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This contribution discusses the development of Austria's trade with the European Union. First, a descriptive analysis shows that Austrian exports to the European Union were adversely affected by trade barriers during the 1980s and in the first half of the 1990s. As a result, Austria's market shares in the European Union declined steadily until 1995. Second, a gravity model for a panel of OECD countries confirms positive trade liberalization effects after the country's accession to the EU. More recently, the introduction of the euro in 1999 seems to have given a new impetus to trade flows between Austria and the countries of the euro area.

1 Introduction

Since the beginning of the European integration process, Austria has had a strong interest in participating in the mainstream of the integration leading to the creation of the European Union (EU).² Austria maintained the most intensive trade relations with the Member States of the EU (especially with Germany and Italy) of all EFTA countries. Correspondingly, Austria initiated bilateral trade liberalization steps (free trade agreement with the EU in 1972 and accession to the European Economic Area in 1994) already before its accession to the EU. Thus, Austria's accession to the EU was a well-prepared step that followed the gradual liberalization between the participating countries over several decades (Felderer et al., 1994; Fidrmuc and Pichelmann, 1999).

This contribution is organized as follows. The next section describes the trade liberalization steps between the EU and Austria. The third section uses results from a gravity model to document the impact of trade liberalization (especially the full accession to the EU) on Austrian trade with the EU. Finally, the last section draws conclusions.

2 Austria's Stepwise Trade Liberalization with the EU

Two general concepts of economic integration emerged in Europe: First, the supporters of deeper integration (Belgium, France, Germany, Italy, Luxembourg and the Netherlands) signed the Treaty of Rome that created the European Economic Community in 1957. Second, Austria together with other six European nations (Denmark, Norway, Portugal, Sweden, Switzerland and the U.K.) formed the European Free Trade Area (EFTA)³ in 1960, which reflected also the neutrality statute of Austria (Felderer et al., 1994).

Unlike the first group of countries, which gradually implemented integration measures, the EFTA countries did not coordinate their internal regulations and tariffs toward third countries and restricted agricultural trade. Furthermore, the common market of the EFTA countries was smaller than that created by the EU, with the GDP of the EU nations being more than twice the size of the GDP of EFTA nations in 1970 (Baldwin, 1994). As a result, the lower degree of integration and the smaller size of the participating EFTA countries translated into smaller integration gains. From the beginning, the asymmetry between the two pro-

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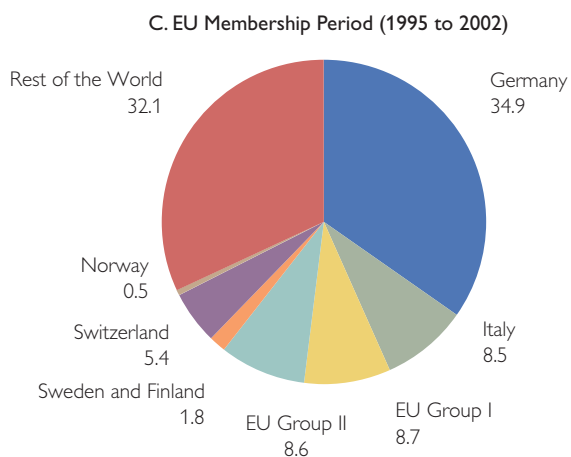
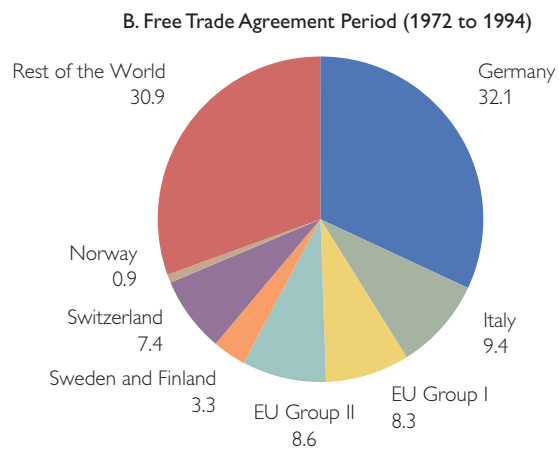
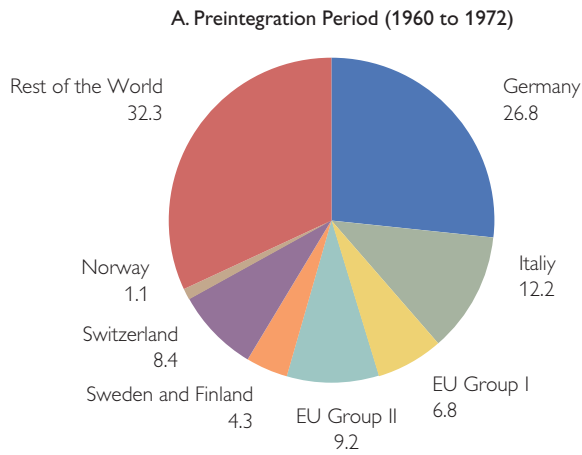
² For simplicity, European Union (EU) also applies to the former European Community (EC) throughout the text.

³ Finland and Iceland joined EFTA in the subsequent years.

Chart 1

Geographical Structure of Austrian Exports

%



Source: OECD, OeNB.

EU Group I – Belgium, Luxembourg, France and the Netherlands; EU Group II – Denmark, Greece, Ireland, Portugal, Spain and the U.K.

cesses created an incentive for EFTA members and the remaining European countries to join the EU. In 1973, the

U.K. and Denmark (as well as Ireland) joined the EU, which was reinforced by the adherence of Greece in 1981

and Portugal along with Spain in 1986. These earlier enlargements increased the importance of the EU, making it more difficult for Austria and other European nations to stay outside.

As a small open economy, Austria is strongly dependent on access to export markets to be economically successful. As a result of its geographical location, other industrialized European countries have traditionally been Austria's main trading partners (Breuss, 1989). The share of these countries has been quite stable at about 70% (chart 1) since 1960. Therefore, Austria's non-participation in the EU integration process, in which its main trading partners (Germany and Italy) were involved, had important consequences on the structure of Austrian foreign trade. First, Austrian exports to the EU faced significant discrimination in comparison with EU countries. Second, tariff reductions within EFTA promoted trade with other EFTA countries. Both effects introduced a distortion toward trade with other EFTA countries. Between 1960 and 1972, the share of EFTA members increased from 9% in 1960 to 18% of Austrian exports in 1972. Conversely, the share of EC-12 countries declined from 58% to 52% of Austrian exports between 1960 and 1972.

The changes of Austria's trade structure resulted mainly in a shift from the initial trading partners in neighboring countries (with the exception of Switzerland) toward the more distant EFTA members. In sum, the trade diversion effect seemed to have exceeded the trade creation effect during the first stage of integration in the

1960s and early 1970s (Breuss, 1992). This situation changed with the signing of a free trade agreement between Austria and the EU in July 1972.⁴ Austrian trade of major nonagricultural products with the EU was liberalized already in 1977, although some sensitive products were still subject to trade restrictions until 1984. As a result, the distortions of the regional structure of Austrian exports and imports were largely reduced in this period. The share of the six founding Member States of the EU (chart 1) reached nearly 50% of Austrian exports on average between 1972 and 1994. The initial EFTA members lost market share in Austria, which declined from 18% in 1972 to 12% of Austrian exports in 1994.

Finally, Austria applied for membership in the EU in July 1989. Other EFTA countries followed, although Norway and Switzerland decided not to join the EU. On January 1, 1995, Austria joined the EU together with Finland and Sweden. The first important step toward full participation in the Single Market had already been taken, however, with the creation of the European Economic Area (EEA) in January 1994. Through the EEA, Austria introduced the free movement of labor, capital and industrial goods with the EU and EFTA (with the exception of Switzerland). However, the EEA did not allow Austria to participate in EU decision-making (Baldwin and Flam, 1994).

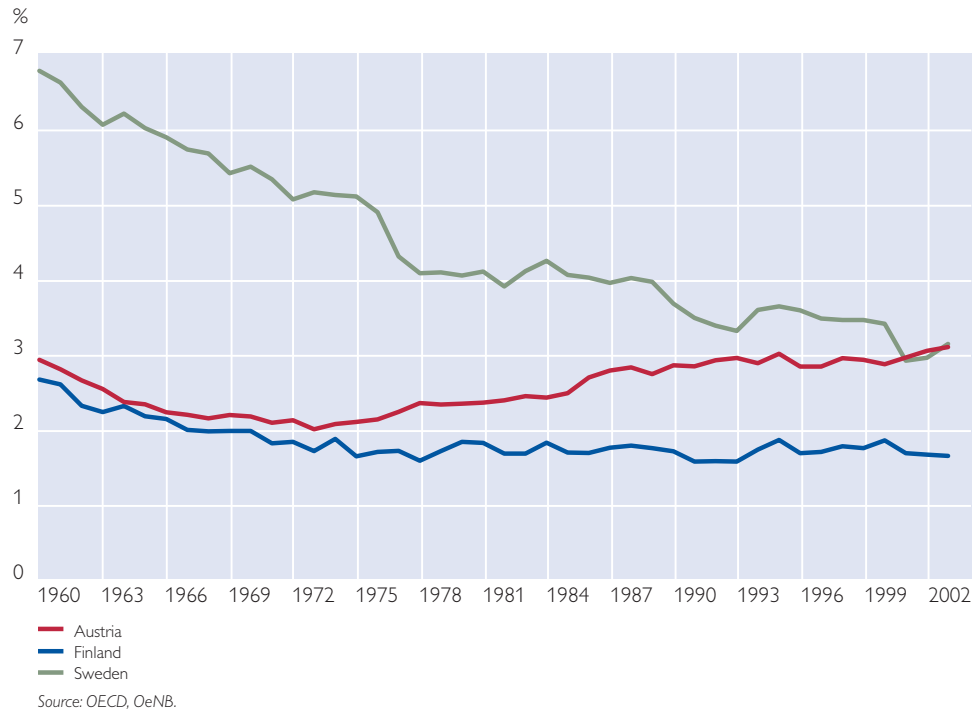
All these trade liberalization steps⁵ affected the development of Austrian trade with the EU. Chart 2 shows the evolution of the market shares of the

⁴ At the same time, Denmark, Ireland and the U.K. joined the EU and the remaining EFTA countries signed free trade agreements with the EU as well.

⁵ Keuschnigg and Kohler (1996) argue that Austria's accession to the EU caused a reduction of trade costs by 2.5%.

Chart 2

Market Shares of the Former EFTA Countries in Intra-EU-15 Trade



three EFTA countries that joined the EU in 1995 in intra-EU-15 trade. Austria's market share reached its minimum of less than 2% in 1973. Free trade agreements in the subsequent years allowed for a continuous rise in market share until the end of the 1980s, when Austria's market share approached 2.8% of intra-EU-15 trade. The full integration into the EU gave another impetus to Austria's trade development, which may have been further strengthened by the introduction of the common currency in 1999. As a result, Austrian market share in intra-EU trade has approached 3% since the introduction of the euro.⁶

The shares of Finland and Sweden faced a different development.⁷ Although the Finnish market share declined until the mid-1970s, much like that of Austria, the revival of trade after the free trade agreement and EU accession was less pronounced. Furthermore, Sweden's position in intra-EU trade has more or less continuously weakened over the entire period. These differences may be partly due to the different geographic locations, where Finland and Sweden as peripheral countries are more likely to trade with non-European countries.

⁶ In addition to integration effects, market shares are determined mainly by competitiveness. In the 1990s, especially Spain, Ireland and the Netherlands gained market share, while Italy, Germany and France lost market share in intra-EU trade. According to Wolfmayr (2004), Austria's competitiveness improved by specialization gains in trade with Central and Eastern European countries, which may have strengthened the integration gains after Austria's accession to the EU.

⁷ The developments in former EFTA countries are analyzed by Pointner in a contribution in this issue of *Monetary Policy & the Economy*.

Gravity Models

Standard gravity models relate bilateral trade flows to aggregate supply and demand (proxied by GDP) and to transport costs (proxied by the distance between the countries). Furthermore, free trade areas (including the EU) are accounted for by dummy variables. Although gravity models can be estimated by pooled OLS (ordinary least squares), recent research (see Mátyás, 1997, 1998; Egger and Pfaffermayr, 2003; Cheng and Wall, 2005) demonstrates that this approach ignores unobservable heterogeneity between the countries, which translates into biased estimates of the model parameters. Against this background, the following analysis is based on panel data estimation methods, which take country-specific effects into account (all variables are defined in logarithms):

$$T_{ijt} = \alpha_{ij} + \theta_t - \beta_1 y_{jt} + \beta_2 y_{it} + \beta_3 d_{ij} + \beta_4 B_{ij} + \beta_5 L_{ij} + \sum_{k=1}^K \gamma_k FTA_{ijk} + \varepsilon_{ijt}$$

where T_{ijt} corresponds to the size of bilateral trade (exports and imports) between country i and country j at time t (average of exports and imports) in real terms, y_{it} and y_{jt} stand for the (real) GDP in the country i and j , respectively, at time t , d_{ij} is the great circle distance between the capitals of country i and country j , and ε_{ijt} is the error term. Consistently with the arguments made before, the income elasticities of trade (β_1 and β_2) are expected to be positive, while the transport elasticity (β_3) should be negative. Furthermore, positive trade effects between countries sharing a common border or a language are controlled by additional dummy variables denoted by B and L , respectively. FTA_k stands for dummy variables for free trade areas (EU and NAFTA), which are equal to 1 if both countries are members of an FTA, and 0 otherwise. Finally, the country-pair individual effects, α_{ij} , cover all unobservable factors related to countries' openness (including tariff and nontariff trade barriers, geographical location). Anderson and van Wincoop (2003) relate fixed effects to the so-called multilateral trade resistance of countries (average overall trade barriers). Similarly, θ_t denotes time-specific effects, which control for common shocks in the world economy. The dataset covers a balanced panel of 23 OECD countries between 1980 and 2002, which is described in more detail in Bussière et al. (2005). This includes more than 7,000 observations and almost 300 bilateral trade relationships. Trade data are mostly compiled from the International Monetary Fund Direction of Trade Statistics; they are expressed in U.S. dollars and are deflated by U.S. industrial producer prices. GDP data come from the IMF International Financial Statistics and are deflated by the U.S. CPI.

Table 1

Estimation of Gravity Models, 1980 to 2002

	OLS	Fixed effects
GDP of country i	0.781*	0.582*
GDP of country j	0.769*	0.651*
EU membership	0.377*	0.207*
NAFTA membership	0.164	0.237*
Distance	-0.641*	
Common border	0.534*	
Common language	0.510*	
Number of observations	7,061	7,061
R ²	0.912	0.674

Source: OeNB.

* denotes significance at the 1% level.

3 Gravity Models and Austria's EU Accession

The changes of the geographical structure of Austria's trade flows can be assessed by gravity models, which have become a working horse of applied

trade analysis (see box "Gravity Models"). Egger (2004), for example, uses gravity models to estimate the trade effects of regional trading blocs. Fidrmuc and Fidrmuc (2003) review the application of gravity models to esti-

mate integration (and disintegration) effects and home bias in selected CEECs as well as to German reunification. Rose (2000) started an intensive discussion of the trade effects of currency unions.

Table 1 compares the pooled OLS with the fixed effects specification, a procedure generally recommended in the recent literature. All variables included in the fixed effect specification have the expected signs and are also statistically significant. Furthermore, both the EU and NAFTA are positively signed and of a similar magnitude according to the fixed effect specification. The results imply in general that EU membership increases trade by nearly one quarter (that is, $\exp(0.207) = 1.230$) in the long run.

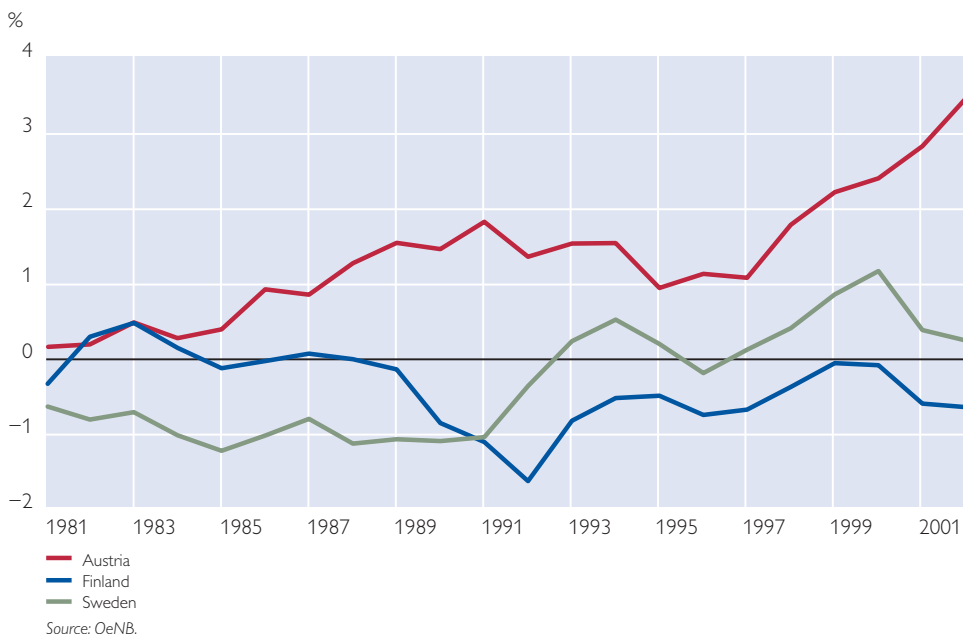
However, this aggregate result of EU integration effects may be driven by the Southern enlargement (i.e. Greece, Portugal, and Spain) in the 1980s. Country-specific adjustment

effects after EU accession or similar policy measures can be easily included in gravity models. As far as trade liberalization represents a source of (positive) shocks to the participating countries, time effects can be decomposed into effects related to a particular economic policy decision. That means that the gravity model is extended by time effects for trade flows between the EU-15 and the former EFTA countries, while the overall time effects control for common shocks in the world trade as before. Given the possible differences between the countries, which are deeply analyzed by Pointner in this issue of Monetary Policy & the Economy, the EU enlargement effects are analyzed separately for Austria, Sweden and Finland. The other parameters of the model remain virtually unchanged.

For Austria, the time dummies for trade with the EU-15 confirm the stylized facts presented in section 2. Aus-

Chart 3

Cumulated Effects of the Free Trade Agreement with the EU and of EU Accession



tria's trade with the EU increased at the beginning of the 1980s as a result of the free trade agreement with the EU. However, the scope of this liberalization was rather limited, and trade flows between Austria and the other EU-15 states stagnated again in the second half of the 1980s and even declined slightly in the first half of the 1990s. It can also be seen that the accession to the EU dramatically increased the intensity of trade with the EU. Actually, the time effects estimated for Austria, which are translated to the perceptual effects in chart 3, confirm that trade with the EU increased by about 25 percentage points between 1995 and 2002, which corresponds to average annual growth rates of about 2.6%. If trade liberalization due to the free trade agreement is taken into account, integration effects increase to more than one-third. It is important to keep in mind that these trade increases reflect output growth (Breuss, 2003, 2004) and also the general trend toward globalization (reflected by global time effects as above). Furthermore, chart 3 suggests that trade effects gained dynamics in 1999, which is possibly due to the introduction of the euro (Faruqee, 2004).

Although trade developments in Austria, Finland and Sweden during the 1990s show similarities (with trade intensity being at a comparably lower level in the Nordic countries than in Austria), these trends did not go beyond 2000. Thus, the parallel behavior of integration effects in Sweden and Finland (chart 3) indicates that there were region-specific shocks possibly

related to the recent developments in the telecommunication industry, which is particularly strong in the Nordic countries.

4 Conclusions

This contribution analyzes the development of trade between Austria and the EU. These trade flows were partly liberalized by a free trade agreement in the 1970s. However, this contribution shows that the agreement did not provide Austrian exporters full access to the EU market. As a result, the intensity of Austria's trade with the EU stagnated or even declined until the full accession of the country to the EU in 1995. Presented gravity models confirm significant effects of EU entry on Austrian activities in the Single Market, as reflected by Austria's steadily increasing shares of intra-EU trade. The long-run estimate of trade effects of the accession to the EU is about 25%. This is largely comparable to the long-run results of EU membership found for Austria. Nevertheless, Austrian trade integration effects are possibly higher than those of the other EFTA countries. This can be related to Austria's geographic location, but also to its industrial structure.

Finally, the results imply that the introduction of the euro might have positively influenced Austrian trade with the euro area countries. However, such an analysis goes far beyond the scope of this contribution. It nevertheless indicates some avenues for further research.

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