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INTEGRATING THE EAST: THE LABOUR MARKET EFFECTS OF IMMIGRATION

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ABSTRACT

Integrating the East: The Labour Market Effects of Immigration*

The paper evaluates the potential gains from labour immigration for the European Union. After a review of the East-West migration problem and recent western migration policies, governmentally controlled labour immigration is studied in a framework with unions, unemployment and heterogenous workers. The model predicts a decline in wages with unskilled and skilled immigration if both types of workers are complements. Only skilled migration reduces unemployment, however. This disequilibrium framework is calibrated using German data and compared with an equilibrium framework to study migration gains and distributional effects. If labour markets are in equilibrium, unskilled immigration will provide larger gains than skilled immigration, but the gains will be small, and partly at the expense of the group of labour that experiences no competitive threat. In the face of unskilled unemployment, unskilled immigration can result in large migration losses while skilled immigration can provide substantial migration gains.

JEL Classification: D33, F22, J61
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NON-TECHNICAL SUMMARY

East-West migration is a key issue of European integration. It seems likely that capital mobility and trade liberalization will act too slowly, and hence leave substantial potential for East-West labour migration. The paper evaluates the potential gains or losses from labour migration for the European Union in the face of various policy regimes. It begins with a review of the East-West migration problem and a summary of recent western permanent and temporary migration policies. After providing a disequilibrium framework that accounts for unskilled unemployment, the model is calibrated and compared with an equilibrium framework to provide more sophisticated estimates of the size and direction of migration gains under various behavioural regimes. It is argued that migrating skilled workers who are currently unemployed or underemployed in Central and Eastern Europe may have positive effects on economic welfare in the European Union without harming the sending countries, even if there is unskilled unemployment in the West.

Migration flows from Central and Eastern Europe to the European Union were predicted to be between a low of five million and a more speculative 40 million people (not workers) over a decade. The upper bound is qualified in the paper. Nevertheless, there are large immigration pressures at least in the short run, which may result in illegal immigration if no official channels for labour migration are available. Western Europe must also be prepared for more migration in the long run if the East-West differences in the ageing process prevail, and at least some Central and East European countries are permitted entry to the European Union as has already been promised. Assuming that future migration streams will flow along ethnic networks, the paper predicts that East-West migration will largely be a German issue.

The persistently high unemployment rates in the West seem to preclude experiments with liberal immigration policies. It is no surprise, therefore, that a review of recent immigration policies in the European Union finds Europe to be resistant, and essentially closed, to foreign labour. Nevertheless, there have recently been indications of a temporary immigration policy towards Central and Eastern Europe in specific labour market segments of Germany.

Governmentally controlled labour immigration is then studied in a framework comprising unions, unemployment and heterogenous workers, where unions create unemployment in the unskilled labour market. To simplify, the model assumes only two types of labour – skilled and unskilled workers – who operate in two segmented labour markets. The model predicts a decline in the

wages of unskilled workers, with both unskilled and skilled immigration, if both types of workers are complements. Complementarity implies that an increase in the size of one type of labour (say unskilled workers) increases the productivity and hence the wages of the other type of labour (say skilled workers). But while unskilled unemployment tends to increase in the case of unskilled immigration, skilled immigration reduces unemployment in the labour market.

What does this mean for the benefits and losses of migration for the native factors of production and for the migrants themselves? Although it is difficult to get an idea of the scope and relevance of the problem, the use of simple calibration techniques helps to clarify the answers.

We study migration's gains and distributional effects in various cases using the disequilibrium framework developed in the paper; calibrated using German data and contrasted with an equilibrium framework. Since Germany will take by far the largest share, it seems sensible to work with German data. Using data for the entire European Union would not significantly alter the results, however.

The traditional model, with both labour markets in full equilibrium, serves as a benchmark case. Gains from immigration are calculated in terms of increases in the national income of natives. If labour markets are in equilibrium, unskilled immigration provides larger gains than skilled immigration in Europe, but these gains will be small. A similar exercise for the United States has revealed the opposite result, however.

For Germany, a 10% increase in the labour-force, approximately 2.8 million foreign workers, would lead to direct gains for natives of around 0.24% of national income (DM 5 billion) in the case of skilled immigration; and around 0.81% (DM 17 billion) in the case of unskilled immigration. Total benefits for natives and foreigners are much larger for skilled migration than for unskilled migration, however. It is also clear that not all factors of production win in this process. While capital always experiences gains from immigration, these gains are largest in the case of 100% skilled immigration, while the labour group competing with the immigrants is losing. Hence there are complicated redistribution issues involved if the compensation of losers is necessary. The paper also calculates the tax and unemployment insurance contributions of migrants, which are much larger for skilled migration making this option more valuable, at least in the case of temporary immigration.

In a disequilibrium framework for unskilled labour, unskilled immigration seems to be a somewhat risky business for governments. The nature of the problem

is the unknown size of unemployment caused by immigration, and the associated losses in income for natives. Potential losses in the paper total 5% of national income. This is different for skilled immigration, however, with its potential for increasing demand for unskilled unemployed natives. Here there are substantial gains from migration, which are calculated to be up to 4% of national income at current unemployment rates. This would add to gains of 2% from migrants' tax payments and unemployment insurance contributions.

There thus seems to be a case for a selective immigration policy towards labour market segments with excess demand, even if other segments are experiencing high unemployment. For some time Central and East European labour markets will have an underutilized stock of qualified workers. Temporary work contracts in the West would avoid the depreciation of their human capital, induce investment in human capital, and may positively affect employment in the low-skilled labour markets of the receiving country.

1. Introduction

East-West migration is a central theme for the EU (European Union) integration process of central Europe. There is no doubt about the attractiveness of the political vision of integration. In the long-run, there is also the economic vision of larger markets in a prosperous larger union of states. The issue is speed: Speed of convergence of economic conditions, and priority in the flexibility of trade, capital and labor. This paper argues that investing in Eastern Europe or liberalizing trade with these countries will not act quickly enough to relieve current demand for economic development and current pressure to migrate. On the contrary, a selective (at first temporary) immigration policy of the EU concerning Central Europe might be useful. It is suggested that East-West migration offers the alternative of skilled or unskilled migration and therefore introduces a new (qualitative) component to a European migration policy.

In the short-run, the issue is dominated by the problem of economic transition to a market economy in the East and from high levels of unemployment to lower levels in the West. In spite of the current economic crisis in the West with its 19 million unemployed in the EU in 1993, there are substantial economic East-West differences. However, it is unclear to what extent these differences cause out-migration. Previous experience with inner West-European migration suggests that labor mobility is rather slow in adjusting wage and unemployment differentials. The experience so far with the anticipated mass migration from the East confirms this view. Nevertheless, the high unemployment rates in the West, larger than 10% in the EU in 1993, feed the emotional debates on migration in the West and the reluctance of policy makers to consider economic migration policies.

If the developed economies do not become jobless societies, and given the stability of the current population projections, the long-run immigration issue of the EU may well be dominated by demographics. The most important demographic challenges for Europe in the next decade are (i)

world-wide migration pressures from the less-developed regions of currently about 80-100 million people and the East-West migration potential, which was estimated between 5 and 40 million people, (ii) a decline of West European population and fast growing countries in Eastern Europe, and (iii) a considerably aging labor force in Western Europe. From these developments it seems easy to predict that the next decade will see a large migration pressure from East Europe which badly requires a policy response. Migration policies therefore have to consider jointly short-run and long-run issues. There is also a potential choice between South-North and East-West migration.

The analysis in this paper concentrates on economic (labor) migration from the East to the West. Is migration potentially harmful or beneficial? Should a migration policy be selective? Section 2 discusses the current situation in the labor markets, the demographic development in the EU and Eastern Europe as well as past migration flows from the East to the West since the collapse of the socialist regimes in Central and Eastern Europe. Section 3 summarizes current developments in migration policies in the EU and discusses some options for the future. Section 4 presents a theoretical framework to study the labor market effects of immigration. In Section 5, this framework is used to provide some rough calculations of the net benefits the West can expect from East-West migration using Germany as a benchmark case. Section 6 concludes.

2. Economic Situation and Migration Potential

It is hardly possible to estimate the potential migration flow from East to West Europe. Several studies which have tried to estimate the extent of this migration wave arrived at very different results. Many newspapers and politicians have speculated that about 20-40 million East Europeans will emigrate. Estimates which have been 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 come within the period 1994-2000 to the EU, this would imply an average inflow of 0.2-1.6% of the population size of the EU in 1994. Immigration to Germany in the last decades had always been around 1%. (See Schmidt and Zimmermann (1992) for a discussion of the German migration experience since World War II.) Hence, at the lower end of the predictions, migration would not seem to be a potential burden.

The future of East-West migration largely depends on political stability in the East and the economic and demographic development in Eastern and Western Europe. Furthermore, the migration policies of West European countries, described in the next section, play an important part. With respect to the political situation in the East, it can be observed that democratic structures and human rights have been developed very quickly, but their stability in most countries (perhaps with the exception of Poland, the Czech Republic and Hungary) is still questionable. Therefore, politically motivated migration may gradually be dissappearing, but it cannot be excluded.

Economic theories of migration conclude that the economic conditions in the sending country relative to the receiving country are important determinants of the migration decision. (An overview of economic theories and their empirical evaluations is provided by Bauer and Zimmermann (1995).) Table 1 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. In Eastern Europe, reductions in employment over the three years 1990-1992 varied widely. Whereas the decline was less than 5% in the Commonwealth of Independent States (CIS) and Romania, it reached nearly 30% in Bulgaria. With the exception of the United Kingdom, employment decline in the EU countries was lower than in all East European countries.

In all East European countries the transition to a market economy was followed by a sharp increase in unemployment which was not existent, at least officially, under central planning. (Schmidt (1994b) provides a recent analysis of unemployment in Poland.) In 1993, the unemployment rates in Eastern Europe varied widely from 1% in CIS and 3.5% in the Czech Republic to 25% in Albania. In 1993 none of the EU countries had less than 5% unemployment, and only Albania had a higher unemployment rate than Spain and Ireland. Thus, there seems to be little potential for large-scale movements from the East to the West. Despite of the high unemployment rates in the West there is 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 technologies, lasers, low-temperature physics and superconductivity, some fields in medicine and computer software may be in great demand in the West (Coleman (1993)). If these high-skilled workers want to live in the West permanently, their emigration could lead to a brain drain in the East European countries with negative consequences for their future economic development. However, in the case of temporary migration these high-skilled workers would get acquainted with Western techniques and therefore could help their source country after returning.

Another important factor encouraging migration in the short-term is the persistently high income differential between the East and the West. For instance, in 1993 an average worker in the manufacturing industry in western Germany earned US $ 2058 per month. In Hungary, the average worker earned 14.0%, in Poland 10.7%, in the Czech Republic 9.7%, in Slovakia 8.3%, in Bulgaria 5.5%, in Romania 3.5%, and in the CIS 2.5% of the German earnings. However, costs of living are much lower in the East than in the West. One of the main problems of the transition countries has been inflation. The third column of Table 1 shows the substantial differences in inflation rates between East and West Europe. Due to high inflation rates, real wages in the East increased only

slightly, or fell in 1993, leading to increasing real wage differentials between the transition countries and Western Europe. Furthermore, policy measures against inflation may affect employment negatively and therefore increase the migration pressure.

The GDP growth rates in 1993 indicate that the economic situation in some Eastern countries improved significantly and therefore lowered the migration pressure. On average, GDP in Eastern Europe fell between 4.8% in 1990 and 16.9% in 1992. In 1993, Albania and Poland exhibit GDP growth of 11% and 4%, respectively. In Hungary and the Czech Republic, GDP fell by 1-2% which was also observed in some EU-countries like Belgium, Germany, Portugal and Spain. The GDP in Romania remained constant, while it fell 5% in Bulgaria, 6% in Slovakia and 12% in the CIS (Economic Commission for Europe (1994)).

In the long-run, differences in demographic development may be an important driving force behind the upcoming era of push-migration (Zimmermann (1995)). Stagnating, aging populations tend to attract migrants, while young and large populations generate more mobile individuals. As Table 2 predicts, the share of the population over the age of 65 will rise in all countries of the European Union. This aging process is the lowest in United Kingdom where the size of the over-65 group will increase from 15.7% to 19.4% over the 1990-2025 period, and highest in Greece where the size of the same group will increase from 13.8 % to 22.2 % in 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 2 indicates large differences in the demographic situation and future development among East European countries. Whereas Bulgaria and Hungary show a similar demographic development relative to West European countries, all other East European countries are characterized 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 offer a migration potential for young people in the East, due to labor shortages in the West, especially in occupations usually filled by young people (Coleman (1993)).

An interesting question in the East-West migration discussion is which countries are likely to attract which migrants? This will be largely a question of ethnic networks. Table 3 shows the residents in the European Union according to nationality, which offers some clues as to the existence of ethnic networks. About 5 million people from the EU live in other member states, most of them ending up in Germany, France or the United Kingdom. In 1992, about 10 million people or 2.9% of the total EU population was from outside the EU. About 3.2 million are from Turkey and the former Yugoslavia, 2.8 million from Africa, 1.6 million from Asia and 0.7 million from Central and Eastern Europe. People from areas outside the European Union predominantly go to Germany, and even Asia has a larger group in Germany than the United Kingdom. (Many Asians, however, carry UK passports.) Among the major European immigration countries, Germany attracts Turks and people from the former Yugoslavia, France receives Africans, and the United Kingdom attracts mainly migrants from the EU member states.

According to Table 3, about 74% of all immigrants from Central and Eastern Europe are in Germany, followed by France, the United Kingdom and Greece. Due to historical connections with Hungary, the former CSFR and Bulgaria, Austria seems to be another important receiving country for East European emigrants. However, the numbers in Table 3 do not include immigrants of German origin from East Europe called *Aussiedler* which automatically become German citizens. (An extensive discussion of the migration of ethnic Germans is given by Schmidt (1994).) Figure 1 exhibits the immigration of ethnic Germans to West Germany since 1950. As a consequence of the collapse of the socialist regimes, the inflow of *Aussiedler* in West Germany jumped from 78,498 in

1987 to 202,645 in 1988, 377,042 in 1989 and 397,067 in 1990. Consequently, the German government altered the entry procedures for *Aussiedler* in 1990, requiring them to apply for entry before arrival. This measure led to a reduced immigration flow: 221,974 in 1991, 230,489 in 1992 and 218,882 in 1993. In the period 1988 to 1993, 51.2% of the *Aussiedler* came from the former USSR, 35.7% from Poland and 12.2% from Romania. At the end of 1992, 3.5 million ethnic Germans were still living in Central and Eastern Europe.

To summarize, 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 labor mobility is rather slow in adjusting wage and unemployment differentials. In the long-run, the shrinking population and the aging labor force in Western Europe and the growing population in Eastern Europe may encourage migration from the East to the West. Assuming that future migration streams will flow along existing ethnic networks, East-West migration is likely to be mainly a German problem whereas South-North migration will affect other EU member countries.

3. EU Migration Policies and Options for the Future

3.1. Common Policies of the EU

In this section we discuss the migration policies in Western Europe after the collapse of the socialist regimes in Central and Eastern Europe in 1988 and afterwards. (A survey of European migration policies after World War II is provided by Zimmermann (1994a, 1995)). EU migration policy is marked by two different developments. Migration within the EU member states has been liberalized steadily since the original Treaty of Rome of 1957. This development has found its conclusion in Article 8a of the Single European Act which requires the achievement of free movement of people,

capital, goods and services since January 1, 1993. This implies the abolishment of controls at the interior borders of the EU.

In contrast to the policies regarding internal migration, a collective policy of the European Union with respect to immigration from outside the EU is just in its infancy. (See Zimmermann (1994a, 1994b, 1995) for a comprehensive discussion of the immigration policies of the EU.) The necessity of a common EU migration policy was coupled with the plan of a common European market, as 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 the territory of the EU, further migration of this person cannot be controlled. The first steps towards a joint EU migration policy were the Schengen Accords of June 1985 (Schengen I) and June 19, 1990 (Schengen II) and the accord of Dublin from June 15, 1990. The main objectives of the Schengen initiative are the elimination of internal border checks, consistent and tighter external border controls, a unified visa policy, the coordination of different national asylum policies and the installation of a common information system called SIS (Schengen-Information-System). The harmonization of the visa policies only covers visas for foreigners who want to stay in the EU for no longer than 3 months. To obtain a visa, foreigners have to prove that they are able to bear their costs of living. The long-term visa policy was left to the national governments because it is assumed that a person cannot guarantee self-financed living for longer than 3 months without working in the country of destination.

The agreements of Schengen II with respect to the coordination of the asylum policies are nearly identical to the accord of Dublin which regulates the responsibility for asylum applications. If an asylum seeker enters the EU illegally, his case must be reviewed by the member state he first entered. Each contracting party has to readmit persons of third countries to their territory if they

have illegally migrated to another contracting state. On the other hand, the state in which a person resides illegally can either repatriate this person to the country which the individual last entered legally or, if he has transitted through another state of the Schengen group, to this state. Figure 2 shows the countries which signed the Schengen Accord. The initial member countries were the Benelux States, France and Germany. Meanwhile Italy, Portugal and Spain have joined the Schengen group, whereas Ireland, the United Kingdom and Denmark refused to participate. Austria has signed the accord in April 1995. On March 26, 1995 the Schengen accord became effective in the Benelux States, France, Germany, Portugal and Spain.

An important step towards a common EU immigration policy can be seen in the Maastricht Treaty of 1992. The main progress has been the definition of an active common immigration policy including the harmonization of visa policies, common measures against illegal immigration and a new framework for the harmonization of the different national (political) asylum laws. With respect to the visa policy, the Maastricht Treaty is not as far reaching as Schengen II. Neither the condition for giving a visa permission, the time of validity of a visa, nor the reciprocal recognition of visa between the EU member states have been regulated. However, the EU commission gets the right to propose to its member countries which sending country fall under visa obligations. Regarding asylum policy, it was decided to implement the accords of Dublin and Schengen. In addition, the harmonization of political asylum acceptance criterions and repatriation policies, as well as the installation of a central information agency similar to the SIS were agreed upon. The intention of considering labor market aspects in the development of a common immigration policy has been formulated. In spite of these developments, the European Union has no explicit collective labor immigration policy. Rather there is a tendency to leave the immigration issue to the national governments. The current debate has not many economic perspectives.

3.2. National Immigration Policies

Recent national immigration policies are characterized by the realization of the agreements of Schengen II, the accord of Dublin and the Maastricht Treaty on the one hand and measures which try to cope with the phenomenon of increasing numbers of illegal immigrants and asylum seekers on the other. For instance, in 1991 Germany reported 23,508 seized illegal migrants. This number increased to 45,675 in 1992. (Presse- und Informationsamt der Bundesregierung (1993).) Table 4 shows the development of asylum seekers in the period from 1988 to 1993 and their distribution over selected European countries. In the period 1988 to 1991, the numbers of asylum seekers increased sharply in almost all West European countries. Table 4 also indicates, that asylum seekers from Eastern Europe go predominantly to Germany. It is evident that the number of political asylum applicants is smaller in relatively small and poor countries and larger in countries with liberal asylum laws like Germany and Sweden.

The following measures have been adopted by most of the EU members to control immigration flows more effectively: Tightening of border controls, extension of visa requirements coupled with an increased number of checks on employers, and swifter processing of asylum applications. (See SOPEMI (1994).) Furthermore, most EU countries do not accept asylum applications from persons originating in countries that are parties to the Geneva Convention on Refugees. In 1991, the Schengen group and Poland signed a repatriation agreement which puts the Schengen II agreement into force. Furthermore, Germany has signed similar treaties with the Czech Republic (May 1993) and Romania (November 1992), as has Austria with the former Czechoslovakia and Poland. The agreements between Germany and Poland, the Czech Republic and Romania include technical and financial help to compensate for the costs which arise due to these treaties. (For instance in 1993 and 1994 Germany paid DM 120 million in financial help to Poland

(Bundesministerium der Finanzen (1994).) On July 1, 1993, Germany passed a new asylum law which states that individuals from so-called "safe" countries (EU-member countries, countries which are members of the EFTA, Poland, the Czech Republic, Bulgaria, Romania, the Slovak Republic, Hungary, Gambia, Ghana and Senegal) can no longer claim political asylum. Most of the other European countries also refuse asylum seekers from these "safe" countries. As Table 4 demonstrates, these more restrictive political asylum policies result in a slight decrease of the number of asylum seekers, especially in Austria and in Germany in 1993. Whether or not asylum seekers are allowed to work during the processing of the application is handled in a different way. Whereas Germany permitted asylum seekers to work in order to reduce the high costs of financial support to these persons (in 1990 the expenses for social help and accommodation of asylum seekers was estimated to reach DM 9 billion in Germany), France prohibits asylum seekers from working in order to discourage economically motivated applications (SOPEMI (1994)).

Recently, a more selective immigration policy of West European countries can be observed. Several bilateral agreements between West European and East European countries regulating seasonal work (e.g. the 1991 agreement between the former CSFR and Germany or the 1992 arrangement between France and Poland) and reciprocal employment (e.g. between Germany and Hungary or the former CSFR and the Commission of the European Union in 1991) have been signed. In most cases, these agreements deal with short-term employment only, limiting the number of workers and requiring special characteristics of the applicants.

For example, there exist four possibilities for East Europeans to work temporarily in Germany. (See Bundesanstalt für Arbeit (1994).) First, it is possible to work as so-called *Werkvertragsarbeitnehmer*. According to these agreements, East European firms are allowed to employ their own workers in project-linked work arrangements which are co-ordinated under

contracts with German firms. The number of workers who can work under this treaty is usually limited by the agreements. Each year, these quotas are adapted to the labor market situation in Germany. The wage of the *Werkvertragsarbeitnehmer* must be the same as that of German workers. Furthermore, the validity of these work permits is restricted to 3 years. These kinds of agreements are mostly used in construction, iron, and steel industries.

Second, if an insufficient number of German workers are available, workers from Poland, the former CSFR, Bulgaria, Romania and Hungary could work in Germany as *seasonal workers* for a maximum of three months. These workers are mainly employed in agriculture and by hotels and restaurants. Furthermore, Germany started *guestemployee* programs with Albania, Bulgaria, Lettland, Poland, Romania, Hungary, the former CSFR, Latvia and the Russian Federation. The aim of these programs is to improve the professional and linguistic skills of the participants. The participants have to meet the requirements of completed vocational education, basic knowledge of German and being between 18 and 40 years old. These work permits are also limited by quotas and are restricted to 18 months. Individuals in Poland and the Czech Republic living near the German border could work in Germany as so-called *Grenzarbeitnehmer* if they return each day or if they work in Germany for a maximum of 2 days per week.

Table 5 demonstrates that the number of workers, who entered Germany through one of the first three agreements was remarkably high, 176,740 persons in 1991, 311,412 persons in 1992 and 256,534 persons in 1993. Therefore, the number of East European workers who made use of one of these agreements in 1992 reached 15.3% of all foreign workers in Germany. Most of these workers came from Poland. In 1993 a total number of 166,224 Polish worked on a temporary basis in Germany, nearly as many as Italian guestworkers (200,319) and more than Spanish (55,282), Greek (121,787) and Portuguese (50,276) guestworkers in September of the same year.

3.3. Options for the Future

As a result of free labor and product markets within the EU, the member countries are unable to follow independent migration policies without potentially harming others. Therefore, the European Union should consider a unified migration policy. (A general analysis of migration policy issues is given by Straubhaar and Zimmermann (1993).) Several strategies could be pursued. First, it might be tempting for industrialized countries to consider a selective immigration policy to attract highly qualified workers needed in innovative industries. So far, foreigners in Europe are more attracted to those industries that employ lower qualified workers (Zimmermann (1995)). To reach the goal of a selective immigration policy the Canadian and Australian immigration models, which have been shown to be very efficient in selecting migrants, could serve as a starting point.

Cost-benefit considerations are at the center of the economic analysis of immigration. A country should allow immigration if the marginal productivity of the foreigners for the country is higher than their marginal costs of integration. If there are substantial immigration costs for the receiving countries, they can be compensated by imposing financial constraints on migrants to share the burden, e.g. a entry fee. Moreover, these fees might be an efficient measure to control and smooth the immigration flows.

Some economic theories conclude that free trade and free capital mobility could replace free labor mobility. However, in spite of the fact that a substantial part of goods and services are non-tradeable, import competition and foreign investments due to cheap labor in Eastern and Central Europe may also crowd out native workers. Furthermore, free trade and free capital mobility are not useful in stopping short-term immigration, because it may take a decade until free trade and the necessary capital investments become effective. Available evidence in developing countries suggests

that economic transfers and development policies supporting economic growth in the sending countries are not adequate policy options, because these kinds of measures often destabilize their economies and creates new economic pressures for short-term emigration.

In the following we will present and calibrate a model which demonstrates that immigration might be beneficial for society as a whole even in the presence of high unemployment, because it may erode institutional constraints on the labor market. The results will demonstrate that the European Union would better consider a unified policy of selective immigration: to channel and coordinate the flows of immigrants and to secure the competitiveness in international markets with high innovative activity by attracting highly qualified workers needed in these innovative industries.

4. Theoretical Framework

This section outlines our model on which the simulations of Section 5 are based. If labor is homogeneous, the standard competitive framework predicts an increase of total welfare at the expense of labor, because the wage rate is lower after immigration. However, wages may not be downward flexible, perhaps due to the behavior of unions. (See Schmidt, Stilz and Zimmermann (1994) for a theoretical treatment of this issue.) If union behavior remains unaffected by immigration, unemployment may rise substantially. On the other hand, unions' wage-employment choice may be affected by the pressure of immigration. If labor is heterogenous, the key issue for the evaluation of the wage effects of immigrant labor is whether foreigners are substitutes or complements to which group of natives. To simplify the analysis, assume that there are only two types of labor, 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 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 and may induce the reverse effects for the skilled natives. The reverse may happen in a scenario with skilled immigration.

While a formal treatment is left to Appendix A, we briefly outline the framework and provide the intuition. The economy is assumed to produce a single output according to a constant-returns-to-scale production function with capital, skilled labor and unskilled labor. Output price is considered to be pre-determined and both types of labor are q-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, and we will concentrate here on pure labor immigration. A monopoly union sets the wage in the market for unskilled labor and employers then choose the level of employment in this market, whereas the market wage of skilled labor is determined by competitive forces. Nevertheless, the union cares about the wages of the skilled workers, which 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 labor immigration in such a model can be studied by use of Figure 3. The upper panel considers the case of immigration of unskilled labor. While the labor market of the skilled is controlled by competitive forces (see A_0 in Figure (3a)), the monopoly union sets a higher than the equilibrium wage in the market for unskilled labor (see B_0 in Figure (3b)). This causes unemployment at level $\bar{L}$-L for the unskilled. The union is concerned about the earnings of the skilled and unskilled workers. Upon unskilled immigration (see the shift of the labor

supply curve in Figure (3b)), it therefore accepts a lower wage level for the unskilled (B_1). Since both types of labor are complements, the increased unskilled employment (L_1) shifts the demand curve for skilled workers upwards (see Figure (3a)), and the wage rate of skilled workers is increasing (see A_1 in Figure (3a)). As a result, the union unskilled wage falls and drives the economy in the direction of the equilibrium point of a competitive labor market. In general, native unemployment may rise or fall. However, according to equation (A8) in the parametric framework chosen in Appendix A, the employment effect for unskilled natives is negative.

The case of immigration of skilled labor is even more obvious. The increasing stock of skilled labor (see the shift of the supply curve in Figure (3c)) drives the equilibrium point down from C_0 to C_1. The demand for unskilled labor increases due to complementarity (see the shift of the demand curve in Figure (3d)), and there will be 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 increases the unskilled wage strongly so that native employment falls, the theoretical model in Appendix A even predicts that wages will fall (see D_1 in Figure (3d) and equation (A9) in Appendix A). The increased level of unskilled employment again shifts the demand curve for skilled labor upwards (see C_2 in Figure (3c)). Hence, immigration of skilled workers will likely cause a decrease of the wages of the unskilled and a decline of native unemployment.

This analysis suggests that there are complicated issues that determine whether one can expect gains from immigration and which groups will receive them. In a competitive (equilibrium) framework in both labor markets natives will receive total gains, but those workers who are substitutes to immigrants will lose. In the union model outlined here effects are similar in nature. If unskilled labor immigrates, there will be gains for skilled natives, but unskilled natives receive lower wages and face higher unemployment. To what extent natives still receive gains in total depends on

the concrete situation. In the case of skilled labor immigration, both wages and unemployment will decline, and total income of natives will increase.

How important are the derived effects? For this purpose one has to calibrate the model. The next section will carefully study the polar cases and provide some estimates of the potential effects. Since the previous sections have forcefully stated that Germany is the major European immigration country, and most East-European migrants move to Germany anyway, we use German data to calibrate the effects.

5. Calculating the Gains from Immigration

In this section we evaluate the benefits from immigration. At first, a simple equilibrium model with full employment is used which is described in more detail in Appendix B and follows closely the work of Borjas (1995). In a second step, the calculations are then modified to deal with a situation where the unskilled labor market is in disequilibrium. Here we draw on the theoretical model outlined in the last section. The calibration is done using the following assumptions based on 1993 German data: The national income in 1993 equals DM 2.108 trillion. The share of national income accruing to unskilled workers is 14%, that of skilled workers 56% and that of capital 30%. These numbers are derived from the German microcensus and the national accounts of the German statistical office. Assuming a Cobb-Douglas approximation, we calculate from these numbers the factor price elasticity for unskilled labor as -0.85 and for skilled work as -0.45. The elasticity of the wage of skilled workers with respect to a change in the quantity of unskilled workers is 0.15, and the elasticity of the wage of unskilled workers with respect to a change of skilled workers is 0.55. It is further calculated that 27.1% of the work force is unskilled and 72.9% skilled. These numbers are kept fixed throughout the analysis.

Table 6 contains the calculated gains from immigration using the simple equilibrium model with full employment and different levels of immigration. Figure 4 demonstrates how these gains are calculated: If only unskilled migrants are accepted (λ=0) the total benefit of immigration is given by the sum of the areas A, B and C, where area B is allocated to immigrants and areas A and C to natives. It should be noted, that the benefits of the immigrants refers only to their income in the receiving country. To calculate the net benefits from migration for the migrants, their forgone earnings in the sending country and the migration costs have to be substracted from the numbers calculated in this study. As Table 6 indicates, the total gain is calculated to be DM 91.822 billion or 4.36% of national income in 1993 if 10% of the native work force (2.758 million persons) immigrates. If 50% of the immigrants are skilled (λ=0.5), this gain increases to DM 132.044 billion (6.26% of the national income) and reaches a maximum of DM 156.934 billion (7.44% of the national income) if all immigrants are skilled (λ=1.0). In the case of skilled immigration, the gains of natives in Figure 4 are the areas E and F, and the income of immigrants is I.

Table 6 further allocates the total gain to skilled and unskilled natives and immigrants, respectively. Inspection of Figure 5 shows that irrespective of the skill-composition of the immigrants, most of this gain goes to skilled workers, followed by capital and unskilled workers. Due to the higher average wage of skilled workers the highest immigration gain for immigrants is reached when only skilled persons move. Figure 6 reveals that the gain from immigration for natives in the full employment model reaches a maximum of DM 17.078 billion (0.81% of the national income) when only unskilled immigrants are accepted and reaches a minimum when 70% of the immigrants are skilled. In a similar study for the U.S., Borjas (1995) estimated a maximum immigration gain for natives of 2.4% of the GDP. This implies that the gains of migration are much smaller in a European setting. Table 7 exhibits the calculated gains from immigration if alternative

elasticities are used. The results indicate that the simulated effects of Table 6 are rather stable.

Figure 7 shows the distributional effects of immigration in the equilibrium model, which could be quite dramatic. It appears that capital always benefits from immigration and that these benefits increase with the share of skilled immigrants. The gains of capital reaches DM 47 billion or 2.2% of national income if only skilled immigration of 10% of the total native labor force occurs. Skilled native workers show a positive immigration gain as long as no more than 44% of the immigrants are skilled, and unskilled native workers benefit from immigration if more than 80% of the immigrants are skilled. Table 6 and Figure 7 also reveals that both types of labor could lose very much through immigration, depending on the share of immigrants which substitute them. For instance, if 10% of the native work force immigrates and all immigrants are skilled, skilled native workers lose 5.4% of their initial income. The maximum loss of unskilled native workers is calculated to reach DM 62 billion or 21% of their initial income in the case of unskilled immigration (see Table 6).

Table 8 examines the change of calculated immigration gains of the full employment model if unemployment of unskilled natives and different reactions of the union to immigration are taken into consideration. (Exact formulae to calculate the gains of immigration in the disequilibrium framework are available from the authors on request.) Here we refer to the theoretical Section 4 and Appendix A. First, we consider the case that 10% of the native work force immigrates and that all immigrants are unskilled. If the union lowers the wage of unskilled workers such that native unemployment remains constant, the immigration gain is the sum of the areas A, B and C in Figure 4 (scenario A II a in Table 8). The immigration benefits in this situation are the same as in the full employment model. Scenario A II b in Table 8 represents the situation where the union keeps the wages of unskilled labor fixed, and immigration leads to an equal increase in native unemployment.

Hence, natives lose area D in Figure 4 or DM 116.670 billion (calculated as w_0 multiplied by the number of immigrants) which equals the income of the immigrants. In this extreme scenario the total immigration gain is zero and the losses of natives are maximized. To obtain more moderate solutions, or a partial crowding-out of unskilled natives, one has to accept further assumptions. Based on the model outlined in Section 4 and Appendix A, the strength of the wage response of the union, and hence the increase in unskilled employment depends on β, the weight of native unskilled employment in the union's objective function. Considering different values of β (0.3, 0.5, 0.7) in Table 8 it becomes clear that the immigration gain is decreasing the closer β is to one. The theoretical basis for this finding is that the larger β the more modest union wage policies are. Unions therefore react less responsive under migration pressure.

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 a which considers the case that the union increases the wage in such a way that native unemployment remains constant. Figure 4 reveals that in this case the gains of natives remain to be the same as in the full employment model (sum of area E and F). The other extrem case (scenario B II b in Table 8) is caused by a wage reduction resulting in zero unemployment. In this case the gains of natives from immigration are calculated as the sum of the immigration gain when only skilled persons immigrate (areas E and F in Figure 4) plus the total immigration gain if only unskilled immigration occurs which equals the number of unemployed natives (areas G and H in Figure 4). This case, which describes the maximum benefit from immigration for natives and in total, is estimated to result in a total immigration gain of DM 240.561 billion (11.41% of the national income) of which DM 88.627 billion (4.20% of the national income) is received by the natives. Similar to the case of unskilled immigration, the immigration gains decrease with β, the union's

weight of unskilled employment.

The last row of Table 8 exhibits the resulting increase of native immigration benefits if tax and the unemployment insurance payments are considered. These numbers include the tax and unemployment insurance contributions of immigrants as well as the costs and benefits of the unemployment insurance system which result from the variation in native employment levels. The resulting gains of natives are substantial. They reach 15 to 17 billion DM in the case of unskilled immigration and 41 to 44 billion DM if only skilled immigrants are accepted.

6. Conclusions

This paper has studied the perspectives and implications of East-West migration in Europe. It is argued that Western Europe, especially Germany, has seen significant inflow of migrants, and that this experience was mostly beneficial. Further migration is seen as largely unavoidable, at least from countries such as Poland, the Czech and Slovak Republics, and Hungary. There is substantial political pressure for integration into the European Union. Relying on the phenomenon of network migration, most of the migration pressure is expected to be directed to countries like Germany and Austria. However, the currently high unemployment rates in Western Europe seem not to permit liberal immigration policies. Consequently, a survey of the migration policies of the European Union has not revealed much flexibility, although a relevant member country (Germany) is executing some significant temporary immigration policies directed to Eastern Europe.

The issue is whether immigration in the face of unemployment automatically causes problems for the labor markets of the receiving country. The conclusion here is that this is not the case. This result is obtained in two steps: At first, a theoretical framework provides a setting with heterogeneous labor where skilled labor is in a competitive equilibrium and unskilled labor is in a

disequilibrium with unemployment. Unskilled immigration may cause an increase in the unemployment of natives, but also a decline in the wages of the unskilled, and hence increases total employment. Skilled immigration will likely cause a decline of both types of wages and decrease unskilled native unemployment.

At second, the framework is calibrated to obtain some feeling for the size of the potential gains and losses. Since Germany is likely to take a larger share, the calibration is done using the most recent available German data (from 1993). The traditional full equilibrium model serves as a benchmark case. Such a border case reveals gains for the receiving country, however they are much smaller than often expected. A 10% increase in the labor force (about 2.758 million immigrants) would lead to direct gains for the natives of about 0.24% of national income in the case of skilled immigration and to about 0.81% (or about 17 billion DM) in the case of unskilled immigration. However, total benefits of natives and foreigners are much larger (7.44%) for skilled migration than for unskilled migration (4.36%). Also, tax payments and unemployment insurance contributions of migrants are much larger for skilled migration making this option more valuable in practice. At least, if one considers only temporary immigration.

In a disequilibrium framework for unskilled labor, unskilled immigration is a rather risky strategy if one has no safe predictions about the employment effects. Losses could be up to 5% of national income. However, skilled immigration seems to be a valuable option even in the face of unemployment. If both types of labor are complements as assumed in the present analysis, there could be substantial gains due to the improvement of the employment possibilities of unskilled natives. Gains could be up to 4% of national income at current unemployment rates which would add to the 2% gains from tax payments and unemployment insurance contributions of migrants. Migrants themselves would receive an income of about 7% of national income.

Given the current excess supply of qualified workers in Eastern Europe and the need for further improvements of their human capital in the process of transformation, a temporary immigration policy as executed currently by the German government seems to be a valuable option for both the East and the West.

References

Bauer, T. and K.F. Zimmermann (1995): "Modelling International Migration: Economic and Econometric Issues," in van der Erf, R. and L. Heering (eds.): *Causes of International Migration: Proceedings of a Workshop, Luxembourg, 14-16 December 1994*. Luxembourg: Office for Official Publications of the European Communities, 95-115.

Borjas, G. J. (1995): "The Economic Benefits from Immigration," forthcoming: *Journal of Economic Perspectives*.

Bundesanstalt für Arbeit (1994): *Amtliche Nachrichten der Bundesanstalt für Arbeit: Arbeitsmarkt 1993*. Bundesanstalt für Arbeit: Nürnberg.

_____ (1993): *Amtliche Nachrichten der Bundesanstalt für Arbeit: Arbeitsmarkt 1992*. Bundesanstalt für Arbeit: Nürnberg.

_____ (1992): *Amtliche Nachrichten der Bundesanstalt für Arbeit: Arbeitsmarkt 1991*. Bundesanstalt für Arbeit: Nürnberg.

Bundesministerium der Finanzen (1994): *Finanzbericht 1994*. Bonner Universitäts- Buchdruckerei: Bonn.

Coleman, D.A. (1993): "Contrasting Age Structures of Western Europe and of Eastern Europe and the Former Soviet Union: Demographic Curiosity or Labor Resource?," *Population and Development Review*, 19, 523-555.

Deutsche Bundesbank (1994): *Devisenkursstatistik Februar 1994*. Deutsche Bundesbank: Frankfurt/Main.

DIW (Deutsches Institut für Wirtschaftsforschung) (1994a): "Die Lage der Weltwirtschaft und der deutschen Wirtschaft im Frühjahr 1994," *DIW Wochenbericht*, 16-17, 229-262.

_____ (1994b): "Die wirtschaftliche Lage Rußlands: Fortsetzung des Niedergangs

ohne hinreichenden Strukturwandel," *DIW Wochenbericht*, 47-48, 805-827.

Economic Commission for Europe (1994): *Economic Survey of Europe in 1993-1994*. United Nations Publication: New York, Geneva.

Europäische Kommission (1994): "Statistischer Anhang," *Europäische Wirtschaft*, 58, 113-194.

EUROSTAT (1994): "Ausländer machen über 4% der Gesamtpopulation der Europäischen Union aus," *Eurostat Schnellberichte: Bevölkerung und soziale Bedingungen*, 7, 1-11.

_____ (1991): *Bevölkerungsstatistik 1991*. EUROSTAT: Luxembourg.

Hamermesh, D. S. (1993): *Labor Demand*. Princeton, New Jersey: Princeton University Press.

IOM (International Organization for Migration) (1991): "Ninth IOM Seminar on Migration: South-North Migration," *International Migration 29*.

Presse- und Informationsamt der Bundesregierung (1993): "Die Kriminalität in der Bundesrepublik Deutschland," *Bulletin*, 40, 349-388.

Schmidt, C. M. (1994a): "The Economic Performance of Germany's East European Immigrants," *Münchener Wirtschaftswissenschaftliche Beiträge*, Nr. 94-09.

_____ (1994b): "Cohort Sizes and Unemployment: Lessons for Poland," *Münchener Wirtschaftswissenschaftliche Beiträge*, No. 94-20. Forthcoming in Lehmann, H. and J. Wadsworth (eds.): *ifo Studies of Eastern Europe and the Economics of Transition, No. 19*.

Schmidt, C. M. and K. F. Zimmermann (1992): "Migration Pressure in Germany: Past and Future," in K. F. Zimmermann (ed.): *Migration and Economic Development*. Berlin et. al.: Springer-Verlag, 201-230.

Schmidt, C. M., A. Stilz and K.F. Zimmermann (1994): "Mass Migration, Unions, and Government Intervention," *Journal of Public Economics*, 55, 185-210.

SOPEMI (1994): *Trends in International Migration: Annual Report 1993*. OECD: Paris.

Statistisches Bundesamt (1995): Löhne, Gehälter und Arbeitskosten im Ausland," *Löhne und Gehälter, Fachserie 16, Reihe 5*. Metzler-Poeschel: Stuttgart.

_____ (1994): *Statistisches Jahrbuch 1994 für das Ausland*. Metzler-Poeschel: Stuttgart.

Straubhaar, T. and K. F. Zimmermann (1993): "Towards a European Migration Policy," *Population Research and Policy Review*, 12, 225-241.

UNHCR (1995): *Die Lage der Flüchtlinge in der Welt: UNHCR-Report 1994*. J.H.W. Dietz Nachfolger: Bonn.

_____ (1994): *Populations of Concern to UNHCR: A Statistical Overview 1993*. UNHCR: New York.

United Nations Population Fund (1994): *The State of World Population 1994*. United Nations Population Fund: New York.

United Nations Population Division (1992): *World Population Prospects 1992/1993*. United Nations: New York.

Waffenschmidt, H. (ed.) (1994): "Zahlen, Daten, Fakten," *Info-Dienst Deutsche Aussiedler*, 57.

Zimmermann, K. F. (1995): "Tackling the European Migration Problem," forthcoming: Journal of Economic Perspectives.

_____ (1994a): "Immigration Policies in Europe: An Overview," in: Siebert, H. (ed.), *Migration: A Challenge for Europe*. J.C.B. Mohr: Tübingen, 227-258.

_____ (1994b): "European Migration: Push and Pull," *Proceedings of the World Bank Annual Conference on Development Economics 1994, Supplement to The World Bank Economic Review and The World Bank Research Observer*, 313-342.

Table 1: Economic Indicators of West, Central and East Europe in 1993*

Country	Employment change (%) (1990-1992)[4]	Unemployment (%)[2]	Inflation Rate (%)[3]	Average Monthly Earnings (US $)[4]	GDP Real Growth Rate (%)[2]
			West European Countries		
Belgium	-0.7	9.4	2.8	1667	-1.3
Denmark	-1.0	10.4	1.7	2211	1.1
France	-0,5	10.8	2.2	1306	-0.7
Germany	2.6	5.6	3.3	2058	-1.9
Greece	-0.9	9.8	13.7	660	-0.2
Italy	0.7	11.1	5.1	-	-0.7
Ireland	-0.1	18.4	2.0	1316	2.5
Netherlands	4.9	8.8	2.1	-	0.3
Portugal	-3.7	5.0	6.8	-	-1.2
Spain	-1.7	21.5	5.1	1134	-1.0
United Kingdom	-5.4	10.5	3.5	1383	1.9
EU	-1.4	10.5	3.8	-	-0.5

Table 1 continued:

Country	Employment change (%) (1990-1992)[1]	Unemployment (%)[2]	Inflation Rate (%)[2]	Average Monthly Earnings (US $)[3]	GDP Real Growth Rate (%)[2]
			Central and East European Countries		
Albania	-21.7	25.0	117.0[4]	.	11.0
Bulgaria	-28.7	16.4	70.0	114	-5.0
Czech Republik	-8.8	3.5	20.0	199	-1.0
Hungary	-12.1	12.1	23.0	288	-2.0
Poland	-12.6	15.7	35.0	220	4.0
Romania	-4.5	10.1	260.0	73	0.0
Slovakia	-13.5	14.4	25.0	170	-6.0
CIS	-4.0	1.0	900.0	51	-12.0

* Sources: Economic Commission for Europe (1994); Statistisches Bundesamt (1995, 1994); Deutsche Bundesbank (1994); Europäische Kommission (1994); DIW (1994a, 1994b); own calculations.

1. Percentage change over the period.
2. Percentage change over previous year.
3. West European Countries: Average hourly wages in manufacturing mulitplied with hours worked per week according to the trade union wage agreements mulitplied with 4.
4. From January to September 1993.

Table 2: Demographic Indicators*

Country	Total Population 1994 (Millions)	Total Population Growth 1994-2025 (%)	Age Structure 1990 15-64	1990 65+	2025 15-64	2025 65+
West European Countries						
Belgium	10.0	-1.0	67.0	14.9	62.6	21.7
Denmark	5.2	-1.9	67.2	15.6	63.1	21.7
France	57.4	5.9	65.7	14.0	62.2	21.2
Germany	81.2	4.1	68.7	14.6	64.1	20.5
Greece	10.2	-1.0	66.9	13.8	62.2	22.2
Italy	57.8	-2.8	68.6	14.1	63.3	22.3
Ireland	3.5	2.9	61.3	11.4	61.7	17.8
Netherlands	15.3	15.7	69.0	12.7	64.2	19.8
Portugal	9.9	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	57.8	4.3	65.3	15.7	63.6	19.4
EU	347.5	3.3	67.3	14.5	63.4	20.7
Central and East European Countries						
Albania	3.3	36.4	62.0	5.2	66.9	11.4
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

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

Table 3: Stock of Foreign Population in 1992 (in Thousands)*

	Total	EU	Africa	Asia	Central and East Europe	Poland	Romania	former USSR
Belgium	922.5	554.6	188.6	24.1	6.9	4.8	.	0.9
Denmark	169.5	28.4	8.2	40.0	7.3	4.9	0.9	0.6
France[1]	3596.6	1311.8	1633.1	227.0	63.0	47.1	5.1	4.7
Germany	6066.8	1487.3	236.4	553.4	550.4	271.2	92.1	51.4
Greece	213.3	61.5	20.9	39.1	35.7	11.4	4.6	12.1
Italy	537.0	111.2	170.2	85.8	20.8	9.1	5.2	2.3
Netherlands	732.9	176.1	197.7	56.8	10.2	4.6	2.0	1.2
Portugal	114.0	30.0	48.0	4.5	0.6	0.1	0.0	0.2
Spain	360.7	158.3	62.9	32.3	3.1	3.1	.	.
UK	2012.4	800.5	195.4	500.1	49.3	29.4	.	14.8
EU	10041.9	-	2762.6	1564.1	747.3	385.8	109.9	88.2
Austria	517.7	77.5	8.5	25.7	62.3	18.3	18.5	2.1
Finland	37.6	5.5	3.2	4.0	12.1	0.7	0.2	10.5
Sweden	493.8	72.5	22.5	83.0	31.8	16.1	5.5	3.4

*. Source: Eurostat (1994)

1. 1990.

Table 4: Asylum Seekers in West European Countries in Thousand*

Country	1988	1989	1990	1991	1992	1993	From East Europe	
							1988-1992	1993
Belgium	5.1	8.1	13.0	15.2	17.7	26.9	1.0	7.7
Denmark	4.7	4.6	5.3	4.6	13.9	14.3	2.2	1.0
France	31.7	58.8	49.8	45.9	26.8	27.6	12.7	3.5
Germany	103.1	121.3	193.1	256.1	438.2	322.8	257.3	120.4
Greece	8.4	3.0	6.2	2.7	2.0	0.9	.	.
Italy	1.3	2.3	4.8	23.3	2.5	1.5	.	-
Nethertands	7.5	13.9	21.2	21.6	17.5	35.4	8.8	3.2
Portugal	0.4	0.2	0.1	0.3	0.7	2.1	.	-
Spain	3.3	2.9	6.9	7.3	12.7	13.8	.	.
United Kingdom	5.3	15.6	25.3	44.8	24.5	22.4	.	-
Austria	15.8	21.9	22.8	27.3	16.3	4.7	49.5	0.5
Sweden	19.6	30.4	29.4	27.4	83.2	37.6	5.4	1.1

*. Source: UNHCR (1994, 1995)

Table 5: Short-Term Employed Workers from East Europe in Germany*

	Bulgaria	former CSFR	Hungary	Poland	Romania	Total
Werkvertrags-arbeiter:						
1991						
Total	486	3808	9109	26468	1478	51240
in %	0.9	7.4	17.8	51.7	2.9	100.0
1992						
Total	1891	10550	12186	51011	7341	93912
in %	2.0	11.2	13.0	54.3	7.8	100.0
1993						
Total	3829	5559	13563	21424	13895	72734
in %	5.3	7.6	18.6	29.5	19.1	100.0
Seasonal Workers:						
1991						
Total	.	12600	4100	75700	.	123300
in %		10.2	3.3	61.4		100.0
1992						
Total	.	28000	7200	136900	2900	212400
in %		13.2	3.4	64.5	1.4	100.0
1993						
Total	.	19800	5300	143900	3900	181000
in %		10.9	2.9	79.5	2.2	100.0

Table 5 continued:

	Bulgaria	former CSFR	Hungary	Poland	Romania	Total
Guestworkers:						
1991						
Total	.	400	1400	400	.	2200
in %		18.2	63.6	18.2		100.0
1992						
Total	.	2000	2000	750	-	5100
in %		39.2	39.2	14.7		100.0
1993						
Total	.	1600	1400	900	.	5800
in %		27.6	24.1	15.5		100.0

* Source: Bundesanstalt für Arbeit (1992, 1993, 1994)

Table 6: Gains of Immigration: Full Employment Model (Billion DM)

		Gains of Natives			Gains of Migrants	
	Total	**Total**	**Skilled**	**Unskilled**	**Skilled**	**Unskilled**
			Inflow = 10%			
$\lambda = 0$	91.822	17.078	51.420	-61.888	0	74.743
$\lambda = 0.5$	132.044	3.372	-6.763	-29.479	80.708	47.965
$\lambda = 1.0$	156.934	4.998	-64.053	21.971	151.936	0
			Inflow = 5%			
$\lambda = 0$	50.181	4.270	28.101	-38.886	0	45.911
$\lambda = 0.5$	66.865	0.843	-2.974	-16.243	40.418	25.604
$\lambda = 1.0$	79.716	1.249	-33.826	11.160	78.467	0
			Inflow = 1%			
$\lambda = 0$	10.719	0.171	6.003	-9.048	0	10.548
$\lambda = 0.5$	13.508	0.034	-5.530	-3.489	8.094	5.380
$\lambda = 1.0$	16.143	0.050	-7.053	2.260	16.093	0

Notes: The calculations assume that national income equals DM 2,108 billion, that 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 the unskilled is -0.85, that for the skilled is -0.45. The elasticity of the wage of skilled workers with respect to a change in the quantity of unskilled is 0.15, that of unskilled workers with respect to a change of skilled workers is 0.55. Furthermore it is assumed, that 27.1 % of the native labor force is unskilled and 72.9 % is skilled. These numbers are all derived from German data for 1993 as explained in the text. The fraction of skilled migrants is denoted by λ.

Table 7: Gains of Immigration: Full Employment at 10% Inflow (Billion DM)

		Gains of Natives			Gains of Migrants	
	Total	Total	Skilled	Unskilled	Skilled	Unskilled
	$\epsilon_{SS} = -0.45$; $\epsilon_{LL} = -0.85$; $\epsilon_{SL} = 0.15$; $\epsilon_{LS} = 0.55$					
$\lambda = 0$	91.822	17.078	51.420	-61.888	0	74.743
$\lambda = 0.5$	132.044	3.372	-6.763	-29.479	80.708	47.965
$\lambda = 1.0$	156.934	4.998	-64.053	21.971	151.936	0
	$\epsilon_{SS} = -0.5$; $\epsilon_{LL} = -0.5$; $\epsilon_{SL} = 0.15$; $\epsilon_{LS} = 0.55$					
$\lambda = 0$	98.854	10.046	55.358	-74.968	0	88.808
$\lambda = 0.5$	133.663	1.752	-5.578	-32.768	80.430	51.481
$\lambda = 1.0$	156.378	5.553	-63.253	21.893	150.825	0
	$\epsilon_{SS} = -0.2$; $\epsilon_{LL} = -1.2$; $\epsilon_{SL} = 0.15$; $\epsilon_{LS} = 0.55$					
$\lambda = 0$	84.790	24.111	47.482	-48.808	0	60.679
$\lambda = 0.5$	130.980	4.436	-8.747	-26.112	0.039	44.449
$\lambda = 1.0$	159.710	2.221	-68.051	22.359	0.075	0
	$\epsilon_{SS} = -0.45$; $\epsilon_{LL} = -0.85$; $\epsilon_{SL} = 0.01$; $\epsilon_{LS} = 0.06$					
$\lambda = 0$	91.822	17.078	51.420	-61.888	0	74.743
$\lambda = 0.5$	130.084	5.332	-5.769	-27.923	78.616	46.135
$\lambda = 1.0$	156.934	4.998	-64.053	21.971	151.936	0
	$\epsilon_{SS} = -0.45$; $\epsilon_{LL} = -0.85$; $\epsilon_{LS} = 0.3$; $\epsilon_{LS} = 1.1$					
$\lambda = 0$	91.822	17.078	51.420	-61.888	0	74.743
$\lambda = 0.5$	134.192	1.224	-7.801	-31.232	82.948	50.019
$\lambda = 1.0$	156.934	4.998	-64.053	21.971	151.936	0

Notes: See Table 6. ϵ_{SS} and ϵ_{LL} denote the elasticities of factor prices of skilled and unskilled workers, respectively. ϵ_{SL} denotes the elasticity of skilled wages with respect to a change in the quantity of unskilled workers, ϵ_{LS} denotes the elasticity of unskilled wages with respect to a change in the quantity of skilled workers.

Table 8: Gains from Immigration and the Disequilibrium Model (Billion DM)

	Natives	Migrants	Total	Tax and Unemployment Insurance Gains[1]
	A. Unskilled Immigration			
(I) Equilibrium	17.078	74.743	91.822	16.623
	(0.81)	(3.55)	(4.36)	(0.79)
(II) Disequilibrium				
a) Constant native unemployment	17.078	74.743	91.822	16.623
	(0.81)	(3.55)	(4.36)	(0.79)
b) Immigration equals increase in	-116.670	116.670	0	15.325
native unemployment	(-5.53)	(5.53)	(0.00)	(0.73)
c) Partial crowding-out of unskilled				
natives				
$\beta = 0.3$	-89.057	113.100	24.043	16.963
	(-4.22)	(5.37)	(1.14)	(0.80)
$\beta = 0.5$	-97.773	114.584	16.811	16.542
	(-4.64)	(5.44)	(0.80)	(0.78)
$\beta = 0.7$	-107.955	115.910	7.954	15.941
	(-5.12)	(5.50)	(0.38)	(0.76)

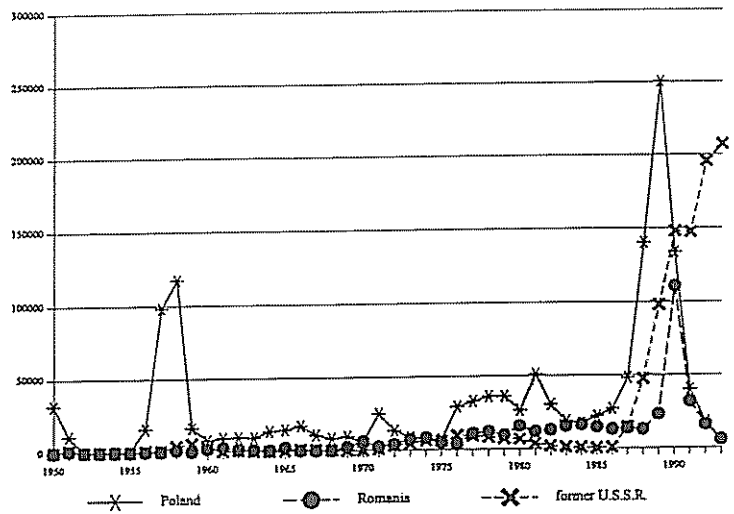
Table 8 continued:

	Natives	Migrants	Total	Tax and Unemployment Insurance Gains[1]
	B. Skilled Immigration			
(I) Equilibrium	4.998	151.936	156.934	40.931
	(0.24)	(7.21)	(7.44)	(1.94)
(II) Disequilibrium				
a) Constant native unemployment	4.998	151.936	156.936	40.931
	(0.24)	(7.21)	(7.44)	(1.94)
b) Zero native unemployment	88.627	151.936	240.566	44.430
	(4.20)	(7.21)	(11.41)	(2.11)
c) Partial expansion of unskilled employment				
$\beta = 0.3$	96.138	151.936	248.074	44.430
	(4.56)	(7.21)	(11.77)	(2.11)
$\beta = 0.5$	61.200	151.936	213.136	42.913
	(2.90)	(7.21)	(10.11)	(2.04)
$\beta = 0.7$	43.962	151.936	195.897	42.262
	(2.09)	(7.21)	(9.29)	(2.00)

Notes: See Table 6. Immigration of 10 % of the native work force is assumed. β denotes the weight of native unskilled employment in the objective function of the union (see Appendix A).

[1] This numbers include the unemployment insurance contributions of immigrants calculated as 0.0384 times their immigration gain, the tax contribution of immigrants calculated using the average tax rate for skilled and unskilled workers, respectively, and the costs or benefits of the unemployment insurance system resulting from the variation in native employment calculated as average unemployment benefit in 1993 (1,421 DM) in Germany times the variation in unemployment.

Figure 1: Inflow of Ethnic Germans to West Germany 1950-1993*



Source: Waffenschmidt (1994)

Figure 2: Countries Incorporated in the Schengen Accords

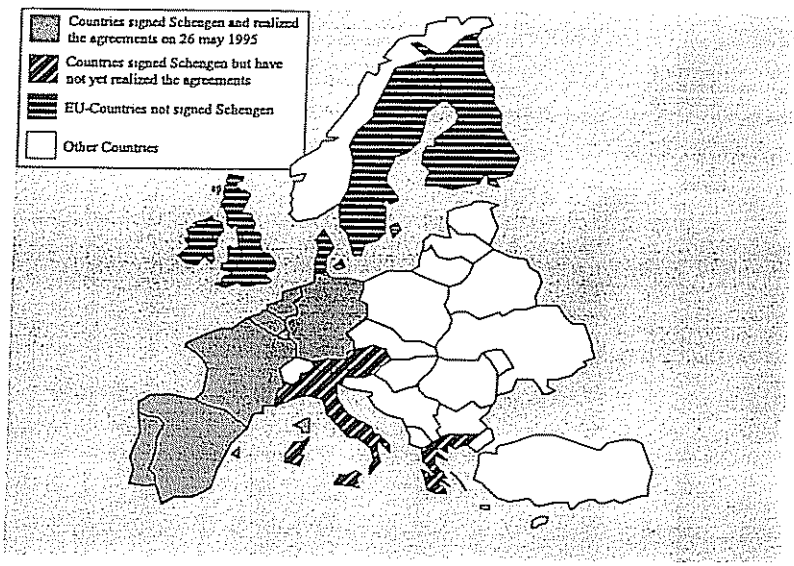


Figure 3: Theoretical Framework

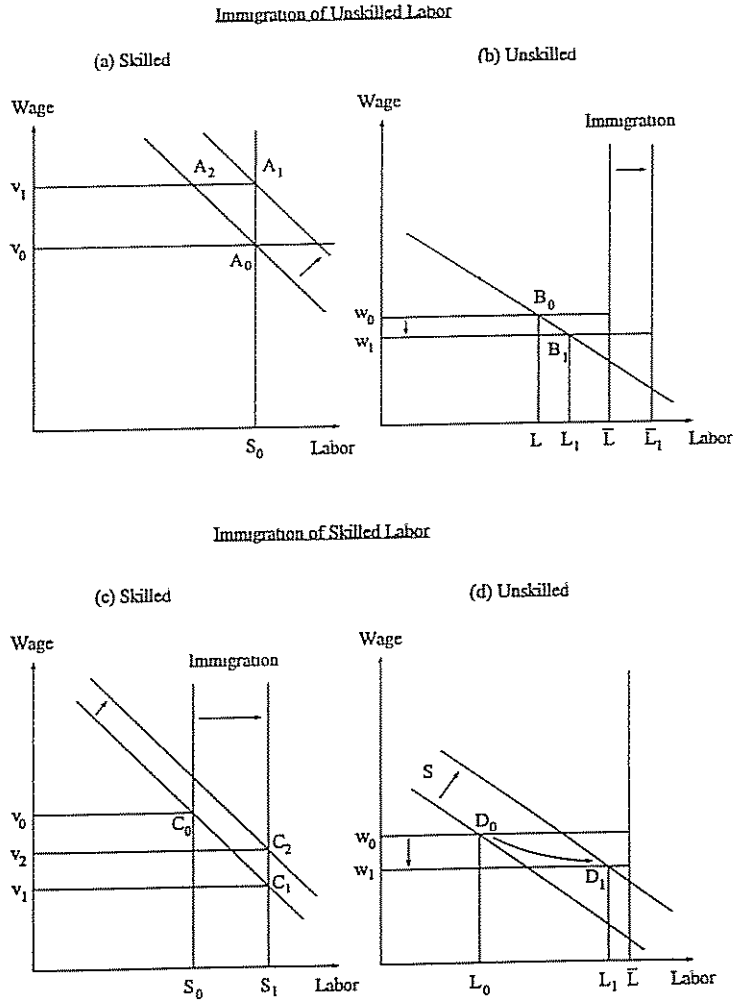


Figure 4: Calculation of the Gains from Immigration

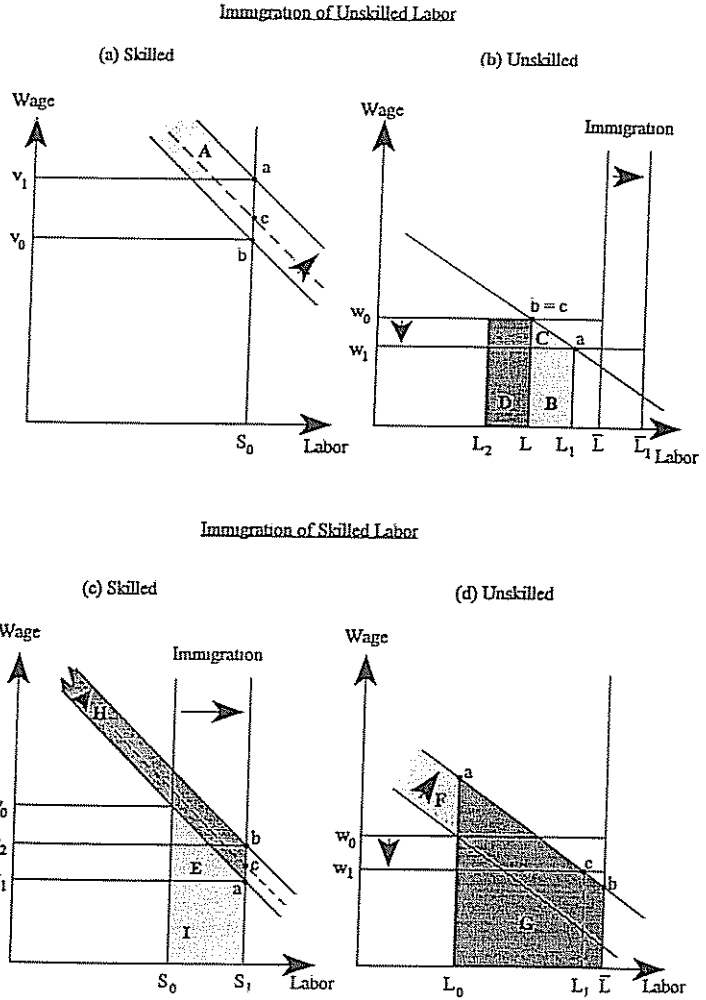
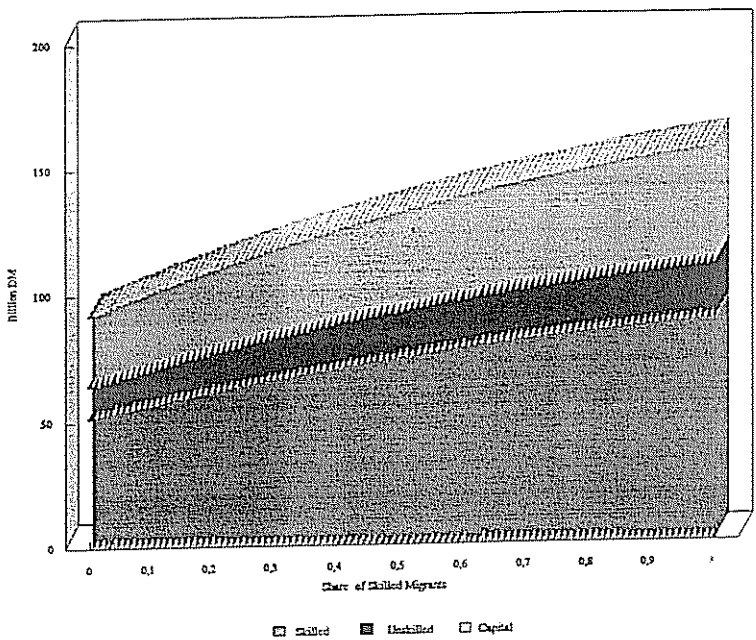
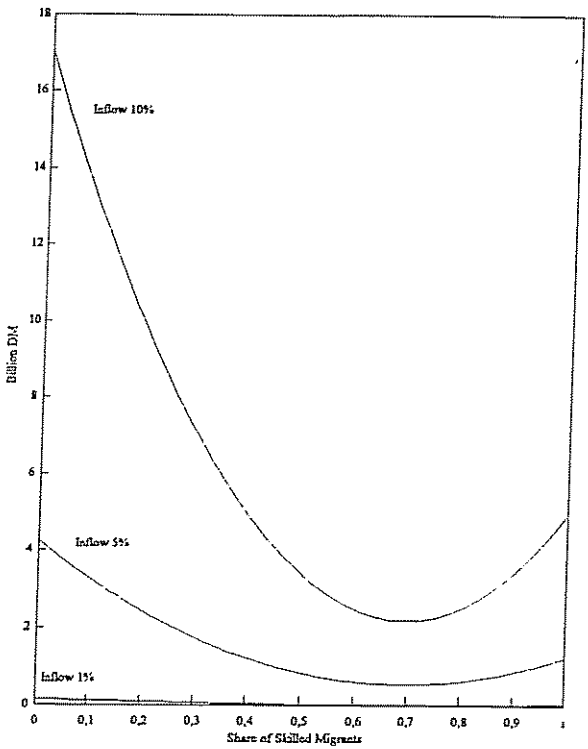


Figure 5: Total Immigration Gains according to Production Factors at 10% Inflow



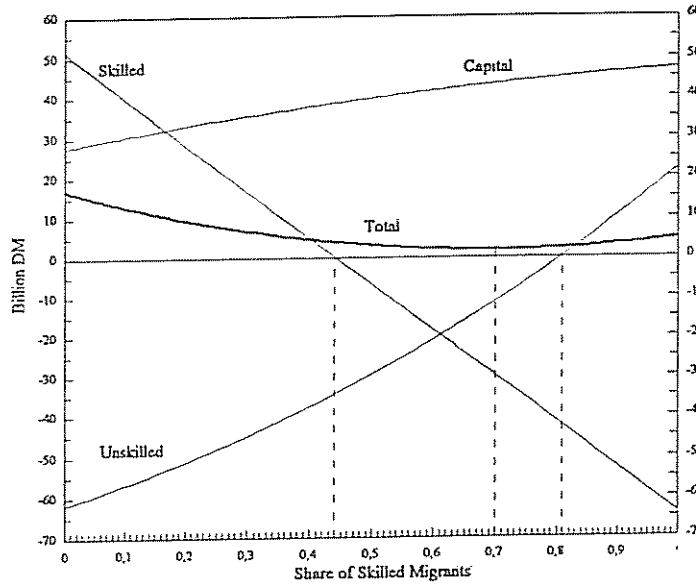
Notes: See Table 6.

Figure 6: Immigration Gains of Natives and Immigrant Skills



Notes: See Table 6.

Figure 7: Immigration Gains of Natives According to Production Factors at 10% Inflow



Notes: See Table 6.

APPENDIX A

The model assumes an economy which produces a single output according to a constant-returns-to-scale production function with capital, skilled labor S and unskilled labor L. The output price is considered to be pre-determined and both types of labor are q-complements (the standard case). Natives supply input factors at fixed levels. The level of immigration M is fixed by governmental rules. 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 or to the skilled workers.

A monopoly union sets the wage w on the market for unskilled labor and employers then choose the level of employment in this market. The wage v of skilled workers is determined by competitive forces. 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:

$$(A1) \quad \max_{w} \Omega = vS + wN^{\beta}, \quad 0 < \beta < 1,$$

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

$$(A2) \quad v = v(\bar{S}, L)$$

(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 maximize Ω with respect to w. Hence, the first-order condition implies

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

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

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

where $\eta_{Lw} = \frac{\partial L}{\partial w}\frac{w}{L}$ and $\varepsilon_{vL} = \frac{\partial v}{\partial L}\frac{L}{v}$ 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. The comparative statics lead to:

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

$\hat{w} = dw/w$ and $\hat{\alpha} = d\alpha/\alpha$. From $\frac{\partial\alpha}{\partial\bar{M}} = -\frac{1}{\bar{N}}$ (for $\bar{M} = 0$) and $\hat{M} = \frac{M}{\bar{N}}$ (with $\partial M = M$) it follows:

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

One also obtains:

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

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

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

$\eta_{LS} = \frac{\partial L}{\partial \bar{S}} \frac{\bar{S}}{L}$ 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 B

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

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

where Y refers to the output, K to Capital, S to skilled workers, L to unskilled 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:

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

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

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

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 labor 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:

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

and

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

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

$$(B6) \quad \frac{\Delta Y_N}{Y} = -\frac{y \epsilon m^2}{2},$$

which correspondes to triangle C in Figure 5.

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

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

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

$$(B8) \quad \frac{\Delta Y_M}{Y} = \frac{y_S \lambda m}{t_S} + \frac{y_S \epsilon_{SS} \lambda^2 m^2}{t_S^2} + \frac{y_S \epsilon_{SL} \lambda (1-\lambda) m^2}{t_S t_L} + \frac{y_L (1-\lambda) m}{t_L} + \frac{y_L \epsilon_{LL} (1-\lambda)^2 m^2}{t_L^2} + \frac{y_L \epsilon_{LS} \lambda (1-\lambda) m^2}{t_S t_L},$$

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

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

$$(B9) \quad \frac{\Delta Y}{Y} = \frac{\Delta Y_N}{Y} + \frac{\Delta Y_M}{Y} = \frac{y_S \lambda m}{t_S} + \frac{y_S \epsilon_{SS} \lambda^2 m^2}{2 t_S^2} + \frac{y_S \epsilon_{SL} \lambda (1-\lambda) m^2}{2 t_S t_L} + \frac{y_L (1-\lambda) m}{t_L} + \frac{y_L \epsilon_{LL} (1-\lambda)^2 m^2}{2 t_L^2} + \frac{y_L \epsilon_{LS} \lambda (1-\lambda) m^2}{2 t_S t_L}$$

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