Effects of the Full Opening of the Austrian Labor Market to EU-8 Citizens

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Within the next few years, Austria will lift its temporary restrictions on the free movement of workers from the EU-8 countries. Estimates of the resulting inflow of foreign labor to Austria are surrounded by a high level of uncertainty and vary widely. A review of the literature and the results of empirical estimations presented in this paper – indicating an expected inflow of some 200,000 immigrant employees within ten years – suggest the following: Immigration will have a small impact on the Austrian labor market at the aggregate level, but may reduce the employability of low-skilled, low-income workers. As regards the impact on inflation, it can be assumed that price pressures will decline.

1 Introduction

Immigration, migrant employment and their effects on the Austrian labor market have been widely discussed in recent years, especially given the upcoming opening of the domestic labor market for workers from the EU Member States of Central, Eastern and Southeastern Europe (CESEE). Nationals from those Central and Eastern European countries that joined the EU in May 2004 – the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia and Slovenia, referred to as the EU-8 here – must be admitted to the labor markets of all EU countries by May 2009, or by May 2011 at the latest under the agreed transitional arrangements.[2]

Countries intending to prolong the existing transitional arrangements from May 2009 to May 2011 because of concerns about serious disturbances in their labor markets must submit a reasoned notification to the European Commission. Austria will, most likely, gradually open its labor market for workers with higher-level qualifications while retaining the transitional arrangements for unskilled or low-skilled workers until May 2011. The government has already introduced or endorsed some steps to this effect.[3]

The political debate is often dominated by fears that immigration invariably leads to higher unemployment and lower wages. In fact, however, the impact of immigration is

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[2] *Until then, employees from these countries are subject to the Aliens Employment Act (Ausländerbeschäftigungsgesetz). Analogous arrangements apply to workers from Romania and Bulgaria, which joined the EU in 2007.*

[3] *In 2007, the access restrictions were lifted for up to 800 welders, turners and milling machine operators from the EU-8. From 2008 on, EU-8 citizens trained in 50 specified trades and professions (e.g. bricklayers, car mechanics, electricians, butchers, railway train drivers and certain university-trained engineers) qualify for unrestricted access to the Austrian labor market. As announced by the Austrian Federal Minister of Economics and Labour, any skilled workers from the EU-8 will be free to work in Austria from May 2009, no matter what occupation they have. From then on, restrictions will be imposed only on unskilled workers, especially from the construction sector. Austria has prenotified the European Commission about these plans and will submit the detailed reasoned notification at a later time (Der Standard daily newspaper, December 6, 2007).*

much more varied and complex. This study investigates the likely inflow of migrants over the coming years and the related impact on the Austrian labor market, notably on employment and unemployment. In addition, it examines an issue that is especially relevant from a central bank perspective: the implications of immigration for the natural rate of unemployment and inflation developments.

This study is structured as follows: Section 2 describes the development of migration to Austria in recent decades and the current patterns of migrant employment. Section 3 outlines the staggered opening of labor markets in the "old" EU Member States (EU-15) and reviews estimation results regarding the migration potential from the CESEE EU Member States (EU-8 plus Bulgaria and Romania) to the EU in general and Austria in particular.

Section 4 analyzes the economic impact of immigration on the Austrian labor market, focusing on the long-term effects on the labor market conditions for the domestic workforce. To this end, section 4 discusses theoretical aspects, summarizes the results of selected relevant international studies and of older empirical studies on Austria, and highlights the dynamic effects of immigration on the natural unemployment rate and on inflation.

Section 5 reports the results of the authors' own empirical approaches, looking into the long-term effects that an increase in migrant employment has on the native-born population's employment and unemployment levels, and presenting a simulation of dynamic effects caused by the expected inflow of labor from CESEE. Section 6 summarizes and draws conclusions.

2 Immigration to Austria: Some Facts and Figures

2.1 Definitions

Migration denotes the movement of people from their country of origin to a destination country. How important immigration is for the destination country is typically measured in terms of the share immigrants have in the destination country's total population. In this respect, "immigrants" can denote (1) residents who are citizens of other countries or (2) the foreign-born population. Both measures are imperfect, however: It is easier to obtain the citizenship of some countries than of others (e.g., some countries grant birthright citizenship while others do not). Therefore, some authors have created combined measures so as to cover all inhabitants with a migration background.

Not all immigrants increase the labor supply, though. To gauge the significance immigrants have in a country's labor market, most authors focus on the share of the non-national workforce rather than the share of the foreign-born workforce. The share of immigrants may be reported for the employed and the unemployed, the total labor force (i.e., employed and unemployed) and the working age population. The employed typically include only immigrants in payroll employment, given the insufficient statistical coverage of self-employed immigrants.

Moreover, stock data mask differences in the pattern of worker flows: Not every immigrant or migrant worker settles permanently in the destination country – many emigrate again; some migrants go back and forth for recurring periods of several weeks or months (seasonal workers), some residents commute across bor-

ders on a daily or weekly basis (cross-border workers).

In light of these considerations, even presenting the various stock data on immigration and migrant employment in Austria in a systematic way would be beyond the scope of this contribution. Therefore, we will highlight only a few stock figures and refrain entirely from presenting flow data.[4]

2.2 Share of Non-nationals in Austria's Total Population Steadily on the Rise

In 2006, non-nationals accounted for 11% of Austria's total population, which is one of the highest shares in the euro area (after Luxembourg and Spain).[5] At just under 15%, the share of the foreign-born population was markedly higher and also significantly above the EU average. The population share of immigrants has increased considerably over the last four decades: In the late 1960s, it still came to a mere 2%. Up to that period, the country's immigration policy had mainly targeted low-skilled workers (primarily from Turkey and the former Yugoslavia). In the 1970s and 1980s, the share of immigrants edged up to 4%, mostly owing to family reunions and in the wake of the Polish crisis. The fall of the Iron Curtain and the wars in Yugoslavia triggered a rapid and large increase in the share of immigrants in Austria: It more than doubled by 1995 (8.5%), and has

continued to grow slowly and steadily since then (Biffl, 2000; Münz, 2007).

2.3 Patterns of Migrant Employment

Based on the monthly employment statistics compiled by the Association of Austrian Social Security Institutions, the total number of immigrants in payroll employment can be expected to come to some 410,000 in 2007,[6] which corresponds to a share in total payroll employment of more than 12%. On average in 2006, most of these employees came from the former Yugoslavia[7] (some 156,000), followed by Germany (55,400) and Turkey (54,100).[8] The figures for other EU countries, e.g. Hungary (15,800), Slovakia and the Czech Republic (14,600), Poland (13,400), and Romania (11,700), are much lower.

The above figures refer to employees who have taken up a job in Austria in compliance with the Aliens Employment Act and to citizens from the EU-15. It is a well-known fact, however, that many people from the CESEE region are working illegally in Austria (i.e., they are not registered with social security). Many of these migrants are employed in households (domestic workers or caregivers), but accurate employment figures are naturally not available. An estimate published in the daily newspaper Der Standard (December 13, 2007)

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[4] See the regular reports submitted by the Austrian Institute of Economic Research (WIFO) to the OECD (e.g. Biffl, 2007) for more details on Austria and the International Migration Outlook series (OECD, 2007a) for an overview of international data.

[5] For an international comparison, see European Commission (2006), Heinz and Ward-Warmedinger (2006) and ECB (forthcoming).

[6] At the time of the editorial close, the data for December were not yet available.

[7] Data for the successor states of the former Yugoslavia and the former Czechoslovakia are (still) compiled into one group, respectively, in the statistics published by the Association of Austrian Social Security Institutions.

[8] These figures do not reflect the large number of immigrants who became naturalized citizens of Austria.

Table 1

Structural Characteristics of the Austrian and Non-national Labor Force in Austria in 2006

%

	Non-citizens	Austrians
Share in the total population	11.0	89.0
of which: males	*51.7*	*48.3*
Age structure of the working age population		
16−24 years	17.2	17.9
25−54 years	71.3	64.6
55−64 years	11.5	17.5
Highest educational attainment level		
ISCED 0−2	36.7	23.3
ISCED 3−4	47.1	62.0
ISCED 5−6	16.2	14.7
Labor force participation rate	70.4	74.1
Unemployment rate	10.6	4.1
Wage differential (adjusted)	−23.0	×

Source: Eurostat, ECB (forthcoming).

assumes that the number of illegal caregivers alone comes to 40,000 in Austria. Another group that is not covered by the migrant employment statistics of the Association of Austrian Social Security Institutions is leasing staff or workers posted to Austria, who typically do not pay social contributions in Austria.[9]

A sectoral breakdown shows that the share of migrant labor is highest in the hotel and restaurant sector as well as in agriculture and forestry (around 30%), followed by the construction sector (slightly below 20%). It is lowest in the electricity, gas and water supply sector as well as in banking and insurance.

Table 1 compares characteristics of nationals and non-nationals in the Austrian working age (15−64 years) population.[10] It shows that the immigrant labor force is characterized by a larger share of men and a slightly lower average age than the Austrian labor force. At the compulsory education level (ISCED[11] levels 0−2), the relative share of immigrants is higher than that of Austrians, while it is much lower at the ISCED 3−4 level. Among university graduates (ISCED 5−6), the relative share of immigrants is slightly higher than that of Austrians, which is, inter alia, attributable to the fact that Austria attracts many highly qualified foreigners, often

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[9] *Foreign firms are, however, obliged to register posted workers and leasing staff. Even though less restrictive provisions apply to EU citizens (e.g. regarding the maximum duration of employment in Austria), they will become effective for EU-8 citizens only after the end of the transitional arrangements. Posted workers and leasing staff seem to constitute a rather small group: In 2006, some 2,400 assignment permits were issued according to the Austrian Public Employment Service.*

[10] *Source: Labor Force Survey. The data only cover people who have a place of residence in Austria, which means that seasonal workers and cross-border commuters are not adequately captured. (By contrast, social security figures include data on these employees – provided they are registered with social security as required.)*

[11] *ISCED (International Standard Classification of Education) is a UNESCO classification of education levels and systems.*

temporarily through multinational corporations (Biffl, 2000). The education level of the foreign labor pool is highly heterogeneous (Bock-Schappelwein, 2006) but on average markedly below that of the Austrian labor force.

The immigrant labor force participation rate is lower than that of Austrians, and unemployment figures are strikingly and significantly higher among immigrants than among Austrians. What is more, migrant employees earn markedly less than Austrians (–23%),[12] reflecting the fact that many enterprises hire migrants as peripheral staff (i.e., they take them on in times of high labor demand and lay them off again when demand drops). These patterns also point to problems in the labor market integration of foreign labor (OECD, 2007b).

3 How Many Immigrants Are to Be Expected?

3.1 Opening of the Labor Markets: EU-15 Countries Adopt Different Strategies

From 2004 on, several EU-15 countries (Ireland, Sweden, United Kingdom) granted unrestricted access to their labor markets to EU-8 citizens, while others (Greece, Spain, Italy, Portugal, Finland) did so in 2006. Still others (Belgium, Denmark, France, Luxembourg, Netherlands) eased the restrictions in 2006. Austria and Germany are the only EU-15 countries that fully retain the provisional arrangements. This is attributable to (1) the comparatively weak labor market conditions in Austria and Germany at the time of the 2004 enlargement and to (2) concerns that

the two countries would have to cope with a disproportionately large share of immigrants, given the geographical proximity.

Thus, a large share of those willing to emigrate from the EU-8 may have done so by the time Austria and Germany open their labor markets – especially young and highly qualified people who are more willing to emigrate than others. As a consequence, Austria may attract mainly low-skilled workers once the restrictions have been lifted.

3.2 Methods for Estimating the Migration Potential

Two questions are particularly relevant when it comes to the opening of the labor market for citizens from the EU-8 plus Bulgaria and Romania: How many economically active persons will enter the economy, and what effects will this inflow have on Austria's labor market? The second question will be addressed in sections 4 and 5.

Studies that focus on the first question can be divided into two categories: econometric studies and surveys. The former are usually based on gravity model estimates (Barro and Sala-i-Martin, 1995) in which immigration is explained by geographical proximity on the one hand and the differences in economic conditions between the destination country and the country of origin on the other.

Surveys conducted among the citizens of potential countries of origin mostly distinguish between the general migration potential (those who consider emigrating), the probable migration potential (people who already compiled information on the

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[12] The data used in this calculation were adjusted for differences in observable characteristics such as education level and work experience.

destination country) and the real migration potential (those who applied for a work permit) (Huber, 2001).

Some authors aim at determining the future immigration potential by extrapolating the effects observed following the EU enlargement toward the South in 1986 (Portugal and Spain). At the time, the enormous waves of immigration feared by the "old" EU Member States never fully materialized. Sinn and Werding (2001) point out, however, that the enlargement toward the South is not very suitable as a reference scenario, because (1) lots of Spanish and Portuguese workers had migrated to the EU before 1986, and (2) the income gap between the EU and the two countries was markedly lower at the time of accession than it is today between the EU and its CESEE members.

Overall, estimates of the migration potential involve considerable uncertainties and thus produce widely varying results. This is mainly attributable to:
– differing assumptions regarding the time of accession and the duration of transitional arrangements, the number of countries of origin included, and the time intervals chosen;
– different methodological approaches (longitudinal or cross-section data; projections of immigrant stock or flow data);
– the failure to account for the varying degrees to which destination countries are affected by immigration (e.g. owing to the geographical proximity of Austria and Germany to the CESEE EU countries);
– the exclusion of cross-border workers, who are probably of

higher significance in Austria and Germany than in other EU countries; and
– the failure to account for the fact that the EU-15 countries opened their labor markets at different points in time.

3.3 Migration Potential Estimates

Comparing studies on the migration potential, Huber (2001) found that forecasts of annual migration to the EU-15 range between 41,000 and 680,000 people. On the basis of their literature analysis, Heinz and Ward-Warmedinger (2006) estimate that, within one or two decades after the free movement of workers has become fully effective in the EU, the immigration potential will be 1% to 4% of the total EU-8 population plus Bulgaria and Romania – i.e., 1 to 3 million people. These figures do, however, not take into account immigrants who return to their countries of origin in that period (gross vs. net migration). Table 2 summarizes the results of several key studies on the immigration potential to the EU-15 and to Austria.

Overall, gravity models and the time-series model by Brücker and Boeri (2000) produce higher estimates than the survey by Fassmann and Hintermann (1997). Current evidence seems to suggest that, when access restrictions to the labor markets are lifted by 2009 and 2011, the emigration potential from the CESEE EU countries will be lower than predicted in several older studies, as many people will have emigrated by then (section 3.1) and the economic catching-up process will have continued. Considering this, we may assume that the actual annual immigration potential will be at the lower end of the estimated range, which is

Table 2

Selected Key Studies on the Emigration Potential from CESEE

Autors	Method	Countries of origin	Immigration potential
Brücker and Franzmeyer (1997)	Gravity model	Poland, Slovakia, Slovenia, Czech Republic, Hungary	EU: 340,000 to 680,000 (annually)
Bauer and Zimmermann (1999)	Extrapolation of migration data following EU enlargement to the South	Bulgaria, Poland, Romania, Slovakia, Slovenia, Czech Republic, Hungary	EU: 3,000,000 (within 10 to 15 years)
Bauer and Zimmermann (2000)	Gravity model with coefficients for EU enlargement to the South	Bulgaria, Poland, Romania, Slovakia, Slovenia, Czech Republic, Hungary	EU: 2% to 3% of the population of the countries under review (total potential)
Straubhaar (2000)	Gravity model with coefficients for EU enlargement to the South	EU-8 plus Bulgaria and Romania	EU: 3,000,000 gross 1,000,000 to 1,500,000 net (total potential)
Fassmann and Hintermann (1997)	Survey	Poland, Slovakia, Czech Republic, Hungary	Austria: 150,000 EU: 721,000 (total potential)
Walterskirchen and Dietz (1998)	Extrapolation of the gravity model by Barro and Sala-i-Martin	Poland, Slovakia, Slovenia, Czech Republic, Hungary	Austria (2005): 42,000 (annually)
Hofer (1998)	Extrapolation of data by Brücker and Franzmeyer (1997) for Austria	Poland, Slovakia, Slovenia, Czech Republic, Hungary	Austria: 25,000 to 40,000 (annually)
Brücker and Boeri (2000)	Time series model	EU-8 plus Bulgaria and Romania (based on EU accession in 2002)	Austria (2002): 41,000 EU (2002): 337,000 (annually, declining later)
Huber and Brücker (2003)	Simulation study based on a gravity model	EU-8 (assumption: free movement of workers from 2004)	Austria (2004): 22,000 Austria (2006): 24,000 (annually, declining later)
		EU-8 (assumption: free movement of workers from 2011)	Austria (2011): 21,000 Austria (2013): 22,000 (annually, declining later)
		Bulgaria, Romania (assumption: free movement of workers from 2013)	Austria (2013): 800 (annually, declining later)

Source: Brücker and Boeri (2000), Huber and Brücker (2003), Heinz and Ward-Warmedinger (2006), Huber (2001), Sinn and Werding (2001), Straubhaar (2000).

22,000 to 42,000 for Austria. In addition, surveys have revealed lower emigration intentions for Austria's neighboring countries – Hungary, Slovenia, Slovakia, the Czech Republic – than for the other EU-8 countries (European Commission, 2006). Moreover, the figures mentioned refer to the first years only; they are expected to decline sharply over time. Our model simulation (section 5), assumes that some 200,000 economically active people will migrate to Austria within ten years.

As soon as the labor market restrictions have been lifted, we may expect both (relatively) permanent immigration and the number of cross-border workers to rise. Seasonal workers from CESEE will also (continue to) play an important role. Table 3 shows recent data on cross-border commuters and seasonal workers from the CESEE EU countries.

It is very difficult to assess the future potential of cross-border commuters. Most studies use the figures on within-country commuters as a basis for cross-border commuters, assuming that the latter will be a certain fraction of domestic commuters. The baseline scenario of Huber and

Table 3

Cross-border Workers and Seasonal Workers from the EU-8

plus Bulgaria and Romania

Annual average, rounded

	Total foreign employment (2006)	Cross-border workers (2003)	Seasonal workers (2006)
Burgenland	10,700	4,300	1,100
Carinthia	15,200	100	300
Lower Austria	54,300	2,200	2,300
Upper Austria	50,800	400	1,000
Salzburg	30,600	<100	1,300
Styria	29,700	1,000	1,800
Tyrol	39,400	<100	2,100
Vorarlberg	26,800	<100	400
Vienna	123,900	400	500
Unidentified	9,200	×	×
Austria total	390,700	8,500	10,900

Source: Biffl and Bock-Schappelwein (2003), Austrian Public Employment Service, Federal Ministry of Economics and Labour.

Table 4

Estimated Commuter Potential from Hungary, Slovenia, Slovakia

and the Czech Republic to Austria

Autors	Method	Maximum Travel Time	Commuter Potential
Walterskirchen and Dietz (1998)	Adjusted within-country commuter data	90 minutes	150,000 daily commuters
Birner et al. (1999)	Adjusted travel time model	90 minutes	41,000 to 61,000 daily commuters, 85,000 to 95,000 other commuters
Huber (2001)	Adjusted within-Austria commuter model	90 minutes	85,000 daily commuters
Huber and Brücker (2003)	Adjusted within-Austria commuter model (transition period until 2011)	90 minutes	Cross-border commuter figures based on within-country figures: 25 %: 55,000, 33 %: 73,000, 75 %: 164,000

Source: Huber and Brücker (2003).

Brücker (2003), for instance, assumes that the cross-border commuter potential is one-third of the number of people commuting between Austrian districts. It is generally assumed that the maximum distance people are willing to commute is a distance they can cover within three hours per day. The potential of daily commuters is forecast to increase by between 40,000 and 160,000 persons (table 4).

4 Economic Effects of Immigration

4.1 Effects on the Labor Market – Theoretical Aspects

Theoretical models usually aim at assessing the effects immigration has on a country's *native-born* population (or on those who already live in the country)[13] – after all, the native majority population often fears that migrants will displace them or depress wage growth.

[13] Migrants may principally be expected to benefit from having taken the step to leave their home countries (provided it was a voluntary choice).

Welfare analyses show that, on the whole, immigration is (marginally) advantageous for the destination country's population. There are considerable distribution effects, though: Some win while others lose, which is why labor immigration is a contentious political issue.

To highlight these distribution effects, we can use the simplest theoretical model: a model based on perfect competition and two production factors, namely capital and a homogeneous labor force (i.e., native-born and immigrant workers are perfect substitutes). In such a setting, immigration leads to lower wages and higher employment (equal to the size of labor immigration), and producers' surplus increases faster than the income of the native-born workforce drops. The resulting welfare gains (immigration surplus) imply a redistribution of wealth from the native-born workforce to the capital owners. Appropriate economic policy measures could be used to compensate the losers for these losses.

It would be quite unrealistic to assume, however, that Austrian and immigrant employees are equally productive and qualified. Immigrants are on average less qualified than the citizens of most wealthy destination countries; this also applies to Austria (table 1).[14] If we extend the neoclassical basic model to contain three complementary[15] production factors (capital, skilled and unskilled labor) and assume that immigrants are perfect substitutes for unskilled Austrian workers, the distributions effects are more complex: While unskilled domestic workers face income losses, capital owners and qualified workers benefit from welfare gains (Borjas, 1995 and 1999).

Winter-Ebmer and Zweimüller (1996) renounce the assumption of perfect competition and show in a dual labor market model that unskilled native-born workers do not necessarily experience wage losses. They can also profit from immigration (rent effects) – provided that they are (better paid) "insiders" and migrant workers make up the peripheral workforce ("outsiders") receiving no more than the agreed minimal wages. The higher the share of the immigrant workforce, the higher the probability that the "insiders" will lose their negotiation powers (threat effect). If the threat effect is dominant, they will suffer wage losses.

The theoretical models outlined above focus solely on the effect of immigration on wages, which are assumed to be perfectly flexible. This ensures full employment for both the native- and foreign-born workforce. If wage flexibility is limited, however, temporary unemployment may be another consequence of the inflow of foreign labor.

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[14] *There are considerable differences between destination countries (ECB, forthcoming). Still, immigrants mainly compete with low-skilled native-born workers in the labor market. This is attributable to two factors, among others: Qualifications acquired abroad are often not recognized in the destination countries, and in most countries, access restrictions are stricter for professions that require higher-level qualifications (see also Chiswick and Miller, 2007). As already mentioned, the fact that Austria will open its labor market at a relatively late point in time suggests that the inflow of highly qualified immigrant employees to Austria may be expected to be comparatively weak, as many of them will have emigrated to other EU countries.*

[15] *The assumption of complementary production factors means that a given production factor becomes more productive when the input of another factor is increased (the scale effect dominates the substitution effect).*

4.2 Macroeconomic Aspects

The economic literature on immigration is dominated by microeconomic and microeconometric studies. Immigration and its influence on classical macroeconomic issues are examined far less often, as Stephen Nickell observed recently in his contribution to a BIS conference (Nickell, 2007).

Nickell distinguishes between long-term and short-term macroeconomic effects. In general, immigration is expected to have no long-term influence on the equilibrium unemployment rate. Immigration will, however, cut the non-accelerating inflation rate of unemployment (NAIRU), if it reduces existing mismatches in the labor market (e.g. if immigrant workers take up jobs that native-born people do not want). In the short run, however, unemployment may be expected to rise.

As regards the short-term effects on inflation, they depend on the relative size and dynamics of the shock caused by immigration both on the supply side (additional labor) and the demand side (immigrants demanding domestic products). In light of the fact that immigrants tend to have a higher saving ratio (for remittances to their home countries) than the native-born population, immigration is likely to lower inflationary pressures. The destination country's institutional framework[16] may also be expected to play a role in this context, which means that the short-term effects of immigration have to be determined empirically.

4.3 Empirical Studies – Results

4.3.1 International Studies

Especially the U.S. literature contains numerous empirical studies on the effects of immigration on the domestic labor market. One often cited case is the Mariel Boatlift in the early 1980s, when more than 100,000 Cubans migrated from Cuba's Mariel harbor to the Miami region within just a few months. This wave of immigration had no substantial negative effects on employment and wages. Another often quoted case was the repatriation of the Algerian French after the Algerian war in the early 1960s. This incident led to an increase in the French labor supply by just under 2%, as a result of which wage growth slowed significantly and unemployment increased in the regions concerned.

These two examples show that the effects of immigration depend on the capacity of the economy to absorb the foreign labor force by expanding production capacities, that is, by creating new jobs. In other words, labor immigration does not translate directly into job losses for the native-born population (Cahuc and Zylberberg, 2006).

The institutional framework can be a key factor in explaining divergent developments in different countries. The empirical evidence in Angrist and Kugler (2003) indicates that the capacity to absorb immigration (so that the employment rate of the native-born population does not drop) is lower in countries with structural

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[16] See Stiglbauer (2006) for an overview of the influence labor market institutions have on the labor market situation.

rigidities than in others. Especially the regulation of product markets turned out to have a robust influence on that capacity (leading to lower employment of the native-born population).

In their overview study for the United Kingdom, Blanchflower et al. (2007) argue that over the last years immigration has probably reduced the equilibrium unemployment rate in the U.K. They also conclude that the inflow of EU-8 citizens has actually lowered inflationary pressures in recent years. This conclusion probably also applies to Austria – indeed even more so because EU-8 migrants may be expected to spend an even lower share of their income in Austria (given geographical proximity) than they do in the U.K., which implies a smaller increase in domestic demand than in supply.

In a simulation study, Barrell et al. (2007) calculate the immigration effects following the 2004 EU enlargement on Ireland, Sweden, and the U.K. (i.e., the three countries that opened their labor markets for workers from the EU-8 immediately). They find that GDP increases in all three countries compared to the baseline scenario, with the effect being strongest in the U.K. and Ireland, where immigration was highest in absolute (U.K.) and in relative terms (Ireland). Slightly dampening long-term effects on inflation are observed for all three countries. In particular in Ireland, unemployment rises rather sharply in the short run, but moderates in the medium term and even falls below the baseline level in the long run (2015 in this simulation).

4.3.2 Older Studies on Austria
In the mid-1990s, Winter-Ebmer and Zweimüller conducted empirical studies[17] on the effects of the then recent rapid increase of migrant labor in Austria and published the results in a number of scientific articles. They analyzed the influence a strong increase in the number of foreign employees had on the unemployment risk and wage growth of the native-born population. The results are summarized in Winter-Ebmer and Zweimüller (1996).

All in all, their findings suggest that the Austrian labor market absorbed the additional labor supply surprisingly well. On the aggregate level, unemployment increased only modestly and wage growth slowed but slightly. The effects varied across labor market segments, though: While for women the risk of unemployment did not rise and wage growth did not decline, for men the risk of unemployment generally increased somewhat. Wage-depressing effects were observed only for low-income males, whereas wage growth was stronger for higher-income males.

Hofer and Huber (2001) estimate a vector autoregressive model with the variables labor demand, the native-born workforce and new migrant workers from the first quarter of 1974 to the fourth quarter of 1999. On this basis, they simulate the effects of a one-off immigration wave bringing 20,000 additional immigrants into the nine Austrian provinces in the year after which the transition arrangements are lifted (presumably 2012). They find that most

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[17] *The studies cover the period from 1988 to 1991.*

provices will adjust to immigration primarily through the creation of new jobs. The second-most important adjustment effect is that the labor participation rate of Austrians declines. In other words, immigration does not so much increase unemployment but rather causes some Austrian employees to withdraw from the labor market.

Focusing on the period from 1991 to 1994, Hofer and Huber (2002) observe slightly negative effects of immigration on the wage growth of male blue-collar workers, but none on that of male white-collar workers and women. An increase in the risk of unemployment following higher immigration was observed only for male blue-collar workers. The two authors also examine the effects of stronger foreign trade, which is another consequence of the 2004 EU enlargement. Austria's exports to the EU-8 have grown considerably, which had a favorable effect on wage growth and led to a marked decline in the risk of male unemployment (but produced no significant results for women).

5 Effects of Foreign Employment: Recent Data

The empirical analyses presented in this contribution use the most recent labor market data. First, we aim to clarify the effects the stronger presence of migrant workers has had on sectoral employment and unemployment in the recent past. Then we simulate the impact of increasing immigration on selected labor market aggregates, e.g. employment and unemployment.

5.1 Effects on Unemployment and Employment over the Past Decade

The main purpose of this exercise is to examine if and how the Austrian labor market has changed in recent years and how it reacts to increased immigration today. To this end, we use seasonally adjusted monthly data on employment and unemployment and the share of migrants (for each sector) for the period from January 1998 to June 2007 to estimate panel regressions of the following form.

$$\Delta \log Y_{it} = \alpha + \beta \Delta \log M_{it} + \\ + \gamma_i + \delta_t + \varepsilon_{it} \tag{1}$$

where i denotes the cross-sectoral dimension and t the time dimension. Y_{it} stands for the dependent variable, for which we used several labor market aggregates (total employment, employed Austrians, total unemployment, unemployed Austrians, total labor force, Austrians participating in the labor force).[18]

Table 5 shows the coefficients of growth for the immigrant labor force and the respective p values. The coefficients indicate how much the dependent variable changes when labor immigration increases by 1 percentage point.

Unsurprisingly, the results indicate that labor immigration leads to a significant increase in total employment and total labor supply. Even though a slight rise is observed in total unemployment, it is not considered significant according to conventional significance levels. For the native-born population, we find no significant effects on either employ-

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[18] This form includes both time- and sector-specific fixed effects (two-way panel). To avoid possible endogeneity problems, we used immigration figures lagged by 6, 12 and 18 months as a function of present-day immigration. Appropriate tests suggest that nonstationarity of the data series can be ruled out.

Table 5

Labor Immigration: Effects on Unemployment, Employment, and Labor Supply by Sectors

Results of Two-Way Panel Regressions

Dependent variable	Coefficient of $\Delta \log M_{it}$	p value of the coefficient
Total employment	0.238	0.000
Employed Austrians	−0.008	0.916
Total unemployment	0.199	0.117
Unemployed Austrians	0.005	0.971
Total labor force participation	0.284	0.000
Total labor force participation of Austrians	0.115	0.101

Source: Austrian Federal Ministry of Economics and Labour, OeNB.

ment, unemployment or total labor force participation. On the aggregate level, migrant employment thus did not produce any observable adverse
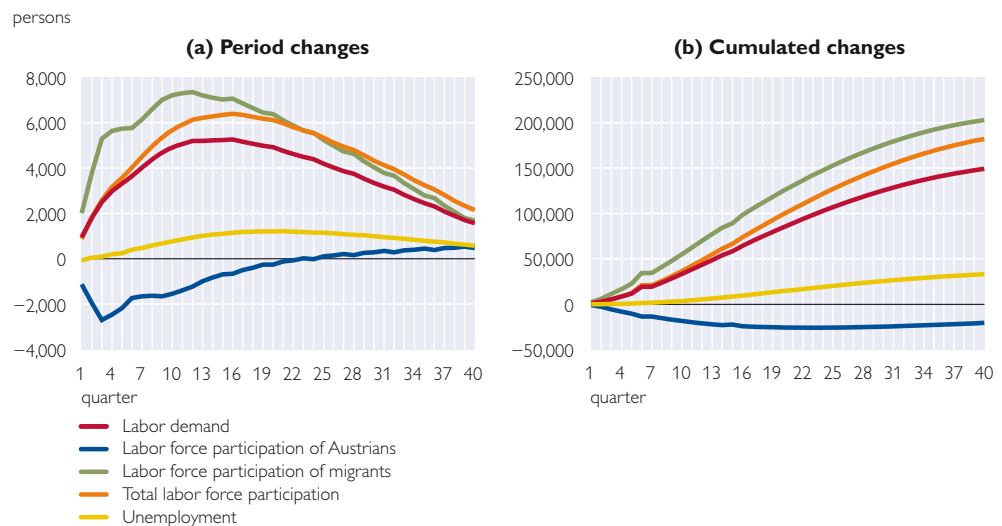
effects on the labor market situation of the native-born population over the past ten years.

5.2 Simulating the Full Opening up of the Austrian Labor Market

The panel regressions presented above highlight the long-term influence of migrant employment. To quantify the dynamic effects of future migration on the Austrian labor market, we estimate a vector autoregressive model that is similar to the one presented in Hofer and Huber (2001). This allows us to simulate the effects of higher immigration on various aggregates of the Austrian labor market. Box 1 below presents the methodological details.

Chart 1

The Impact of Immigration Shocks over 40 Quarters

persons

(a) Period changes

(b) Cumulated changes

Labor demand
Labor force participation of Austrians
Labor force participation of migrants
Total labor force participation
Unemployment

Source: OeNB.

The model consists of three equations:

$$\Delta L_t^D = \sum_{n=1}^{T} \left(a_{1n} \Delta L_{t-n}^D + b_{1n} \Delta L_{t-n}^{SN} + c_{1n} \Delta \sigma_{t-n}^F \right) + \xi_t^D$$

$$\Delta L_t^{SN} = \sum_{n=1}^{T} \left(a_{2n} \Delta L_{t-n}^{SN} + b_{2n} \Delta L_{t-n}^D + c_{2n} \Delta \sigma_{t-n}^F \right) + \xi_t^{SN} \qquad (2)$$

$$\Delta \sigma_t^F = \sum_{n=1}^{T} \left(a_{3n} \Delta \sigma_{t-n}^F + b_{3i} \Delta L_{t-n}^{SN} + c_{3n} \Delta L_{t-n}^D \right) + \xi_t^F$$

where L_t^D denotes the demand for labor (expressed in total payroll employment), L_t^{SN} stands for Austrians participating in the labor force (i.e., Austrian payroll employees and unemployed Austrians), and σ_t^F is the number of migrant workers in the Austrian labor market. ξ_t^i for $i = D$, SN, F stands for the error terms in each equation. The model contains three endogenous variables. Changes in these variables are not only explained by their own past developments (like in a univariate time series analysis), but also by lagged changes in the other endogenous variables.

The resulting values can be used to calculate changes in the total labor supply and in total unemployment with the help of the following definitional equations.

$$\Delta u_t \approx \Delta L_t^S - \Delta L_t^D \qquad (3)$$

$$\Delta L_t^S \approx \Delta L_t^{SN} + \Delta \sigma_t^F \qquad (4)$$

The data set comprises the first differences in seasonally adjusted quarterly data on the labor force participation of Austrians, total payroll employment, and the foreign labor supply in absolute figures, covering the period from the first quarter of 1974 to the second quarter of 2007. The null hypothesis of unit roots in the respective time series was rejected in two common stationarity tests. The tests on cointegration between the individual original I(1) time series did not provide evidence of cointegrating relations in the equation system. In the next step, we estimated four VAR(p) models (p = 1...4) and compared them against Akaike's information criterion (AIC) and Bayes' information criterion (BIC). As expected, a VAR(1) model was favored by the BIC, while a VAR(4) model was supported by the AIC. We decided to use a VAR(4) model for our analysis, as the model's goodness of fit matters less in this case than its predictive power.

To examine the reaction of the labor market to an exogenous shock, we did not assume a one-off immigration shock at time 0 (like Hofer and Huber, 2001). Instead, we simulated generalized impulse responses (Pesaran and Shin, 1998) over 40 quarters and analyzed the resulting effects. In aggregate terms, this exercise produced an additional increase in the immigrant labor force by just under 203,000 people after 40 quarters, which corresponds roughly to the figure on the total immigrant labor force from all EU-8 countries postulated by Hofer and Huber (2001) and the baseline scenario predicted by Huber and Brücker (2003). In addition, our model assumes roughly the same immigration behavior as Huber and Brücker (2003), i.e., immigration rises first and then declines only gradually.

We postulated an inflow of some 200,000 payroll employees within ten years – which seems realistic in light of the discussion outlined in section 3.3. The charts below present the simulation results (impulse response functions). Chart 1 (a) shows the reactions in the variables for each quarter, while chart 1 (b) depicts the results cumulated over time.

Labor demand shows the strongest reaction, with the total number of payroll employees climbing by almost 150,000. The second-strongest impact is observed for the labor force participation of Austrians, which drops, but in the short run only. After some 4 quarters, the domestic participation rate slowly starts rising again. In the long run, however, the second-most important adjustment mechanism is the increase in unemployment. In the simulation period, the increase in unemployment affects some 33,000 people, which corresponds to a rise in the unemployment rate (national definition) by just under 0.6 percentage points. This is not excessively high for a ten-year period.[19]

Our results tend to confirm the older findings by Hofer and Huber (2001) – with one exception, though: Our simulation suggests a stronger increase in the unemployment rate in the medium term. While this type of analysis does not permit us to determine which groups will be affected by the rise in unemployment, our results (notably section 5.1) and the fact that unemployment is generally higher among immigrant workers (table 1)

suggest that immigration essentially leads to an increase in unemployment of the immigrant labor force itself.

6 Summary and Conclusions

Within the next few years, the Austrian labor market will be opened – probably gradually – to EU-8 citizens. It is unclear how many workers will migrate to Austria as a result. An inflow of around 200,000 workers within ten years, as established in this paper, seems to be a realistic estimate in light of the literature review. This would represent an increase in immigrant payroll employment by some 50% compared with today's level.

Immigration will probably have a neutral impact on the equilibrium unemployment rate or even lower it (if the immigrant workforce reduces imbalances in the domestic labor market). As to the impact of immigration on inflation developments in Austria, we expect the inflationary pressure to diminish, because immigrant employees from the EU-8 will spend part of their income in their countries of origin (given geographical proximity) so that only part of their income will increase domestic demand.

Some fear that a rise in immigrant employment will cause Austrian labor market conditions to deteriorate. Yet the literature reviewed and the empirical estimations presented in this contribution suggest that, at the aggregate level, immigration will have no or only negligible negative effects for the employment situation of Austrians – at least in the long run;

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[19] *We also simulated another scenario that assumes immigration at the aggregate level to be markedly higher (just under 350,000 persons within ten years). In this case, the cumulative increase in total labor supply is some 308,000 people, the number of payroll employees increases by 253,000, the domestic labor supply declines by 41,000 people, and the number of unemployed persons rises by 54,000 (which is equivalent to an increase in the unemployment rate by 0.9 percentage points).*

it seems likely that unemployment will rise slightly in the short run.

The literature also indicates that the effects of immigration may be highly varied for different labor market groups. Especially low-skilled, low-income employees (notably males) will face a higher risk of unemployment and slower wage growth, while better-educated, higher-income employees and capital owners will probably profit from labor immigration. In this respect, it would appear advisable to adopt active labor market policies and fiscal measures (e.g. cutting taxes on labor) to improve the employability of the high-risk labor force groups.

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