}[2-\eta_{Lw}(1-\beta)]}$

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$$\eta_{LS} \;=\; \frac{\partial L}{\partial \bar{S}}\,\frac{\bar{S}}{L}.$$

In general, equation (A9) may take any sign. Reasonable sizes of the elasticities, however, imply:

$$(A10) \quad \eta_{Lw} \;>\; \frac{\beta\eta_{LS} - 1}{\beta[1 + (1-\beta)\eta_{LS}]} \;,$$

so that $\hat{w}/\hat{\bar{S}} < 0$ in equation (A9).

Straightforward derivations lead to:

$$(A11) \quad \frac{\hat{N}}{\hat{\bar{S}}} \;=\; \frac{1 + \beta\,\eta_{Lw} + \beta\,\eta_{LS}}{\beta[2 - \eta_{Lw}(1-\beta)]} \;>\; 0.$$

The sign of (A11) follows directly from the optimality condition (A6).

APPENDIX D

Calculating the gains from migration

To calculate the gain from immigration in the equilibrium framework, we closely follow the work of Borjas (1995). We assume a concave and linear homogeneous production function:

(B1) $Y = f(K, S, L) = f(K, \rho N + \lambda M, (1-\rho)N + (1-\lambda)M)$,

where Y refers to the output, K to Capital, S to skilled workers, L to un-skilled workers, and M to the immigrants. ρ and λ give the fraction of skilled workers among natives and immigrants, respectively. If the wage of each production factor is determined by the respective marginal productivity, the increase in national income through immigration accruing to the natives is:

(B2) $\Delta Y_N = \left(K \dfrac{\partial r}{\partial M} + \rho N \dfrac{\partial v}{\partial M} + (1-\rho) N \dfrac{\partial w}{\partial M} \right) M$

Defining $\varepsilon_{ij} = \partial \log q_i / \partial \log X_j$ as elasticity of factor price, using the restriction that $\sum_j \varepsilon_{ij} = 0$ (Hamermesh (1993, p.37) and converting equation (B2) in percentage terms one obtains (see Borjas (1995):

(B3) $\dfrac{\Delta Y_N}{Y} = - \dfrac{y_S \varepsilon_{SS} \lambda^2 m^2}{2 \, t_S^2} - \dfrac{y_L \varepsilon_{LL} (1-\lambda)^2 m^2}{2 \, t_L^2} - \dfrac{y_S \varepsilon_{SL} \lambda (1-\lambda) m^2}{2 \, t_S t_L}$

$- \dfrac{y_L \varepsilon_{LS} \lambda (1-\lambda) m^2}{2 \, t_S t_L}$,

where y_s and y_L are the shares of national incomes accruing to skilled and unskilled workers, m is the fraction of immigrants to the total labour force, and t_S and t_L are the shares of the work force that are skilled and unskilled, respectively.

If only skilled ($\lambda = 1$) or unskilled ($\lambda = 0$) immigration is considered, (B3) is reduced to:

$$\text{(B3)} \quad \frac{\Delta Y_N}{Y} = - \frac{y_S \, \varepsilon_{SS} \, \lambda^2 \, m^2}{2 \, t_S{}^2} - \frac{y_L \, \varepsilon_{LL} (1-\lambda)^2 \, m^2}{2 \, t_L{}^2} - \frac{y_S \, \varepsilon_{SL} \, \lambda (1-\lambda) \, m^2}{2 \, t_S t_L}$$

$$- \frac{y_L \, \varepsilon_{LS} \, \lambda (1-\lambda) \, m^2}{2 \, t_S t_L},$$

where y_s and y_L are the shares of national incomes accruing to skilled and unskilled workers, m is the fraction of immigrants to the total labour force, and t_S and t_L are the shares of the work force that are skilled and unskilled, respectively.

If only skilled ($\lambda = 1$) or unskilled ($\lambda = 0$) immigration is considered, (B3) is reduced to:

$$\text{(B4)} \quad \frac{\Delta Y_N}{Y} = - \frac{y_S \, \varepsilon_{SS} \, m^2}{2 \, t_S{}^2},$$

and

$$\text{(B5)} \quad \frac{\Delta Y_N}{Y} = - \frac{y_L \, \varepsilon_{LL} \, m^2}{2 \, t_L{}^2},$$

respectively. It is evident, that the immigration gain for both types of native labour is the higher, the higher their initial share of national income, the higher the absolute value of the elasticity of factor price and the higher the higher the fraction of migrants to skilled or unskilled native workers ($m^2 / t^2{}_i$, with i = S, L), respectively. In the simple case of only one type of labour, (B3) is reduced to:

$$\text{(B6)} \quad \frac{\Delta Y_N}{Y} = - \frac{y \, \varepsilon \, m^2}{2}, \text{ which corresponds to triangle C in Figure 9.}$$

The wages q_i with i = v, w after immigration can be calculated as:

$$\text{(B7)} \quad q_{i1} = \frac{q_{i0} \, T_0}{T_0} \left(1 + \varepsilon_{ii} \frac{M}{T_0} \right).$$

Assuming that immigrants bring no capital with them and using (B2), the income accruing to immigrants can be calculated as:

$$\frac{\Delta Y_M}{Y} = \frac{y_S \lambda m}{t_S} + \frac{y_S \varepsilon_{SS} \lambda^2 m^2}{t_S^2} + \frac{y_S \varepsilon_{SL} \lambda (1-\lambda) m^2}{t_S t_L}$$

$$+ \frac{y_L (1-\lambda) m}{t_L} + \frac{y_L \varepsilon_{LL} (1-\lambda)^2 m^2}{t_L^2} + \frac{y_L \varepsilon_{LS} \lambda (1-\lambda) m^2}{t_S t_L},$$

where the first three terms show the income accruing to skilled immigrants and the second three terms the income accruing to unskilled immigrants.

The total effect of immigration on the production of the receiving country is:

$$\frac{\Delta Y}{Y} = \frac{\Delta Y_N}{Y} + \frac{\Delta Y_M}{Y}$$

(B9)

$$= \frac{y_S \lambda m}{t_S} + \frac{y_S \varepsilon_{SS} \lambda^2 m^2}{2 t_S^2} + \frac{y_S \varepsilon_{SL} \lambda (1-\lambda) m^2}{2 t_S t_L}$$

$$+ \frac{y_L (1-\lambda) m}{t_L} + \frac{y_L \varepsilon_{LL} (1-\lambda)^2 m^2}{2 t_L^2} + \frac{y_L \varepsilon_{LS} \lambda (1-\lambda) m^2}{2 t_S t_L}.$$

Assuming that the income shares of the production factors are not changed by immigration, the immigration gain of skilled and unskilled natives can be calculated by subtracting the corresponding income of immigrants from the total gain. Due to the Euler-Theorem, the rest of the immigration gain is owned by capital.