ESTIMATING THE ECONOMIC EFFECTS OF IMMIGRATION IN A NOT STRICTLY SEGMENTED LABOR MARKET: THE CASE OF GERMANY AND AUSTRIA

1. Introduction

In recent years, the effects of trade and migration on the labor markets in the industrialized countries have been studied intensively. Labor economists have investigated the claim that the decline in wages, especially for low-skilled workers, and the increase in unemployment is due to immigration. Trade economists as well as labor economists have analyzed the issue whether trade with the emerging countries has had adverse effects on the labor market. In continental Europe, attention has been focused on assessing the economic effects of the opening of the East and on forecasting the benefits and costs of the enlarging the European Union to the East.

The EU's eastward enlargement has the potential of substantially raising economic activity in the countries of Central and Eastern Europe. In the long run, the increase in trade flows and in investment to these countries, which is expected to result from this integration step, will make a substantial contribution towards narrowing the huge income gaps between East and West; nonetheless, for many years large income differentials will remain, which are likely to set off a wave of immigration from the East.

Even before the launch of the Eastern enlargement, migration has been exerting increasing pressure on some West European countries, and concern about the ability of the labor market to integrate the newcomers has risen. With unemployment at persistently high levels, an increasing number of EU member countries is less and less willing to accept new members into the EU, because of the fear that such a move will be costly, not the least in terms of higher unemployment. The development over the last 10 years since the opening of the East have triggered a debate on the economic and social consequences of immigration in many countries. That this debate has sometimes been emotionally charged simply reflects the fact that immigration has an uneven impact on various groups in society: there are winners and losers.

Because of geographical proximity and historical links, Austria and Germany have experienced more pronounced increases in trade flows and have received a relatively larger share of immigrants over the past ten years than other countries; this trend is expected to continue as the integration of the Central and Eastern European countries progresses. This paper, therefore, concentrates on the literature dealing with the economic effects of immigration in these two countries.

Two popular views of the effects of immigration

While there may be controversy in the political sphere, one may hope for a great deal of consensus in the economic sphere; after all, economics is a mature social science with a sophisticated tool kit for investigating the purely economic effects of immigration. Such empirical investigations can rely on basic economic principles. Within the framework of demand and supply, immigration can be depicted as a shift in the supply of labor to an economy; price and quantity effects are then determined by the interaction with demand.

But it seems that even in economics there is no unanimity on how to approach the issue of labor market effects of immigration, maybe because of interference from the political sphere. *Borjas* (1993, pp. 191-192) summarizes the two disparate strands of thinking in the following way:

"There are two opposing views about immigrants affect the native labor market (...). One asserts that immigrants have a harmful effect on the employment and earnings opportunities of natives. Put succinctly, immigrants "take jobs away" from natives: as immigrants enter the labor market, natives are displaced. This hypothesis is sometimes stated even more extremely: immigrants displace natives on a one-to-one basis; for every immigrant admitted to the United States, an American native worker loses his/her job."

Basically, three assumptions are required to reach the conclusion that immigrants displace workers from their jobs on a one-to-one basis (*Borjas,* 1993, p. 191). The first is that the number of jobs in the labor market is fixed. New labor market entrants compete with the existing labor force for the same pool of jobs. This view implies that for every person taking a job, some other worker must be displaced. This, however, need not be the case, if there is some degree of substitutability between capital and labor or if there is economic growth.

The second assumption is that immigrants and natives are perfectly interchangeable in the labor market. For an immigrant to be able to take over a job formerly held by a native, the immigrant must be equally qualified for the job. In other words, immigrants and natives are perfect substitutes in production.

As *Borjas* (1993, p. 193) points out, it is unclear why employers, given a choice between equally skilled immigrants or natives, would prefer to hire immigrants. Hence, a third assumption is required: immigrants are willing to work for lower wages than equally productive natives. As immigrants enter the labor market, the supply of these skills to the market increases and there is more competition among the workers supplying these skills to employers. Because of the lower wages now paid native workers, some natives find it worthwhile to withdraw from the labor force; the number of native workers employed declines. This "displacement" will in general not be on a one-to-one basis (unless the supply of natives is very elastic). The number of natives that leave their jobs depends on how many find it worthwhile to leave the labor market altogether, which in turn depends on the value of their alternatives (such as leisure or managing the household). Another possibility, not mentioned by *Borjas* (1993), but relevant for the European setting, is that wages are inflexible downward, as may be the case in the short run, when wages are fixed by minimum wage laws or unions. If the definition of "wages" is widened to include working conditions, then wages in

the strict sense may remain unchanged, but if foreign workers but not natives are willing to accept worse working conditions, natives will be replaced on a one-to-one basis, at least in the short run.

"A second school of thought argues exactly the opposite. *Piore* (1979), for instance, believes that immigrants entering the US labor market cause very little displacement of natives because immigrants 'take on a distinct set of jobs, jobs that the native labor force refuses to accept'. In this view, the American labor market is segmented into two sectors: a primary sector, containing "good" jobs, and a secondary sector of 'bad' jobs" (*Borjas,* 1993, p. 192).

This view is also flawed because it depends on arbitrary assumptions that find no empirical support. If natives did indeed wish to avoid working in the secondary labor market, a shortage of these types of workers would drive up wages paid in this sector, so that even some natives would be willing to work at "bad" jobs (*Borjas,* 1993, p. 192).

Thus, both of the views presented above have serious shortcomings and a more constructive approach would be to start with the basic principles of supply and demand. One simple case that seems to fit the problem at hand as a first approximation is to assume that the supply of workers is completely inelastic. This case corresponds to an economy at full employment. Employment is entirely determined by the supply of labor, and the demand for labor determines the wage rate. An exogenous increase in the supply of labor, say, because of immigration, shifts the supply curve outward, and the wage rate falls to a new level. In this case the entire effect is on the wage rate. Under plausible assumptions regarding the production parameters, this effect can be quantified as follows: A 10 percent increase in the number of workers reduces the wage by 3 percent (*Borjas,* 1995, p. 7)[1]. Complications of this basic model that have been considered in the literature include the breakdown of labor into skilled and unskilled workers (allowing a treatment of the question of whether immigrants are substitutes or complements of natives), and the distinction between flexible and inflexible wage regimes. These cases are treated later.

This paper is organized as follows. The next section presents some basic statistics on the population and the labor force by nationality in the 15 EU countries. The following two sections provide a brief historical survey of U.S. labor market studies concerned with immigration and show how the conflict between early area studies and studies using factor analyses has been resolved in the U.S. literature. Section 5 summarizes the results of several cross-sectional studies for Austria and Germany. The following section applies the methodological insights gained in the U.S. debate to the cross-sectional studies for Austria and Germany. Other points of criticism are also raised. While the cross-industry studies for Germany and Austria are methodologically flawed, a few studies within the factor proportions framework serve as a basis for estimating the impact of immigration on the labor markets of Austria and Germany. These studies, differentiating between unskilled and skilled labor report substantial unemployment effects for the rigid European-style labor markets. A final chapter contains the conclusions.

[1] This assumes a constant-output labor demand elasticity of –0.3 (*Hamermesh,* 1993, p. 24) and a share of labor income of 0.7.

2. Some basic statistics on the population and the labor force in the EU

Table 1 presents data on the population in the fifteen EU states and the share of non-nationals. There is a great deal of variation in the share of non-nationals, with Luxembourg, Belgium, Germany, and Austria posting by far the highest rates.

As is evident from Table 2, the discrepancy between the Mediterranean and some Nordic countries on the one hand and the countries mentioned above, on the other, is even more pronounced when shares in the labor force are considered. As a rule, unemployment rates of non-nationals are higher than for the total population, though there are several exceptions when the unemployment rates of EU-nationals are considered. Figure 1 provides a graphical representation of the share of non-nationals and of non-EU-nationals in the total labor force[2].

3. U.S. labor market studies: conflicting evidence

The empirical literature on labor market impacts of migration has at first concentrated on the U.S. experience as a major immigration country; but in drawing on the empirical findings for the U.S. labor market, it is important to bear in mind that labor market institutions differ between the U.S. and Europe. In the more flexible U.S., wage effects should be more prominent, whereas in the more rigid European labor markets unemployment effects should be more important.

U.S. immigration studies generally use regional variation in immigration as the major explanatory variable, i.e., they compare local labor markets with differing immigration rates. *LaLonde - Topel* (1991) and *Altonji - Card* (1991), for example, use U.S. Census data in a regional context, and both studies find very small unemployment and earnings effects. The correlations between immigrant proportions in cities and native labor market performance are insignificant.

[2] Luxembourg, with its special status as a financial center, is excluded from this comparison.

Table 1: Population of EU Member States by Nationality

	EU15	A	B	D	DK	E	FIN	F	GR	IRL	I	L	NL	P	S[1]	UK
	In thousands															
Population																
Nationals	347218.2	7208.4	9280.0	73529.4	5067.9	38506.3	4886.4	52954.0	10107.5	3440.8	56223.3	269.1	14452.0	9710.0	6027.1	55556.1
Non-nationals, total	15921.7	671.9	824.6	7040.2	138.8	242.4	38.8	3381.3	130.5	94.8	190.1	133.5	719.0	55.1	306.4	1954.3
of whom, EU-nationals	5114.7	84.3	470.4	1863.1	39.2	99.9	8.7	1142.9	17.9	71.3	40.5	120.8	206.0	29.6	130.0	790.1
	In %															
Population																
Nationals	95.6	91.5	91.8	91.3	97.3	99.4	99.2	94.0	98.7	97.3	99.7	66.8	95.3	99.4	95.2	96.6
Non-nationals, total	4.4	8.5	8.2	8.7	2.7	0.6	0.8	6.0	1.3	2.7	0.3	33.2	4.7	0.6	4.8	3.4
of whom, EU-nationals	32.1	12.6	57.0	26.5	28.2	41.2	22.4	33.8	13.7	75.2	21.3	90.5	28.7	53.7	42.4	40.4

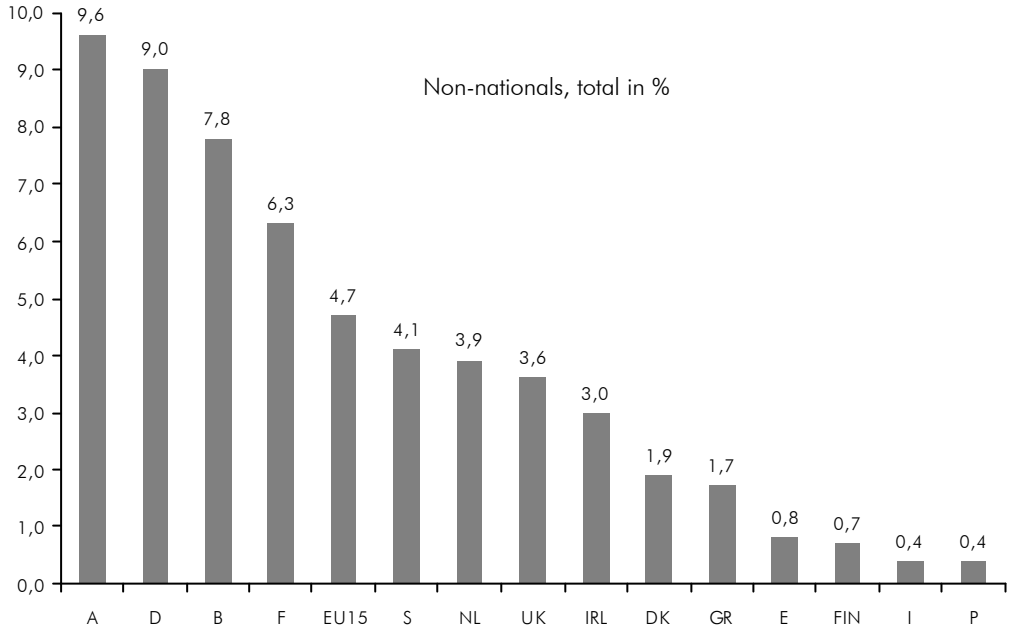
Source: Eurostat Labour Force Survey 1995; *Kiehl - Werner* (1999). – [1] Population surveyed only from the age of 15 upwards

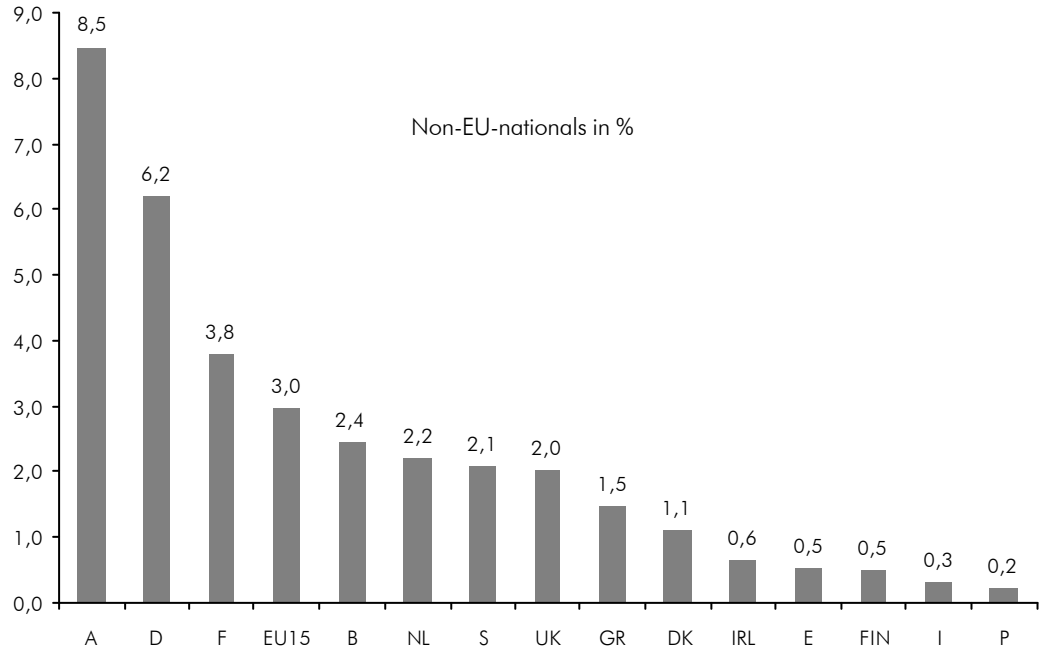
Table 2: Labor Force[1] and Unemployment Rates by Nationality in 1995

	EU 15	A	B	D	DK	E	FIN	F	GR	IRL	I	L	NL	P	S	UK
	Labor force															
Population																
Nationals	95.3	90.4	92.2	91.0	98.1	99.2	99.3	93.7	98.3	97.0	99.6	61.0	96.1	99.6	95.9	96.4
Non-nationals, total	4.7	9.6	7.8	9.0	1.9	0.8	0.7	6.3	1.7	3.0	0.4	39.0	3.9	0.4	4.1	3.6
of whom, EU-nationals	37.1	11.7	68.7	31.4	43.6	36.1	30.3	40.2	13.0	79.2	21.3	92.9	43.6	50.7	49.3	44.5
	Unemployment rates															
Population																
Total	10.7	4.3	9.3	8.2	7.0	22.7	17.0	11.9	9.1	12.0	11.8	2.9	7.2	7.0	8.1	8.7
Nationals	10.4	4.1	8.1	7.5	6.8	22.7	16.9	11.2	9.0	11.8	11.8	2.5	6.5	7.0	7.6	8.6
Non-nationals, total	16.7	6.8	23.4	15.0	18.1	23.1	26.3	21.7	13.7	17.9	12.8	3.6	23.5	12.2	19.7	14.3
of whom, EU-nationals	10.8	1.2	17.4	9.4	7.2	19.2	24.1	10.5	8.1	18.9	9.3	3.5	11.0	9.9	14.5	11.0

Source: Eurostat Labour Force Survey 1995; *Kiehl - Werner* (1999). – [1] Labor force = persons in employment and unemployment persons aged 15 and over.

Figure 1: Labor Force by Nationality in 1995 in the EU





Freeman (1993, p. 447) summarizes these findings on the impact of immigration on the U.S. labor market as follows: "Earnings or employment of U.S.-born workers, including those with skills similar to immigrants, differ little between areas with differing immigrant concentrations."

The fact that econometric research has not been able to establish a single instance in which the earnings of the U.S. born workers have been strongly and adversely affected by the increase in the supply of immigrants is at odds with the typical presumptions in the public arena. *Borjas* (1993, p. 195) cites three reasons for this divergence: First, in the public debate there is the assumption that immigrants are strong substitutes in production; second, immigration to the U.S., though large and increasing in size, is still a relatively small component of demographic change in the U.S. Third, at the same time that immigrants were entering the U.S., two other, much larger groups of natives were also entering the labor force: women and the baby boomers, with the result that immigration increases were dwarfed by these demographic developments.

But the econometric findings are also at variance with an analysis of how immigration affects the skill mix of labor based on the demand-supply framework. As *Freeman* (1993, p. 448) put it: "Immigration increases the supply of less skilled workers, contributing significantly to rising earnings inequality." This conclusion follows from the economic principle that a large immigrant-induced increase in the supply of less educated, which indeed has occurred in the U.S., has to affect less educated native-born Americans. *Borjas - Freeman - Katz* (1992), relying on estimated elasticities of relative wages to relative supplies from other studies, find that some 40 percent of the 10 percentage point decline in the relative weekly wage of high school dropouts is attributable to immigration.

4. Resolution of the conflict between area studies and factor proportions analyses

This conflict between cross-city and factor proportions analysis, which also shows up in studies of the European labor market, is resolved in later studies of the U.S. labor market, but seems to persist in the European literature. A paper by *Borjas* (1995) and a major study by *Borjas - Freeman - Katz* (1997) deal in depth with this methodological question. They conclude that the immigrations effects are diffused throughout the economy, and that the spatial correlations between changes in native outcomes and immigration do not measure the impact of immigration on local labor markets. *Borjas - Freeman - Katz* (1997, p. 25) are quite explicit about the shortcomings of this approach: "The one valid inference from an analysis of spatial correlations is that immigration is not a major determinant of the regional structure of labor market outcomes for natives."

The interpretation of such correlations as a causal relationship between immigration and native wages presumes that the local markets are segmented from each other. But the geographical areas, for which these studies have been conducted, are not closed economies. Labor, capital, and goods flow easily across geographical boundaries, and factor prices tend to be equalized. Native workers, in particular, and firms respond to the inflow of immigrants by moving to other regions offering better opportunities; in sum, these migration flows (as well as flows of capital) disperse the

adverse impact of immigration on the wage over the entire economy, and the correlations reported in the econometric literature allow no inference on the macroeconomic impact of the inflow of foreign labor.

On the substantive issue, *Borjas - Freeman - Katz* (1997, p. 66), using a production function framework, show that the net gain for the U.S. economy of a 5.5 percent increase in the number of immigrants (since 1979) in terms of full-time equivalents is small: about 0.13 percent of GDP. The main beneficiary of immigration is native-owned capital, experiencing a 6.5 percent increase in income, while both skilled and unskilled workers suffer losses: 2.5 percent and 4.6 percent, respectively. Thus the wage of skilled relative to unskilled workers changes by 2.1 percent[3].

5. Cross-sectional studies for Austria and Germany

The situation in Austria and Germany after the fall of the iron curtain could also be considered a kind of historic experiment, well suited for measuring the labor market impact of immigration because of the massive inflow of immigrants and the sudden change in the trade regime. In contrast to studies for the U.S. most studies use industries as the unit of measurement instead of regions. This is argued by reference to the smallness of the countries concerned which suggests that a geographical breakdown may not be useful. In view of the high unemployment in Europe in the eighties and nineties, the impact of immigration on the wage level as well as on unemployment is investigated in these studies.

An analysis of the German labor market, which has experienced huge immigration flows throughout its post-war history can be expected to provide sound empirical evidence on this issue. *Zimmermann* (1995, p. 54), reviewing several studies of the German labor market, points out that that the empirical findings are rather similar to those from area studies for the United States: wage and employment effects are in general small. The paper by *Winkelmann - Zimmermann* (1993), one of the first study to deal with the effects of immigration on the labor market, uses micro panel data for Germany and finds only small negative effects of immigration on the frequency of unemployment spells for the 1970s; for the 1980s, however, *Mühleisen - Zimmermann* (1994) could not detect any negative effect, presumably because of heightened wage flexibility.

Austria may also be thought to offer an interesting field for study, as the share of foreign labor in the Austrian labor market rose from 5 percent in 1988 to almost 9 percent in 1991 and continued to rise in the following years. This strong inflow of foreign labor appears to offer an interesting setting for examining the impact of foreign labor on income and employment opportunities of the native population. *Zweimüller - Winter-Ebner* (1996), using individual data for workers in manufacturing, conclude that increased immigration did not result in higher unemployment entry of Austrian workers, although it slightly increased the duration of unemployment: a rise in the

[3] These results apply when the capital stock is fixed. The GDP gain is smaller when capital adjusts completely to the entry of immigrants.

immigrant share by 1 percentage point raises unemployment duration by approximately 5 percent, i.e. by 5 days. In an earlier study (*Winter-Ebner - Zweimüller,* 1994) it was found that increased immigration did not result in higher unemployment entry for young native workers in Austria. These results are in contrast with the study by *Brandel et al.* (1994) which concludes that the surge in the number of immigrants at the end of the eighties and the beginning of the nineties into Austria led to a significant displacement of guestworkers of earlier generations, but also of natives: 60 percent of all firms in their sample with shrinking employment of natives raised the employment of foreign labor in the period from 1989 to 1991.

Even if the effects on unemployment are small, as these studies suggest, there may be wage effects. The impact of immigration on wages in West Germany is investigated by *DeNew - Zimmermann* (1994) who use data from the German socio-economic panel together with data on industry concentration of foreigners. They find large negative effects on hourly wages for blue-collar workers, but positive effects for white-collar workers. Their empirical findings imply that an increase in the share of foreign labor by 1 percentage point depresses wages of blue-collar workers by 5.9 percent, but boosts wages of low-experience white-collar workers increase by 3.5 percent; wages of highly experienced white-collar workers are unaffected. This finding allows them to conclude that foreigners are substitutes to native blue-collar workers, but complements to native white collar workers. These results are corroborated by *Hatzius* (1994, cited in *Winter-Ebner - Zimmermann,* 1998, p. 4) who uses regional variation in foreign shares as exogenous variables. Somewhat smaller effects are implied by the study by Winkelmann, who also employs the German Socio-Economic Panel for the years 1984-1998, but uses the industry share of unskilled workers instead of the share of foreign workers in an industry. While workers with a university degree are effectively shielded from competition by immigrants, the situation for workers with an apprenticeship degree, the bulk of the work force, is not clear cut. While wage effects are statistically significant, the effects are much smaller than the ones found by *DeNew - Zimmermann* (1994). A 1 percentage point increase in the share of foreigners reduces wages of natives by less than a quarter of a percent. A more recent study by *Haisken-DeNew - Zimmermann* (1996) updates the 1994 study and found an even higher degree of complementarity between foreign and native labor. The share of foreign workers has an overall positive effect on wages of natives: while immigration has no effect on low-skilled workers, it raises the wages of the highly-skilled.

6. A critique of the immigration studies for Germany and Austria

These studies can be criticized on various counts. The papers by *Zweimüller - Winter-Ebner* (1996) and *Winter-Ebner - Zweimüller* (1996) are typical of this kind of study and are analyzed in detail. Data are from social security record, which have several serious drawbacks, some of which are explicitly acknowledged by the authors. The most serious of these are that monthly gross earnings are only observable up to the social security contribution ceiling, and, more importantly for the purposes at hand, no information is available on hours worked. Thus, only data on male workers in manufacturing (below the age of 57) are included in the sample, with the more or less reasonable assumption that most male employees in manufacturing work full time. This procedure excludes female employees altogether; in particular, unskilled female labor is not considered, a

group likely to be a close substitute of foreign labor[4]. Moreover, restricting the study to workers aged less than 57 excludes a group of workers more likely than younger workers to be laid off in response to a labor supply shock[5].

Another concern refers to the time period studied. Some of the studies, particularly those studies dealing with Austria, cover the period from 1989 to 1992. True, this period saw a rapid increase in the number of foreign workers in the Austrian economy: the share of foreign workers as a percentage of dependent employment rose from 5.4 percent in 1988 to 9.0 percent in 1992; so this period could be said to provide a great deal of variation in the number of foreign workers and seems well suited for studying a shock to the labor market. There is one important caveat, however. The inflow of foreign labor cannot be considered an exogenous shock in its entirety (unlike the shock to the U.S. labor market after the amendment to the U.S. immigration law in 1965). The history of the flow of foreign labor into the Austrian labor market suggests that these flows were controlled to a great extent by the Social Partners, by the Austrian Trade Union Federation in particular (*Matuschek,* 1985, Gächter, processed) . Since the mid-sixties, when the labor unions agreed to a controlled inflow of guestworkers, the number of foreign workers has been subject to quotas in various forms. After the recession of 1974-75, for example, the number of foreign workers was reduced drastically in order to relieve the labor market. The rise in the number of foreign workers at the end of the eighties and the beginning of the nineties was again subject to approval by the unions, and granted because of the economic boom set off by the reunification of Germany[6].

The upswing of 1988 was followed by the economic boom resulting from the reunification of Germany. In Austria, economic growth took off after the downturn in 1987, when the growth rate of GDP was only 1.7 percent. In 1989 GDP growth was 3.7 percent, accelerating to 4.6 percent in 1990. In 1992, growth leveled off to 2.7 percent. If the inflow of foreign labor was more or less geared to the course of the upswing during these years, it would be surprising to find strong wage and unemployment effects of immigration, for t is well possible that the effect of the supply shock (immigration) on, say, wages of unskilled labor, was partly or fully offset by the outward shift in the demand for labor in the course of the economic upswing. It is a well established phenomenon that boom periods benefit less skilled workers more than proportionally, with the result that wage differentials narrow (*Katz - Murphy,* 1986, *Katz - Murphy,* 1992, *Kruger - Summers,* 1988, *Pollan,*

[4] Industries, typically the low-wage industries, which have a high share of female employment, also have a high share of foreign labor; these are the industries most likely to be affected by the inflow of foreign labor. In 1992, 72 percent of all foreign female workers were employed in the service sector, with 57 percent employed in only four branches: tourism, cleaning services, retail trade, and health services (*Biffl,* 1992, p. 533)

[5] For many years there were special unemployment schemes in effect in Austria; these schemes allowed firms to lay off elderly workers, with no negative effect on income: after a period of unemployment with special unemployment benefits, workers would enter early retirement with no loss in income.

[6] It could be argued, though, that the trade unions were less effective in controlling the inflow of foreign labor than in the sixties and seventies (Gächter).

1990, *Yellen,* 1984). It is unlikely that this effect is fully captured by variables that could be viewed as proxies for demand variables[7].

But perhaps the most damning criticism of these studies is similar to the one leveled against cross-sectional studies of the impact of immigration on the labor market; in the case of the U.S. the criticism is directed at area studies, in the European context it is industry studies, in which cross-sectional data are employed with industries as the units of observation. In addition to individual characteristics (such as age, schooling, and experience), the regressors include industry and regional level information like the share (or its change) of foreign workers in an industry or region and industry-related trade (such as the change in export (import) share in industry to Central and East European Countries and the change in the export (import) share in industry to the rest of the world).

As *Chiswick* (1993, p. 911) points out, the assumption on which this methodology is based is that the units of observation are closed economies; i.e., the mobility of native factors of production does not bring about factor price equalization when the impact of immigration on wages of natives is considered; the imbalances in the labor market of one particular industry have no effect on labor markets in other industries, when the impact of immigration on the incidence or duration of

[7] This is so particularly because of the form in which such potential demand variables enter the equations: merchandise exports and imports are industry-specific. See below.

unemployment is examined[8]. This criticism is not made less valid by making the flow of immigrants to the industries analyzed endogenous[9].

Austria is credited with having a highly centralized and coordinated wage bargaining system (*OECD,* 1997), which is geared to macroeconomic indicators such as the overall unemployment rate and economy-wide productivity growth. This claim is consistent with the finding of a rather rigid wage structure (*Hofer et al.,* 1998). Moreover, Austria's labor market is said to be characterized by a relatively high degree of wage flexibility, in the sense that the development of wages reacts strongly to changes in unemployment (*Coe,* 1985, *Layard et al.,* 1991, *Elmeskov,* 1994, *Roeger - int'Veld,* 1997). Furthermore, labor turnover in Austria is reported to be about as high as in comparable European countries (*Hofer et al.,* 1998).

Under these conditions, the impact of immigration will be distributed throughout the economy, as workers in an industry experiencing an inflow of labor look for work in other industries (in a way similar to outmigration in area studies) or withdraw from the labor market, while other workers who might have moved to the industry in question will try to find work in another sector.

Labor mobility is, however, just one mechanism diluting the impact of immigration on specific industries. The other mechanism is the kind of centralized wage bargaining practiced in Austria. True, if there is a rise in unemployment in a specific industry as the result of a supply shock, wage rates in that industry will tend to decline, perhaps with a time lag. But even that reaction may be very muted, if economy-wide wage settlements strongly take into account the rise in unemployment and, by moderating wage claims for the whole economy, distribute the effects of higher unemployment in a specific industry over the whole economy.

Thus, the repercussions of a supply shock in industry A may well be felt in other industries. And vice versa: the effects of a labor supply shock in the rest of the economy may be felt in industry A, without there being a supply shock in this particular industry. The small effects of immigration on unemployment and wages found in cross-industry studies do not show that immigration had a minor impact on the economy, but the conclusions from such studies may be just this, to paraphrase the criticism leveled by Borjas, Freeman, and Katz at cross-city correlations: The only valid inference from an analysis of correlations with industries as the unit of measurement is that immigration is not a major determinant of the industrial structure of labor market outcomes for

[8] The third possibility that workers withdraw from the labor market altogether or move to the underground economy when the wage falls below the reservation wage is not even considered in any of these papers. Persons, who joined the hidden labor reserve, may reenter the labor market at a later period, with the possible effect of pushing other labor market participants into unemployment. If this is the case, the unemployment effect may be delayed for several months or even years. Evidence that this may be an important element in the development of Austria's labor market comes from the observation that participation rates in the late nineties were considerably below those in earlier periods and that the employment expansion in the course of the upswing of 1998 was accompanied by an even stronger rise in the labor supply, with the result that unemployment kept rising despite the pick-up in economic activity (*Biffl,* 1999, p. 284-285).

[9] Several of the studies mentioned above have taken this approach.

natives[10]. And: The evidence from cross-industry studies may just show that much of the adverse impact of immigration on the economic opportunities of workers in industries directly affected by the immigrant supply shock was diffused across the whole economy, as native migration flows responded to influxes of immigrants into specific industries[11].

7. General equilibrium studies of immigration into Europe

Just as the impact of immigration on the U.S. labor market has been modeled by way of the factor proportions approach, there are several studies assessing the impact of immigration in a general supply-demand framework. *Weyerbrock* (1995), *Breuss - Tesche* (1996), and *Bauer - Zimmermann* (1995) use this approach to discuss the labor market effects of immigration for the EU, Austria, and Germany.

In these models immigration is treated as an exogenous increase in labor supply. If wages are flexible, this excess supply leads to a wage decrease, which induces an increase in employment. Under this flexible wage regime, all factor supplies are exogenously given and factor prices adjust to clear the factor markets.

Under a fixed wage regime, however, which is likely to correspond to the short term, immigration leads to unemployment and lower per capita income, while factor prices are barely affected (*Weyerbrock,* 1995).

Weyerbrock (1995) constructs a 14-sector[12] CGE model for six regions (United States, EC, EFTA, small Eastern European economies, and the former Soviet Union) and examines the EC's potential to absorb 7 million workers[13] from Eastern Europe and the former Soviet Union within five years. This implies an annual increase in the EC labor force of about 0.9 percent. The simulations show that, with the urban wage fixed, immigration leads to a rise in unemployment by 4 percentage points, a fall in the average rural wage (–6.3), a rise in the rental rate of rural and urban capital, and a decrease in per capita income (employees and capital owners) of 4.3 percent. GDP rises by only 0.3 percent.

If, however, the EU were to adopt a flexible wage regime, immigrants would be integrated more readily into the workforce, with both rural and urban wages declining. Per capita income losses would be small or even turn into income gains, depending on the specification of capital growth.

In the bilateral Hungary-Austria case, *Breuss - Tesche* (1997), using a similar CGE model with comparable assumptions, examine the micro- and macroeconomic effects of labor migration of

[10] *Borjas et al.,* 1997, p. 25.

[11] *Borjas et al.,* 1997, p. 38.

[12] Four of the 14 sectors are in agriculture.

[13] It is assumed that all immigrants enter the EC labor market. Many immigrants will bring family members; therefore the total number of immigrants corresponding to 7 million immigrants entering the labor market is much higher.

10.000 persons from Hungary to Austria and of 100.000 persons from Eastern Europe to Austria. The experiments are performed for various scenarios (concerning the wage regime, mobility of capital). The results of this study, however, are of greater relevance for Hungary than for Austria. This has to do with the distinction between rural and urban wages. While this distinction may be important for the Eastern European countries, which have a large agricultural sector, it is of practically no relevance for Austria, where agriculture contributes less than 3 percent to GDP.

Perhaps the most interesting of the exercises using the supply-demand framework is the study by *Bauer - Zimmermann* (1995), who address the question whether immigration in the face of unemployment automatically causes problems for the labor market of the receiving countries. They distinguish between two types of labor: skilled labor is assumed to be in a competitive equilibrium, while unskilled labor is in disequilibrium and there exists unemployment in this labor market segment (i.e., wages are not downward flexible, perhaps because of union resistance to wage cuts, and unemployment may rise markedly as a result of immigration). The second issue important for the assessment of the wage effects of immigrants is the question of whether foreign workers are substitutes or complements to the two groups of natives distinguished. A plausible assumption is that immigrants are substitutes to unskilled natives and complements to skilled natives. Hence, increased immigration (of mostly unskilled labor) may depress wages and (possibly) increase unemployment of unskilled workers and may induce the reverse effect for skilled natives by shifting the demand curve for skilled workers.

In a first step the authors, following *Borjas* (1995), calculate a simple equilibrium model with full employment. Then the model is modified to deal with a situation of disequilibrium in the unskilled labor market. The calibration is carried out using German data. In 1993, the base year for this calculation, 27 percent of the native labor force was unskilled, and 73 percent was skilled.

A 10 percent increase in the labor force (about 2.8 million immigrants) would lead to direct gains for the natives (capital owners and workers) of about 0.24 percent of national income in the case of skilled immigration and to about 0.81 percent in the case of unskilled immigration. Not all factors of production win in this process, however. Capital always gains from immigration, 4.3 percent in the case of unskilled immigration, but substantially more, 7.4 percent, when only skilled labor immigrates (given the assumption of complementarity between capital and skilled labor).

Labor always loses, depending on the mix of skilled/unskilled immigration: in the case of unskilled immigration, the income of native labor falls by 0.7 percent on average, with wages of unskilled native labor dropping by 21 percent, and wages of skilled labor rising by 4.4 percent; in the case of skilled immigration, labor income drops by 2.8 percent on average, with wages of skilled labor falling by 5.4 percent, and wages of unskilled labor gaining 7.5 percent. When the skilled/unskilled immigration mix is 0.5, the capitalists experience a 6.3 percent increase in income, while labor loses 2.5 percent on average.

In the disequilibrium case with unemployment (which by assumption affects only unskilled labor), unskilled immigration can result in large losses, up to 5 percent of national income, depending on whether immigrants partially or totally crowd out unskilled native labor. In the worst case, immigration leads to a one-to-one increase in unemployment. The more the unions (which are

assumed to fix the wages of the unskilled labor force) take unemployment into account, the smaller the losses.

On the other hand, still within the disequilibrium framework with unemployment for unskilled labor, considerable gains can be expected from skilled immigration. Starting out from a position of unemployment, skilled immigration, by increasing the demand for unskilled unemployed natives (skilled and unskilled workers are complements), relieves unemployment among natives. Again the results of these calculations depend on how the unions react to the drop in unemployment. In interpreting this seemingly counterintuitive results, one should bear in mind that the disequilibrium in the labor market segment for unskilled labor is due to the rigidity of wages, which may be the result of the fact that unions set wages too high for unskilled workers or of minimum-wage laws. Clearly, there are options available for correcting this situation other than skilled immigration, such a lowering wages or training of the unskilled.

These positive effects in the presence of unemployment among the unskilled are one reason for favoring skilled immigration; the other is that tax payments and unemployment insurance contributions by migrants are likely to be much larger for skilled migrants than for the unskilled (*Bauer - Zimmermann,* 1995, p. 22).

The results derived for Germany are broadly applicable to the Austrian economy and may be used to get a rough estimate of the impact of immigration on the Austrian labor market in the early nineties. With regard to the important distinction between unskilled and skilled labor, the structure of the workforce by educational attainment is comparable to that of Germany, a result of similarities in the educational and training systems (such as the apprenticeship system), (*Biffl,* 1997, p. 271)[14]. From 1988 to 1992, the period with the heaviest inflow of foreign labor in the recent past, the number of foreign workers rose by 4.4 percent; thus, as far as the extent of the increase in foreign labor is concerned, the situation is very similar to one of the scenarios modeled by Bauer and Zimmermann, which assumes a 5 percent increase in foreign labor.

First consider the case of a *fully flexible labor market*. For a unskilled/skilled mix of 0.5 in immigration, the results derived by Bauer and Zimmermann for a 5 percent increase in foreign labor indicate a loss for labor of 1.3 percent on average, with wages of unskilled workers falling by 5.5 percent and those of skilled workers remaining unchanged.

But clearly, this is an unrealistic scenario, as the period from 1988 to 1992 cannot be considered an equilibrium situation in Austria. First, the number of unemployed rose by 44,000 from 1989 to 1993[15], amounting to more than one third of the rise in the number of registered foreign workers. Second, the period was a period of an economic upturn, and thus is unlikely to correspond to a position of long-term equilibrium as postulated in this scenario. Therefore, one also has to consider disequilibrium cases in order to get a rough estimate of the labor market outcomes in

[14] This also applies to the skill structure of foreign workers. In 1991, more than 60 percent of all foreign workers were unskilled, compared to some 30 percent of all Austrians (*Biffl,* 1997, p. 271, table 3).

[15] This calculation assumes a lag of one year between the supply shock and a change in unemployment.

Austria. *Bauer - Zimmermann* (1995) calculate two extreme disequilibrium cases (for unskilled immigration): (1) no change in the unemployment of native unskilled labor, (2) a one-to-one increase in the unemployment of native unskilled labor in response to unskilled immigration. Given that the increase in unemployment during this period was quite substantial, it seems reasonable to calculate the loss experienced by native labor as being between these two extremes but closer to the case of no change in unemployment; in this case, the income loss experienced by native labor can be put at 4.5 percent over this four-year period.

8. Conclusions

As the literature review has shown the impact of immigration on the labor market remains a controversial issue in economics. Two approaches have been used. The first approach attempts to establish the effects of the influx of (foreign) labor by examining supply shocks to particular geographic areas or to particular industries. This approach has been thoroughly discredited in the methodological debate that began in the nineties. It is only valid for strictly segmented labor markets, with no diffusion of the effects of immigration throughout the economy, whether the unit of observation is a geographic area or an economic sector. In the case of immigration into the European economies, where all economic sectors are affected to some extent, the case against this kind of studies is very strong; not only are the diffusion effects disregarded, but so are the spill-over effects from other sectors of the economy.

The second methodology which has been applied to the issue of immigration is an application of the basic supply-and-demand framework. What has been called the aggregate factor proportions approach by *Borjas - Freeman - Katz* (1997) is mainly concerned with changes in the proportions of various skill categories of labor. A full accounting of the effects of immigration is carried out within the framework of an aggregate production function or, in a more sophisticated but also less transparent way, in general equilibrium models.

Typically, the overall macroeconomic effects turn out to be minimal. In the equilibrium model as calculated by *Borjas - Freeman - Katz* (1997) the net gain to the economy of an increase in the number of workers by 5.5 percent is around 0.1 percent of GDP. This figure masks large redistribution effects, however. Given a fixed capital stock, the main beneficiary of immigration is native-owned capital, experiencing a 6.5 percent increase in income. Both skilled and unskilled workers suffer heavy losses (2.5 percent and 4.6 percent respectively). *Bauer - Zimmermann* (1995) derive similar results: depending on the mix of skilled/unskilled immigration, a 10 percent increase in the supply of labor leads to small income increase for natives of between 0.2 percent and 0.8 percent; gains for capital are substantial (ranging from 4.3 percent to 7.4 percent), while native labor experiences income losses (from 0.7 percent to 2.8 percent on average)[16].

[16] To gain a perspective of the size of the overall effect for natives, it is instructive to compare the income effect with the share of GNP spent by various countries on official development assistance: the United States (0.09 percent), Austria (0.26 percent) and Germany (0.28) are ranked at the lower end of donor countries, considerably below the UN target of

If the labor market is in disequilibrium and wages are not flexible downward, there may be substantial GDP losses. With a 10 percent increase in unskilled labor, losses may amount to 5 percent of GDP. On the other hand, if immigration is restricted to skilled workers, unemployment of the unskilled may be pushed down substantially, though clearly there are other remedies available than immigration to lower unemployment.

All these computations are carried out under the convenient assumption of constant returns to scale. As *Nordhaus* (1997, p. 83) in his comment on the paper by *Borjas - Freeman - Katz* (1997) points out, this is a crucial assumption; he argues that putting land and other fixed factors into a Cobb-Douglas production function with a conservative coefficient of 0.05 would result in a 0.25 percent penalty for a 5 percent labor increase; this would reverse the sign of total net benefits (capital and labor). Such calculations, however, do not even account for environmental effects or congestion effects, which are likely to be important, given that immigrants tend to settle in some of the most congested parts of the country. A similar case could be made for the costs of building and maintaining the economic infrastructure paid for by the native taxpayers[17].

If the goal of immigration policy is to increase the national income of natives, an additional point needs to be considered. As several authors have pointed out, it is important to look at the immigration surplus net of the fiscal burden imposed by immigrants on native taxpayers (*Borjas,* 1995, p. 18, *Biffl,* p. 559, *Freeman,* 1993, p. 449). Estimates of the costs of providing government services vary widely for the United States; as (*Borjas,* 1995) surmises, they may be higher for the European countries with their extensive welfare system and may easily dwarf the immigration surplus arrived at in the accounting exercises reported above.

In sum, given that the macroeconomic gains or losses for the natives are minimal, then main questions are distributional ones and the question of how large are the external effects in consumption and production and the fiscal effects (social costs and infrastructure) and who bears these costs. Distributional issues may also be at the root of why rich countries prefer free trade over free migration, even though, according to traditional trade theory, free trade and free immigration are equivalent means of economic integration, both leading to an equalization of factor prices. Countries that perform deliberate redistribution and immigration policies would never choose positive immigration quotas for workers who can be expected to be net fiscal beneficiaries in the immigration country (*Wellisch - Walz,* 1998).

0.7 percent, while the Scandinavian countries exceed this target (*OECD Observer,* 1999, p. 63). If immigration is considered a form of development aid, it is mainly paid for by low income groups, while official development assistance is paid out of general government revenues, with a more equitable income burden.

[17] Of course, as *Freeman* (1993, p. 449) suggests, there is a simple, though impractical solution to this problem: charge immigrants a service fee.

References

Altonji, J., Card, D., "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives," in Abowd, J. M. Freeman, R. B. (eds.), Immigration, Trade, and the Labor Market, Chicago: University of Chicago Press for NBER, 1991, pp. 201-34.

Bauer, Th., Zimmermann, K. F., "Integrating the East: The Labour Market Effects of Immigration", Centre for Economic Policy Research, Discussion Paper Series, 1995, (1235).

Biffl, G., "Auswirkungen des Ausländerstroms auf den Arbeitsmarkt," WIFO-Monatsberichte, 1992, 65(10), pp. 526-535.

Biffl, G., "Immigrant Labour Integration", in International Handbook of Labour Market Policy and Evaluation, Schmid, G., O'Reilly, J., Schönman, K. (eds.), Edwar Elgar Publishing Company, Cheltenham, 1996, pp. 551-565.

Biffl, G., "Trotz günstiger Beschäftigungsentwicklung kein Abbau der Arbeitslosigkeit", WIFO-Monatsberichte, 1999, 72(4), pp. 284-289.

Biffl, G., "Migration und ihre Rolle in der Integration Westeuropas", WIFO-Monatsberichte, 1999, 72(7), pp. 499-513.

Borjas, G. J., "The impact of immigrants on employment opportunities of natives," in The Changing Course of International Migration, OECD, Paris, 1993.

Borjas, G. J., "The Economic Benefits from Immigration," Journal of Economic Perspectives, Spring 1995, 9(2), pp. 3-22.

Borjas, G. J., Freeman, R. B., Katz, L. F., "How Much Do Immigration and Trade Affect Labor Market Outcomes", Brookings Papers on Economic Activity, 1997, 1, pp. 1-90.

Breuss, F., Tesche, J., "A General Equilibrium Analysis of East-West Migration: the Case of Austria and Hungary," in Biffl, G. (ed.), Migration, Free Trade and Regional Integration in Central and Eastern Europe, Schriftenreihe des Bundeskanzleramts, Verlag Österreich, Vienna, 1997, pp. 101-126.

Chiswick, B. R., Review of Immigration and the work force: Economic consequences for the Untied States and source areas. Edited by George J. Borjas and Richard B. Freeman, Chicago: University of Chicago Press, 1992, American Economic Review, 1993, 31(3), pp. 910-911.

Coe, D., "Nominal Wages, the NAIRU and Wage Flexibility", OECD, Economic Studies, 1985, (5), p. 87-126.

DeNew, J. P., Zimmermann, K. F., "Native Wage Impacts of Foreign Labor: A Random Effects Panel Analysis," Journal of Population Economics, 1994, 7, pp. 177-192.

DIW – Deutsches Institut für Wirtschaftsforschung, "Europäische Union: Osterweiterung und Arbeitskräftemigration," Wochenbericht, 64(5/97), Berlin, 1997.

Elmeskov, J., "Nordic Unemployment in an European Perspective", Swedish Economic Policy Review, 1994, 1(1-2).

Freeman, Richard B., "Immigration from poor to wealthy countries," European Economic Review, 37, 1993, pp. 443-451.

Gächter, A., "Austria: Protecting Naive Workers from Immigrants," to be published in Penninx, R., Roosblad, J. (eds.), Trade Unions, Immigration, and Immigrants in Europe: A Comparative Study of the Attitudes of Trade Unions in Seven Western European Countries, New York, Berghahn Publishers, without year, (forthcoming).

Haisken-DeNew, H. P., Zimmermann, K. F., "Wage and Mobility Effects of Trade and Migration," Centre for Economic Policy Research, Discussion Paper, London, 1996, (1318).

Hofer, H., "The Impact of Emigration on Host Country's Wage and Unemployment," in Pichelmann, K., The Economic consequences of Eastern Enlargement of the European Union. The Austrian View. Final Report. Sponsored by the Austrian Federal Chancellery, Institute for Advanced Studies, Vienna, March 1998.

Hofer, H., Pichelmann, K., Schuh, A.-U., Price and Quantity Adjustments in the Austrian Labour Market, Institute for Advanced Studies, Vienna, 1998.

Katz, L., Efficiency Wage Theories: A Partial Evaluation, NBER Macroeconomics Annual 1986, M.I.T. Press, Cambridge, Mass., 1986.

Katz, L., Murphy K., "Changes in relative wages, 1963-1987: Supply and demand factors", Quarterly Journal of Economics, 1992, 108, pp. 33-60.

Kiehl, M., Werner, H., "The Labour Market Situation of EU and of Third Country Nationals in the European Union", IAB Labour Market Research Topics, 1999, 32.

Krueger, A., Summers, L., "Efficiency Wages and the Inter-industry Wage Structure", Econometrica, 1988, 56(2), pp. 259-293.

LaLonde, R. J., Topel, R. H., "Labor Market Adjustment to Increased Immigration", in Abowd, J. M., Freeman, R. B. (eds.), Immigration, Trade, and the Labor Market, Chicago: University of Chicago Press for NBER, 1991, pp. 167-200.

Layard, R., Nickell, St., Jackman, R., Unemployment: Macroeconomic Performance and the Labour Market, Oxford: Oxford University Press, 1991.

Martin, Ph., Hailbronner, K., Straubhaar, Th., "Managing Migration in the 21st Century. Focus on Economic Integration and Migration." Paper given at the Conference Managing Migration in the 21st Century, Hamburg, Germany, May 1997, 22.

Matuschek, Helga, "Ausländerpolitik in Österreich 1962-1985," Journal für Sozialforschung, 1985, 25/2, pp. 185-198.

Mühleisen, M., Zimmermann, K. F., "A Panel Analysis of Job changes and Unemployment," European Economic Review, April 1994, 38(3-4), pp. 793-801.

OECD, "Economic Performance and the Structure of Collective Bargaining", Employment Outlook, Paris, 1997, 3.

OECD, OECD Observer, "Declining trend in development assistance continues", Paris, 1999, pp. 62-63.

Piori, M. J., Birds of Passage: Migrant Labor and Industrial Societies, Cambridge University Press, New York, 1979.

Pollan, W., "Lohnunterschiede in der Industrie", WIFO-Monatsberichte, 1990, 63(11), pp. 616-622.

Roeger, W., int'Veld, J., "Quest II. A Multi country business Cycle and Growth Model", Economic Papers, European Commission DG II, Brussels, 1997, 123.

Walterskirchen, E., Dietz, R., Auswirkungen der EU-Osterweiterung auf den österreichischen Arbeitsmarkt, Studie im Auftrag der Bundesarbeitskammer, Austrian Institute of Economic Research, Vienna, April 1998.

Wellisch, D., Walz, U., "Why do rich countries prefer free trade over free migration? The role of the modern welfare state," European Economic Review, 1998, 42, pp. 1595-1612.

Weyerbrock, S., "Can the European Community Absorb More Immigrants? A General Equilibrium Analysis of the Labor Market and Macroeconomic Effects of East-West Migration in Europe," Journal of Policy Modeling, 1995, 17(2), pp. 85-120.

Winkelmann, R., "Unskilled labor and wage determination: An empirical investigation for Germany," Population Economics, 1995, 9, pp. 159-171.

Winter-Ebner, R., Zimmermann, K. F., "East-West Trade and Migration: The Austro-German Case," Arbeitspapier, Johannes Kepler Universität, Linz, January 1998, (9801).

Winter-Ebner, R., Zweimüller, J., "Do Immigrants Displace Native Workers: The Austrian Experience", May 1994, mimeo.

Winter-Ebner, R., Zweimüller, J., "Immigration and the Earnings of Young Native Workers", Oxford Economic Papers, 1996, 48, pp. 473-491.

Yellen, J., "Efficiency Models of Unemployment", American Economic Review, Papers and Proceedings, 1984, 73, pp. 200-205.

Zimmermann, K. F., "Tackling the European Migration Problem," The Journal of Economic Perspectives, Spring 1995, 9(2), pp. 43-62.

Zweimüller, J., Winter-Ebner, R., Immigration, Trade, and Austrian Unemployment, Centre for Economic Policy Research, Discussion Paper, London, 1996, (1346).