

# STATISTIKEN

Special Issue

## Structure of Trade in Services in 2006

Results of the Company Analysis

Irregular special issues of the “Statistiken – Daten & Analysen” series provide detailed information on special statistical topics.

### **Editors in chief**

*Aurel Schubert, Gerhard Kaltenbeck, Michael Pfeiffer, Eva-Maria Springauf*

### **Coordinators**

*Matthias Fuchs, Patrick Thienel*

### **Editorial processing**

*Rita Schwarz*

### **Translations**

*Rena Mühlendorf*

### **Technical production**

*Peter Buchegger (design)*

*Walter Grosser, Birgit Vogt*

*OeNB Web and Printing Services (printing and production)*

### **Paper**

*Printed on environmentally friendly paper*

### **Inquiries**

*Oesterreichische Nationalbank, Statistics Department/Statistics Hotline or Communications Division*

*Postal address: PO Box 61, 1011 Vienna, Austria*

*Phone: Statistics Hotline (+43-1) 40420-5555*

*Communications Division (+43-1) 40420-6666*

*Fax: Statistics Hotline (+43-1) 40420-5499*

*Communications Division (+43-1) 40420-6698*

*E-mail: statistik.hotline@oebn.at and oebn.info@oebn.at*

### **Orders/address management**

*Oesterreichische Nationalbank, Documentation Management and Communications Services*

*Postal address: PO Box 61, 1011 Vienna, Austria*

*Phone: (+43-1) 40420-2345*

*Fax: (+43-1) 40420-2398*

*E-mail: oebn.publikationen@oebn.at*

### **Imprint**

*Publisher and editor:*

*Oesterreichische Nationalbank*

*Otto-Wagner-Platz 3, 1090 Vienna, Austria*

*Günther Thonabauer, Communications Division*

*Internet: www.oebn.at*

*Printed by: Oesterreichische Nationalbank, 1090 Vienna, Austria*

*© Oesterreichische Nationalbank, 2009*

*All rights reserved.*

*May be reproduced for noncommercial, educational and scientific purposes with appropriate credit.*

**DVR 0031577**

**Vienna, 2009**



# Contents

Preface	4
1 The Framework for Compiling Trade in Services in Austria	6
2 Development of Trade in Services	9
3 The Determinants of Trade in Services	20
3.1 Description of the Data Set	20
3.2 Description of the Sample	20
3.3 Examination of the Basic Population for the Analysis	25
3.4 Concentration of Enterprises in Trade in Services	26
3.5 The Significance of Service Exports for Total Sales	29
3.6 Service Trade Broken down by Provinces	31
3.7 Service Trade Range	35
3.8 The Influence of Company Size and Age on Trade in Services	38
3.9 Links between Service Trade and Group Activities	41
3.10 Links between Trade in Services and Trade in Goods	45
3.11 Regression Analysis	49
4 Conclusions	52
5 Appendix	55
6 References	58
7 Overview of the "Statistiken – Daten & Analysen" Series	59

## Preface

Tertiarization – the structural shift from a manufacturing to a service economy – has been observable in Western economies at least since the mid-1970s. Whereas the growth of the service sector and the attendant development of employment and productivity have been analyzed within national boundaries, cross-border trade in services (except travel) has attracted attention only in recent years. In Austria, a Vienna working group on economic and sociological studies, for instance, initiated a first inventory of trade in services at the end of the 1990s.<sup>1</sup>

Balance of payments statistics have traditionally been used as a basis for observations about cross-border trade in services. They provide information about exports and imports by individual countries or by economic or monetary areas and enable analysts to examine trade flows by service categories and partner countries. Since the economic agents trading services are corporations, not countries, transnational trade in services must, however, be analyzed at the firm level. Only then it is possible to determine why companies in fact trade services across borders – results that may support interest groups, politicians, and business and industry in their decision making.

The Austrian authorities started to directly survey enterprises on exports and imports of services (except travel) on January 1, 2006. This structural change in data collection has effectively and sustainably boosted the quality of statistics of international trade in services in Austria. Data on exports and imports per service category and partner country are now available on a per-enterprise basis. The company register

number may be used to link these data with structural or other organizational information, e.g. about company headquarters, sales revenues, the number of employees and about outward and inward FDI or with foreign trade statistics data. Following its regular annual revision of the balance of payments statistics, the Oesterreichische Nationalbank (OeNB) undertakes to link enterprise and foreign trade data starting with the year 2006 and will regularly publish the results of the analyses in a special statistical publication.

The enterprise survey shows that, in 2006, nearly 5,000 enterprises in Austria traded services across borders. Their economic activities involve some 774,000 employees and resulted in sales revenues of about EUR 250 billion, service export revenues of about EUR 20 billion and service import expenditures of roughly EUR 15 billion. In analyzing the survey results, the OeNB took account of a number of variables to identify the determinants of trade in services, including the degree of enterprise concentration in services, the importance of external trade for total sales, the reach of trade in services and its correlation with company size, enterprise age, industrial classification and trade with goods. The relevant empirical literature puts these issues at the center of its research.<sup>2</sup> Our analysis comes to the conclusion that Austria does not feature “typical” service exporters. Much rather, it is possible to distinguish between various types of service traders: (1) network industries, where exports are intrinsic to the system (postal, telecommunications and transport services); (2) technology-intensive parts of the manufac-

<sup>1</sup> See Lamel et al. (1990).

<sup>2</sup> For Austria, see e.g. Egger and Pfaffermayr (2005), Francois and Wörz (2007), Wolfmayr (2008), Nowotny and Palme (2008).

turing industry, including e.g. the automotive industry, chemicals and the manufacture of radio, TV and communication equipment; (3) transnational enterprises with global production sites and an R&D center in Austria; (4)

group management providing a broad range of services, e.g. advertising, legal consultancy and financial services; and (5) local, specialized companies in areas such as technology and management consultancy.

# 1 The Framework for Compiling Trade in Services in Austria

Patricia Walter,  
René Dell'mour<sup>3</sup>

The Oesterreichische Nationalbank (OeNB) is responsible for compiling and publishing the balance of payments and related external statistics, i.e. the international investment position and direct investment statistics. In January 2006, the OeNB introduced a new system for compiling external statistics to substantially improve these statistics' quality and coverage.

Prior to January 2006, data for external statistics had largely been gleaned as secondary information from banks' records on payment transactions. Banks had to report to the OeNB every single transaction above a certain threshold (at last count, EUR 12,500), providing coded information about the type of transaction, the amount, the currency, the source or target country and the domestic economic sector. The reporting obligation applied to banks' own transactions and those of their customers. Progressive economic globalization rendered the largely indirect reporting system increasingly unsuitable for providing the high quality of balance of payments statistics demanded by national and international users. Among the contributing factors was the rise in intracompany liquidity management that eluded appropriate coverage by a bank-based reporting system. As a result, the volume of trade and financial flows was distorted upward in statistics and did not reflect actual transactions in the economy. The switch to a direct reporting system was further driven by the gradual harmonization of cross-border payment transactions within the euro area and the discontinuation of the related reporting obligations of banks.

These circumstances prompted the OeNB to redesign the data collection framework for compiling the Austrian balance of payments and related statistics by switching from indirect reports by banks to direct surveys of economic agents. The heart of the new system consists in taking random samples from enterprises, institutional investors, banks and households; the sampling process differs depending on the type of transaction surveyed. To benefit from synergies in the new reporting system, the OeNB works in close cooperation with Austria's second key producer of statistics, Statistics Austria. Since 2006, the OeNB has thus concentrated on capturing financial transactions and the financial sector, whereas Statistics Austria has focused on real economy data. The OeNB remains responsible for consolidating the different reports and for the quality and publication of the balance of payments statistics.

On behalf of the OeNB, Statistics Austria compiles data on service exports and imports by nonfinancial corporations classified under sections C to I, K, M to O as well as division 67 of the Austrian Statistical Classification of Economic Activities (ÖNACE) 2003. This does not include travel data, which are captured separately because travel operates according to a different mode of supply that requires a different data collection system, i.e. one that combines primary and secondary data sources. The OeNB, in turn, conducts the surveys of the financial sector (mainly banks and insurance companies) with regard to trade in services;

<sup>3</sup> The authors thank Helga Neuhold (Statistics Austria) as well as Anton Haas and Dieter Kreuz (both OeNB) for expert support.

this relates to the divisions 65 and 66 of ÖNACE 2003.

The direct surveys of trade in services cover business activities according to the Extended Balance of Payments Services Classification (EBOPS, table 1). The survey design for the nonfinancial sector is a stratified corporate sample within the scope of the structural business survey (SBS). The respondents are grouped by industry classified at the ÖNACE two-digit level. The reporting obligation applies to those nonfinancial corporations whose service exports or

imports surpass a specified threshold. Every industry has a particular reporting threshold of between EUR 50,000 and EUR 200,000, with the threshold chosen to capture at least 90% of all service imports and exports in every industry.

Unreported data are imputed using an estimation method. To this end, service exports and imports of reporting enterprises are stratified by industries and sales size classes, median values are calculated, and these are then applied to nonreporting enterprises. Robust

Table 1

### Extended Balance of Payments Services Classification (EBOPS)

1. Transportation	1.1. Sea transport	1.1.1 Passenger 1.1.2 Freight 1.1.3 Other
	1.2 Air transport	1.2.1 Passenger 1.2.2 Freight 1.2.3 Other
	1.3 Other transport	1.3.1 Passenger 1.3.2 Freight 1.3.3 Other
	Extended classification of other transport	
	1.4 Space transport	
	1.5 Rail transport	1.5.1 Passenger 1.5.2 Freight 1.5.3 Other
	1.6 Road transport	1.6.1 Passenger 1.6.2 Freight 1.6.3 Other
	1.7 Inland waterway transport	1.7.1 Passenger 1.7.2 Freight 1.7.3 Other
	1.8 Pipeline transport and electricity transmission	
1.9 Other supporting and auxiliary transport services		
2. Travel	2.1 Business travel	2.1.1 Expenditure by seasonal and border workers 2.1.2 Other
	2.2 Personal travel	2.2.1 Health-related expenditure 2.2.2 Education-related expenditure 2.2.3 Other
3. Communications services	3.1 Postal and courier services	3.1.1 Postal services 3.1.2 Courier services
	3.2 Telecommunications services	
4. Construction services	4.1 Construction abroad	
	4.2 Construction in the compiling economy	
5. Insurance services	5.1 Life insurance and pension funding	
	5.2 Freight insurance	
	5.3 Other direct insurance	
	5.4 Reinsurance	
	5.5 Auxiliary services	

<b>6. Financial services</b>			
<b>7. Computer and information services</b>	7.1 Computer services 7.2 Information services	7.2.1 News agency services 7.2.2 Other information provision services	
<b>8. Royalties and license fees</b>	8.1 Franchises and similar rights 8.2 Other royalties and license fees		
<b>9. Other business services</b>	9.1 Merchenting and other trade-related services 9.2 Operational leasing 9.3 Miscellaneous business, professional, and technical services	9.1.1 Merchenting 9.1.2 Other trade-related services  9.3.1 Legal, accounting, management consulting, and public relations  9.3.2 Advertising, market research, and public opinion polling 9.3.3 Research and development 9.3.4 Architectural, engineering, and other technical services 9.3.5 Agricultural, mining, and on-site processing services 9.3.6 Other business services 9.3.7 Services between related enterprises, n.i.e.	9.3.1.1 Legal services 9.3.1.2 Accounting, auditing, bookkeeping, and tax consulting services 9.3.1.3. Business and management consulting and public relations services  9.3.5.1 Waste treatment and depollution 9.3.5.2 Agricultural, mining, and other on-site processing services
<b>10. Personal, cultural, and recreational services</b>	10.1 Audiovisual and related services 10.2 Other personal, cultural, and recreational services	10.2.1 Education services 10.2.2 Health services 10.2.3 Other	
<b>11. Government services, n.i.e.</b>	11.1 Embassies and consulates 11.2 Military units and agencies 11.3 Other government services		

Source: OECD, *Manual on Statistics of International Trade in Services*.

regression is used to estimate service exports and imports at values below the threshold. To this end, exports and imports are calculated as a function of sales revenues.

A time series break occurred in the results when the new survey method for international trade in services was introduced. Between 2005 and 2006, trade flows slumped, above all in the category Unclassified Transactions. This statistical artifact disappeared on introduction of the direct survey sys-

tem, causing the trade volume to shrink. At the same time, the degree of detail and the plausibility of the statistical results increased.<sup>4</sup> On the basis of these findings, the OeNB and Statistics Austria backcasted service exports and imports for the period from 1995 to 2005, using the methodology in place since 2006, to provide users of Austrian balance of payments data with a largely consistent time series for their analyses.<sup>5</sup>

<sup>4</sup> For a more detailed presentation, see Walter (2008).

<sup>5</sup> The new tables containing this information are available on the OeNB's website at [www.oenb.at/en/stat\\_melders/datenangebot/aussenwirtschaft/zahlungsbilanz/zahlungsbilanz.jsp#tcm:16-4965](http://www.oenb.at/en/stat_melders/datenangebot/aussenwirtschaft/zahlungsbilanz/zahlungsbilanz.jsp#tcm:16-4965)



## 2 Development of Trade in Services<sup>6</sup>

Austria's balance of payments statistics indicate that Austria has increasingly been generating surpluses on service exports and imports (excluding travel) and that these have contributed substantially to the positive long-term trend of external trade as reflected by the current account balance (chart 1). Between 1998 and 2008, net service trade augmented from about EUR 1 billion to EUR 6 billion, a rise from 0.7% of GDP to 1.5% of GDP. The underlying service flows have grown considerably – exports by an average of around 10% a year, imports by some 8% a year.

In Austria, travel also plays an important role as a net revenue source in external trade (chart 2). Compared with revenues on all other services though, travel revenues expanded only moderately between 1998 and 2008; adjusted for inflation, travel expenditure in fact stagnated (travel income: +4% a year; travel expenditure: +2% a year). As Austria has undergone a pronounced shift in the structure of its

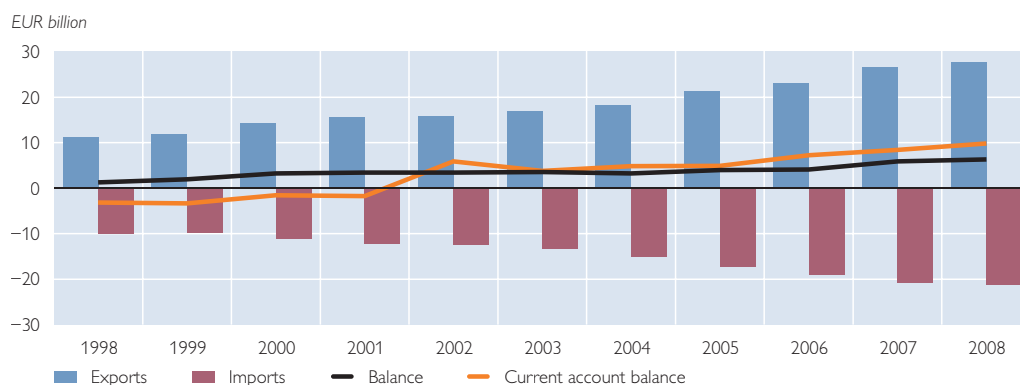
external trade, it cannot be considered first and foremost a tourist destination any longer. Much rather, Austria has become a provider of varied services.

The value of goods imports by Austria tends to exceed that of goods exports. As a result, trade outlays were higher than trade revenues for a long period (chart 3).<sup>7</sup> In recent years Austria benefited from eastward EU enlargement and posted trade results close to balance or in surplus. A comparison of trade flows signals that the value of trade in services remained fairly low from 1998 to 2008, though. The service-to-goods export ratio widened slightly from about 20% to 23%, that of service-to-goods imports grew from roughly 16% to 18%. Thus, the annual growth of service flows was higher on average than that of goods flows (exports: +8% a year, imports: +7% a year), but did not suffice to make up for the head start of goods trade.

The literature cites two main factors in the lag of trade in services on

Chart 1

### Development of Trade in Services



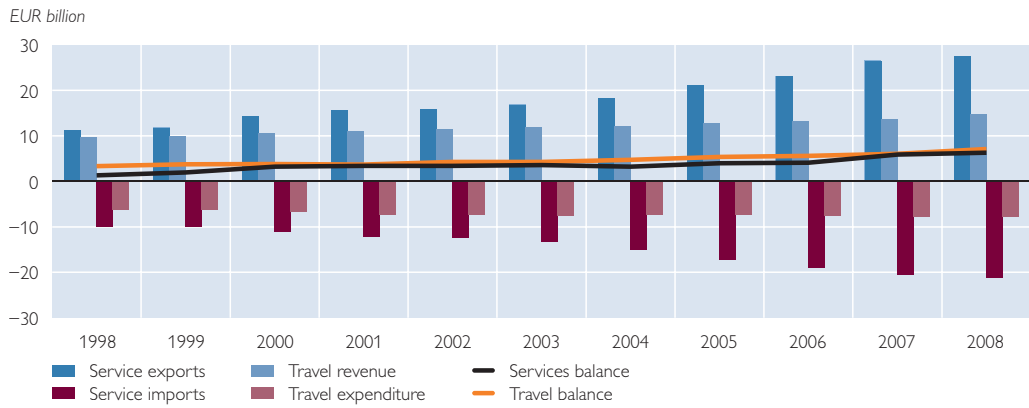
Source: OeNB, Statistics Austria.

<sup>6</sup> In the following sections, services are defined as business services. Travel is treated separately and travel results are presented explicitly.

<sup>7</sup> The data are derived from the balance of payments, not the external trade statistics. There are methodological differences; in particular, imports of goods are adjusted for transport and insurance components in the balance of payments.

Chart 2

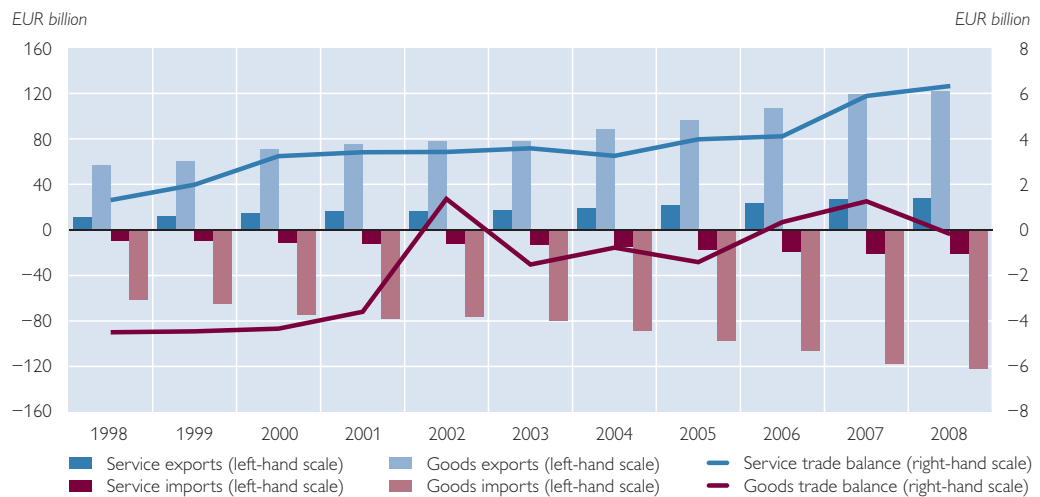
**Development of Service Trade Compared with Travel**



Source: OeNB, Statistics Austria.

Chart 3

**Development of Trade in Services Compared with Goods Trade**



Source: OeNB, Statistics Austria.

goods trade: first, the limited tradability of services resulting from their immateriality and their intrinsic link to the persons performing the relevant service, and second, the continued existence of nontariff trade barriers, above all in the form of regulations on business startups and establishing a commercial presence and restrictions

on labor mobility.<sup>8</sup> The extent of tradability is determined by the way in which services are rendered. The General Agreement on Trade in Services (GATS) distinguishes between four modes of supplying services: cross-border trade, consumption abroad, commercial presence, and presence of natural persons (table 2).

<sup>8</sup> For a detailed presentation, see Kox and Kyvik Nordas (2007).

Table 2

**Four Modes of International Trade in Services (Modes of Supply)**

Mode of supply	Criteria	Location of supplier
1. Cross-border supply	Service delivered within the home territory of the consumer, the supplier being located in a different country	Service supplier not present in the territory of the consumer
2. Consumption abroad	Service delivered outside the home territory of the consumer who moves to another country	
3. Commercial presence	Service delivered within the home territory of the consumer through the commercial presence of a foreign supplier	Service supplier present in the territory of the consumer
4. Presence of a natural person	Service delivered within the home territory of the consumer with the supplier being present as a natural person	

Source: GATS, document MTN.GNS/W/124.

The service survey in Austria distinguishes among 54 service items in order to capture the different types of service exports and imports in conformity with international standards. The survey does not make a distinction between different modes of rendering the respective service. Most services may be rendered in various ways. Take computer service exports, for example: a data medium with a particular software may be sent to a customer in another country, or a supplier may travel abroad to install the software on site. In some cases – take construction services or management consultancy services – a service can be rendered only if the person performing the service is physically present. Services that are provided by a branch office abroad that is a separate legal entity are not considered in the service survey; they are reported as part of the direct investment survey instead.

This analysis subsumes the different types of services in three main groups to provide clear insights into trade developments and the shifts in the focus of Austria's external trade:<sup>9</sup>

- Traditional services: transportation; construction services; trade-related services; operational leasing<sup>10</sup>
- Innovative services: communications services;<sup>11</sup> computer and information services; research and development; architectural, engineering, and other technical services
- Knowledge-based services: legal services; accounting, auditing, bookkeeping, and tax consulting services; business and management consulting and public relations services; advertising, market research, and public opinion polling; personal, cultural, and recreational services

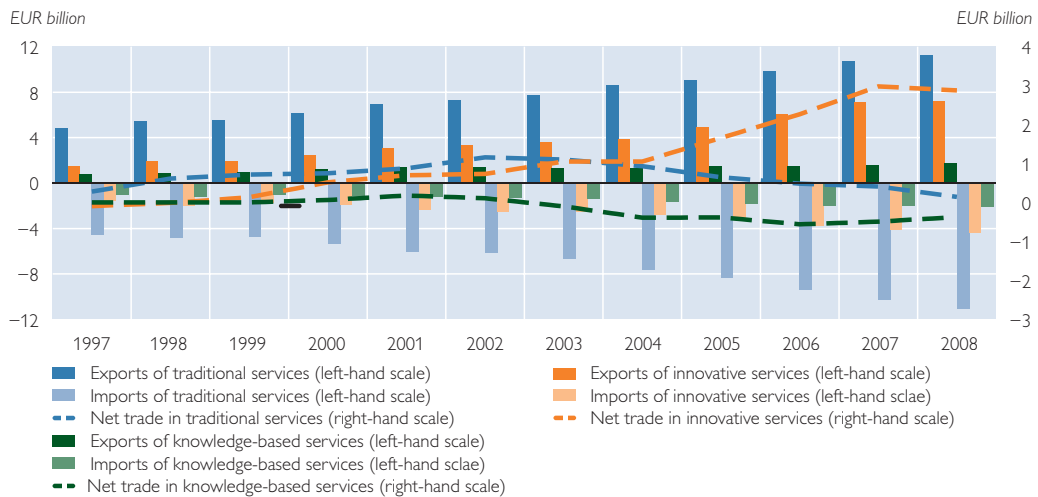
<sup>9</sup> The list does not include all service categories covered by the survey. The analysis does not take into account insurance and financial services, as these are not part of the company analysis which follows. In addition, services that cannot be classified directly, such as "other business services" and government services, were excluded. Merchanting was also left out of account, as it is at the methodological borderline between goods and services and would distort the plausibility of the results on traditional services. In the International Monetary Fund's newest *Balance of Payments Manual* (6<sup>th</sup> edition) merchanting is now considered under goods.

<sup>10</sup> Agricultural and mining services account for a negligible volume of services and can thus be disregarded.

<sup>11</sup> Communications services include telecommunications, postal and courier services. However, as telecommunications services account for the bulk of exports and imports, the entire complex was considered under innovative services. This presentation is also in line with balance of payments conventions (table 1).

Chart 4

### Development of Different Service Categories



Source: OeNB, Statistics Austria.

Traditional services generate the highest volumes of exports and imports in Austria in value terms (chart 4). However, the surplus on trade in such services is declining and approaching balance. Imports have been gaining momentum over time (average annual growth of exports: +8%, of imports: +8<sup>1</sup>/<sub>2</sub>%).

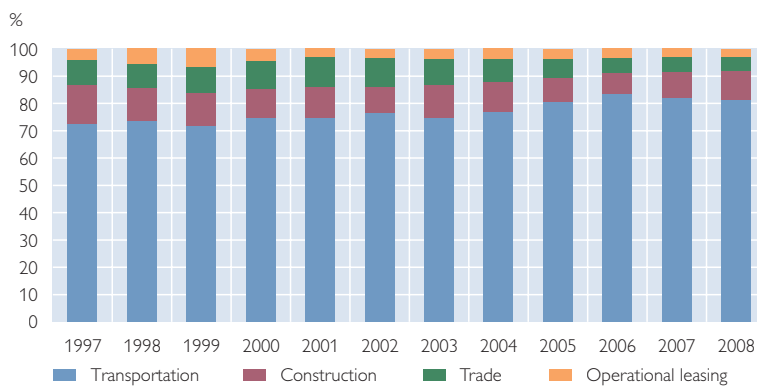
Transport services account for the bulk of traditional service exports and

imports (chart 5). In fact, their share widened from roughly 75% to over 80% from 1998 to 2008. Transportation of goods accounts for the bulk of trade flows and has risen compared to passenger transportation. Transportation of goods abroad expanded by an average of 12% a year, whereas passenger transports abroad grew by 5% a year. On balance, though, Austrians make net payments to foreign transportation firms. The noticeable surpluses on passenger transportation have been trending toward balance. Hence, a phase of rising trade surpluses from international transportation services was followed by a move toward a deficit after 2003.<sup>12</sup>

While traditional services still predominate Austrian service trade flows, the pace of growth is most dynamic in trade with innovative services (chart 4). From 1998 to 2008, such exports jumped by an average of some 15% a year, whereas imports went up by 10%. Net innovative services moved from a

Chart 5a

### Composition of Exports of Traditional Services



Source: OeNB, Statistics Austria.

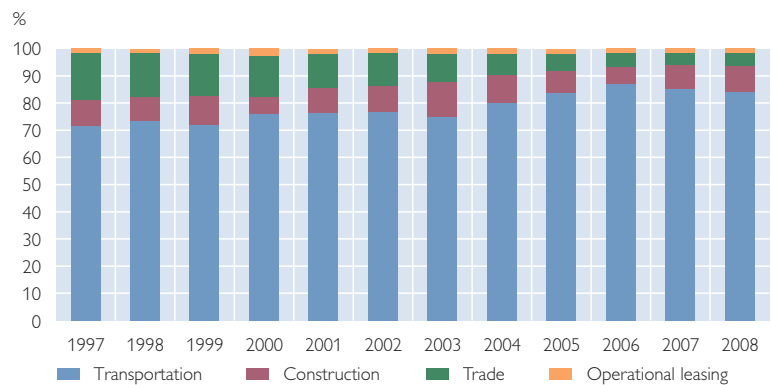
<sup>12</sup> In balance of payments methodology, “cross-border” is understood to mean that a foreign enterprise is commissioned with transportation. Whether goods or persons are transported within a country or abroad is irrelevant.

rough balance to a surplus of about EUR 3 billion, mainly because of the positive development of architectural, engineering and other technical services as well as of research and development services, reduced by net expenditure on royalties and license fees.

Architectural, engineering, and other technical services represent the highest share of innovative service exports (chart 6). In the course of time, their share has contracted, falling from 48% in 1998 to 35% in 2008. The share of exports of computer and information services as well as research and development services has been growing. Whereas Austria's revenues from royalties and license fees are negligible, expenditures of this type dominate innovative service imports. However, their share has lost ground against imports of computer and information services as well as of research and development services, dropping from 38% in 1998 to 25% in 2008.<sup>13</sup>

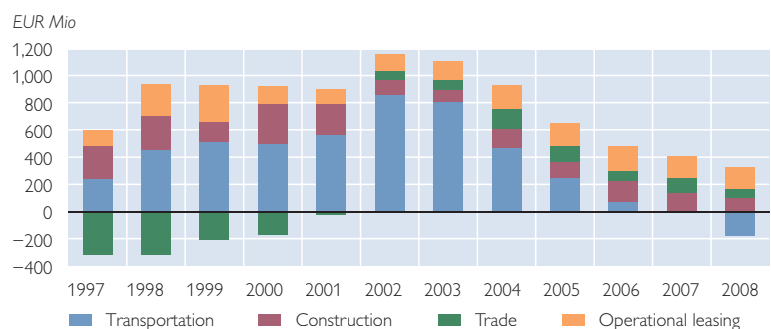
Comparing traditional, knowledge-based and innovative services, knowledge-based service exports and imports account for the lowest volume in value terms throughout the entire observation period (chart 4). Although knowledge-based services exhibit robust growth (average annual growth of exports: +8%, of imports: +7%), the significance of these trade flows for the Austrian economy has diminished against those of traditional services, with exports falling from 16% in 1998 to 15% in 2008 and imports from 24% to 20%. The minor importance of knowledge-based services may be at-

Chart 5b  
**Composition of Imports of Traditional Services**



Source: OeNB, Statistics Austria.

Chart 5c  
**Composition of Net Trade in Traditional Services**



Source: OeNB, Statistics Austria.

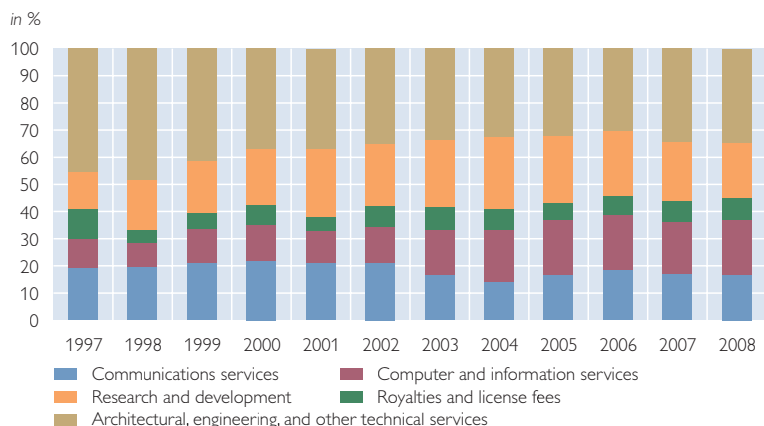
tributed to regulations on business startups and establishing a commercial presence regarding, for example, legal consulting and personal services.

Advertising, market research, and public opinion polling services, followed by business and management consulting services account for the largest share of exports of knowledge-based services (chart 7). In the case of im-

<sup>13</sup> Revenues from royalties and license fees are generated whenever the patented results of research and development are provided as immaterial assets and property rights to third parties abroad for authorized use. Conversely, research and development services cover services connected to the performance of basic research, applied research and the development of new products and processes for customers abroad.

Chart 6a

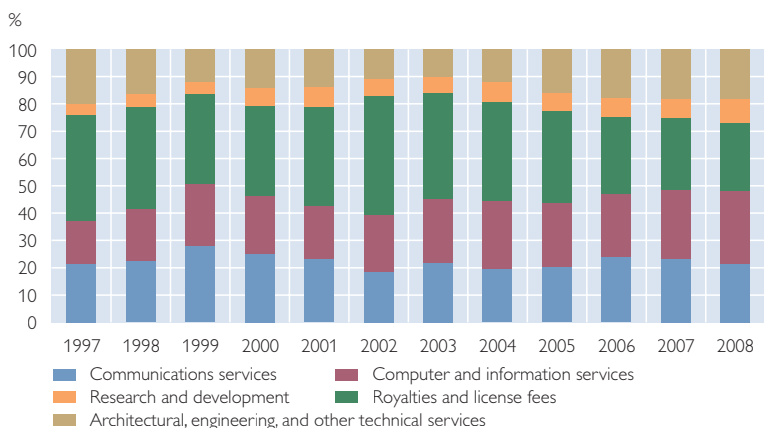
### Composition of Exports of Innovative Services



Source: OeNB, Statistics Austria.

Chart 6b

### Composition of Imports of Innovative Services



Source: OeNB, Statistics Austria.

ports, personal, cultural and recreational services have gained ground.<sup>14</sup> Rises in imports of personal services have an impact on net knowledge-based service trade and determine its trend to slip into deficit.

Using the revealed comparative advantage (RCA), analysts can determine on which services Austria has a comparative advantage in exports. In par-

ticular, the RCA shows to what extent the export-to-import ratio of a particular service deviates from the export-to-import ratio of all services (excluding travel). Typically, the index for country *i* is defined as

$$RCA_i = 100 \ln [(ex_j/im_j)/(Gex/Gim)]$$

where

*ex* exports

*im* imports

*j* type of service

*G* total services

The RCA index displays a positive value if the ratio is above average for a particular service. Thus, a positive value indicates that a country has a strong international competitive position for that particular service. In relative terms, foreign suppliers of that service have not gained as strong a foothold in that country's market as domestic suppliers have succeeded in gaining a foothold abroad.<sup>15</sup>

In terms of traditional services, Austria exhibits comparative disadvantages in transportation (chart 8). With the exception of operational leasing, Austria also has comparative disadvantages in the case of all other traditional services. In other words, the market access for those types of services in Austria by foreign suppliers outpaces that of Austrian suppliers abroad. In the case of innovative services, though, Austria possesses comparative advantages in research and development services and in architectural, engineering, and other technical services. Its comparative disadvantage in the communications and computer service trade has been diminishing over time and is tending toward balance; Austria posts the

<sup>14</sup> The importance of this service category is attributable mainly to the purchase of health services abroad. As the survey cannot cover such services directly, as they are imported by households, the data are based largely on estimates of the shadow economy used in drawing up the national accounts.

<sup>15</sup> For a more detailed presentation, see Utkulu and Seymen (2004).

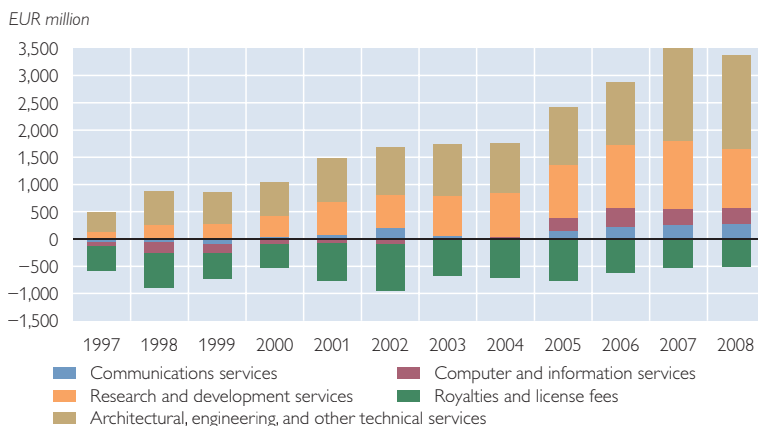
greatest competitive disadvantage in trade in royalties and license fees. Turning to knowledge-based services, Austria has a predominantly negative competitive position, with no trend reversal observable so far.

A regional analysis of trade in services proves how important trade relations within the EU are for Austria both in terms of the value of service exports and imports and in terms of the trade result (chart 9). In 1998, Austrian exports to non-EU countries came to 40% of its exports to the EU-27, a ratio which fell below 30% by 2003 to recover to 43% in 2008. In other words, Austria focused its service trade on EU countries after joining the EU in 1995, and then, after 2004, strengthened its service trade relations with non-EU countries. This logic does not apply to service imports, which Austria has purchased from EU countries to a steadily growing degree. The surplus on trade in services with the EU has been trending more or less sideways at a high level since 2000, while net revenues from non-EU countries have been developing dynamically.

Broken down by EU accession dates, trade within the EU-27 has focused above all on the original EU-15 countries, both in terms of the service export and import value and in terms of net revenues, which augmented from a position in balance in 1998 to EUR 3 billion in 2008 (chart 10). But trade flows with the Member States that joined in 2004 developed more dynamically by comparison, with exports advancing on average by 11% a year and imports by 13% a year (EU-15: exports +9%, imports +7%). As a result, the ratio of service exports to the EU-10 compared with those to the EU-15 went up from 20% in 1998 to 24% in 2008, that of service imports rose from 18% to 33%. The trade result shifted

Chart 6c

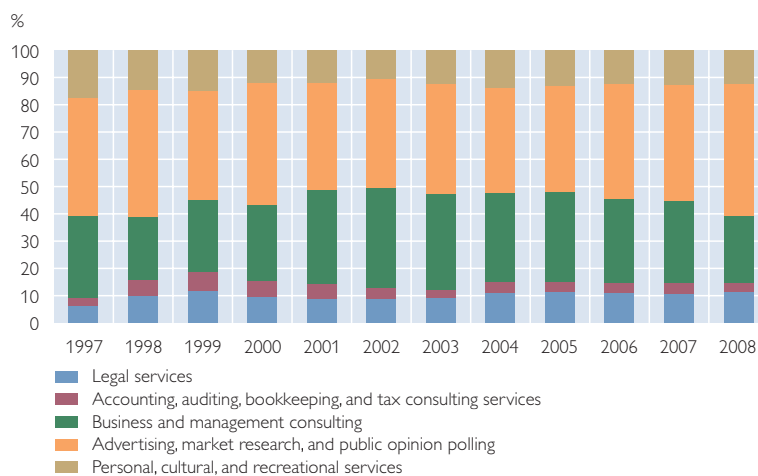
### Composition of Net Trade in Innovative Services



Source: OeNB, Statistics Austria.

Chart 7a

### Composition of Exports of Knowledge-Based Services



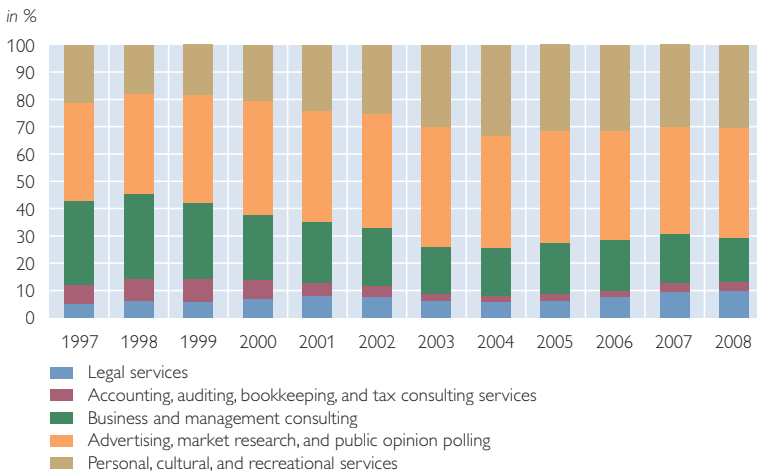
Source: OeNB, Statistics Austria.

from an initial surplus into deficit, in particular because of imports of transport and personal services from the EU-10 countries. Trade flows with the two second-wave accession countries Bulgaria and Romania posted the fastest growth (exports: +23% a year, imports: +19%). By definition, the service trade account is in balance, but tends to show a slight surplus.

Germany is by far the most important target country for Austria's service exports (table 3); its significance has

Chart 7b

**Composition of Exports of Knowledge-Based Services**



Source: OeNB, Statistics Austria.

some 36% in 1998 to 31% in 2006. Switzerland and Italy are the number two and number three targets for Austrian service exports. In the period from 1998 to 2006, France and some Eastern and Southeastern European countries gained significance as sales destinations for Austrian service exports. Additionally, Turkey moved further up the list of main target countries. Overall, non-EU countries make up a greater share of Austrian service exports than of Austrian goods exports.

The Balassa index of the RCA measures the intensity of trade specialization of a country within a region of the world. The calculation is the following: Export share of a product category of the total exports of a country, divided by the export share of this product of a region. The Balassa index is defined as

$$RCA_{c,s} = (X_{c,s}/NX_{c,s}) / (wx_s/WX_s)$$

where

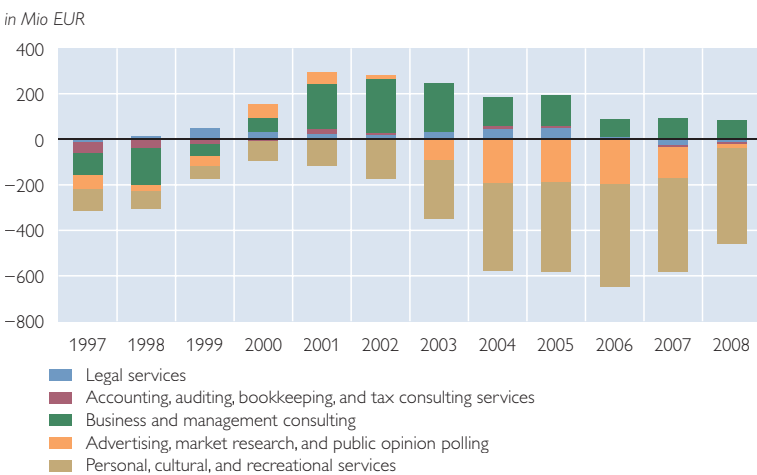
- $X_{c,s}$  exports of product category  $s$  by country  $c$
- $NX_{c,s}$  total exports by country  $c$
- $wx_s$  exports of product category  $s$  by a region
- $WX_s$  the region's total exports

The Balassa index assumes a value greater than 1 if the country has specialized on exports of a particular product category. In such a case, the share of exports in the country's total exports is larger than the respective share of the region.<sup>17</sup>

This analysis examines Austria's service export specialization, defining goods, travel and business services as

Chart 7c

**Composition of Net Trade in Knowledge-Based Services**



Source: OeNB, Statistics Austria.

been stagnating.<sup>16</sup> Germany's predominance as a target country for Austrian goods exports has been losing ground much more noticeably, shrinking from

<sup>16</sup> Table 3 shows the ranking of target countries for Austrian service exports in 2006, as the company analysis that follows also refers to 2006.

<sup>17</sup> For a more detailed presentation, see United Nations et al. (2008).



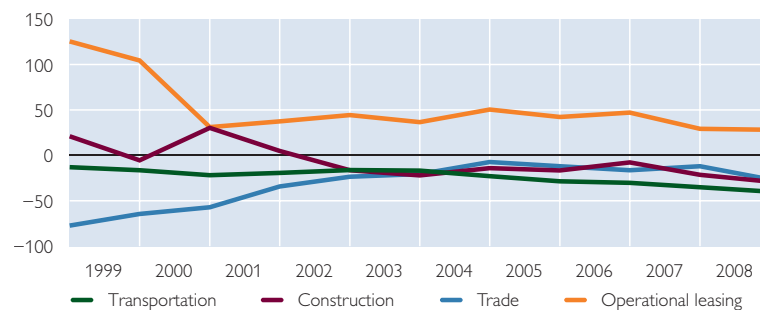
total exports. Austria's export share of business services was compared with that of the EU-27, with individual Member States' total international (i.e. intra- and extra-EU) service trade flows being analyzed.

The analysis shows that at the beginning of the review period, Austria had comparative advantages in trade in services (chart 11), but that these advantages dissipated after 2000. By contrast, Austria has developed a specialization in travel.

Chart 8a

### Austria's Competitive Position in Trade in Traditional Services

Revealed Comparative Advantage (RCA)



Source: OeNB, Statistics Austria.

Table 3

### Target Countries for Austrian Service Exports in 2006

Rank			Share in %	
2006	1998		2006	1998
1	1	Germany	32.50	33.08
2	2	Switzerland	7.04	8.47
3	5	Italy	6.44	4.84
4	3	United Kingdom	4.50	8.24
5	4	U.S.A.	4.24	7.49
6	7	Hungary	3.05	3.32
7	12	France	2.78	2.09
8	8	Netherlands	2.74	2.42
9	9	Czech Republic	2.47	2.31
10	19	Romania	1.95	0.60
11	10	Slovakia	1.88	2.11
14	11	Poland	1.59	2.10
15	16	Croatia	1.58	0.76
16	14	Russian Federation	1.50	1.39
17	15	Slovenia	1.38	1.23
19	18	China	0.93	0.65
20	21	Japan	0.82	0.53
21	38	Finland	0.81	0.25
22	24	Turkey	0.72	0.47
23	42	Cyprus	0.69	0.18
25	35	Bulgaria	0.66	0.27
26	25	Ukraine	0.60	0.47

Source: OeNB, Statistics Austria.

Chart 8b

### Austria's Competitive Position in Trade in Innovative Services

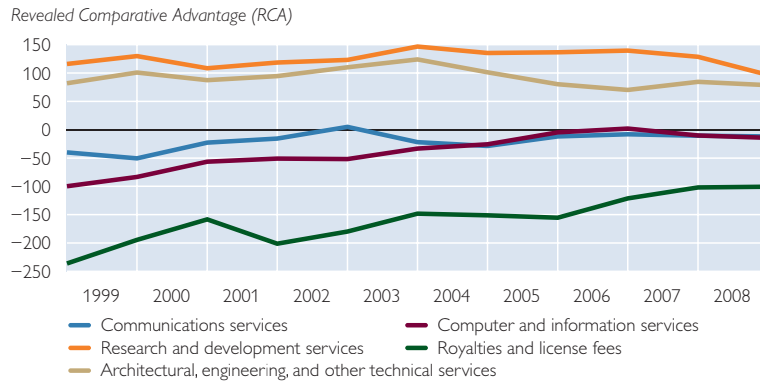


Chart 8c

### Austria's Competitive Position in Trade in Knowledge-Based Services

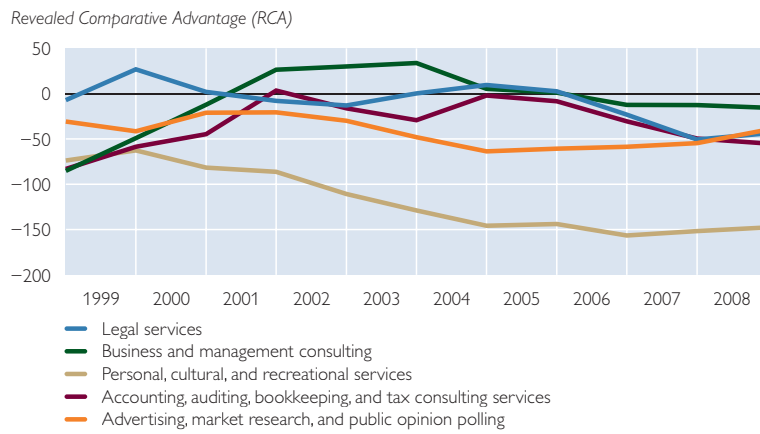
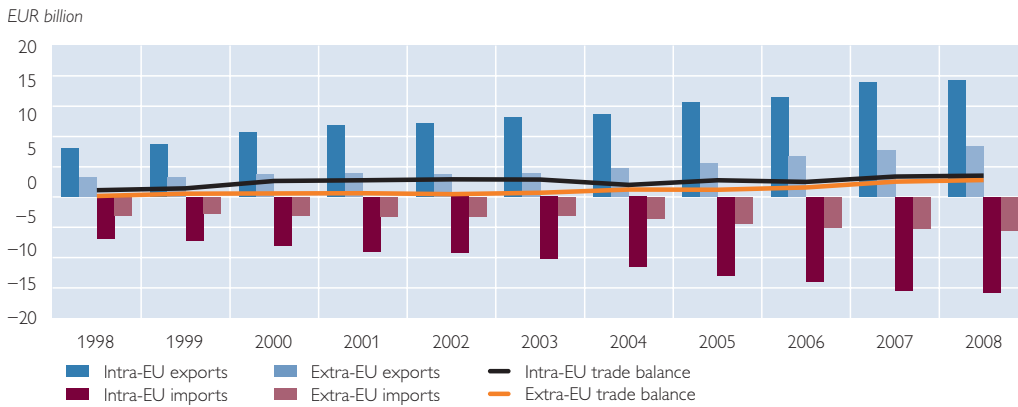


Chart 9

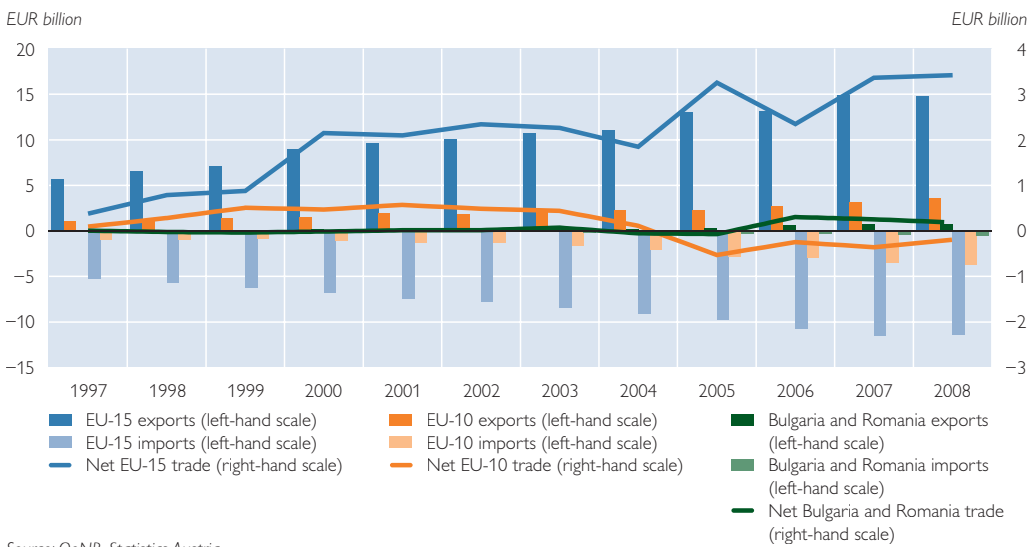
### Development of Intra- and Extra-EU Service Trade



Source: OeNB, Statistics Austria.

Chart 10

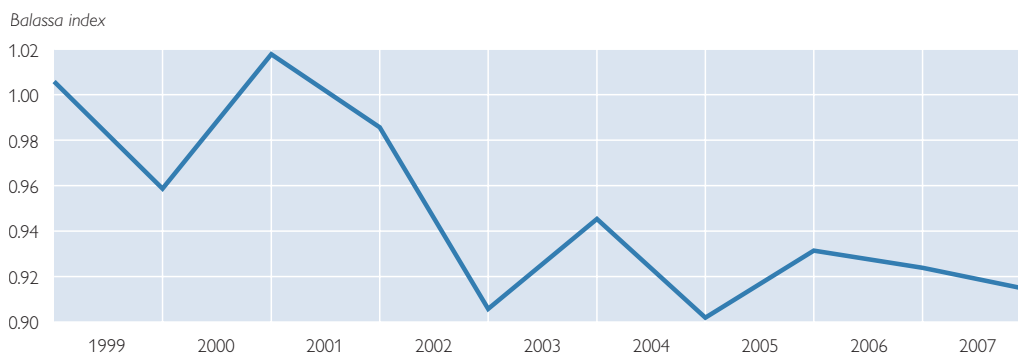
### Development of Austria's Intra-EU Service Trade



Source: OeNB, Statistics Austria.

Chart 11

### Austria's Competitive Position in Trade in Services



Source: Eurostat, OeNB.

## 3 The Determinants of Trade in Services

### 3.1 Description of the Data Set

The data on service exports and imports are taken from the survey of nonfinancial corporations' trade in services in 2006, the reporting year for which all data sources required for the analysis were available. The analysis does not cover travel, nor does it take into account survey data collected from financial corporations (mainly banks and insurance companies). Consequently, the relevant services – insurance and banking services – are recorded only rudimentarily, above all such service exports.

The analysis is based exclusively on service exports and imports actually reported and leaves imputed and estimated values out of account. Moreover, enterprises that do not have a company register number – mainly associations – were not considered. Finally, the merchandising data were adjusted by using the estimated service component (net presentation) rather than the gross presentation in which flows of goods are captured.

The following variables were obtained from this data set: the company register number, the type of service, the country of incorporation of the trade partner, and export revenues and import expenditure in euro (table 4).

The data on service exports and imports were linked with structural in-

formation about the reporting enterprises, most of which was taken from the 2006 structural business statistics (SBS). Master data of companies covered by the trade in services survey in 2006 but not covered by the SBS were taken from the company register.

The following structural information was used: the industry in which the company operates (ÖNACE 2003), annual average employment (employment at year-end if the information was taken from the company register), and sales revenues.

Moreover, information about companies' total goods exports and imports in 2006 on the basis of the foreign trade statistics was used.

The master data were complemented by information derived from the OeNB's company database. For the 2006 reporting year, the variables company headquarters (Austrian province), date of establishment, outward FDI (yes or no) and inward FDI (yes or no) were queried per company register number.

### 3.2 Description of the Sample

The SBS have been drawn up annually since the reporting year 1997 in compliance with the requirements of the relevant EU regulation.<sup>18</sup> These statistics are compiled on the basis of a full survey with cutoff limits for those companies whose employment figures and

Table 4

#### Variables per Company Register Number

Company designation	Headquarters	Date of establishment	Industry in 2006	Employment in 2006	Sales revenues in 2006	Outward FDI in 2006	Inward FDI in 2006	Exports of goods in 2006	Imports of goods in 2006	Type of service	Country	Exports in 2006	Imports in 2006
	Austrian province		ÖNACE 2003	annual average <sup>1</sup>		yes/no	yes/no			balance of payments items	ISO code		

Source: OeNB, Statistics Austria.

<sup>1</sup> Except for the data source being the company register.

<sup>18</sup> See Statistics Austria (2008).

Table 5

**Description of the Sample: Total Degree of Coverage**

Variable	Sample	Degree of Coverage
		<i>In % of the 2006 SBS, restricted to registered companies</i>
Enterprises	4,963	3.6
Employees	774,122	33.6
Sales revenues, EUR million	250,284	43.9

Source: OeNB, Statistics Austria.

<sup>1</sup> Excluding education; health and social work; other community, social and personal services.

sales revenues are above legally defined thresholds. In 2006, the SBS comprised 289,635 reporting units including an estimate for companies below the reporting threshold; this figure represents all survey-relevant companies in Austria.

For this analysis, an extract that included only active enterprises registered in the Austrian company register was drawn from the 2006 SBS; thus, the analysis does not include companies that are covered by the SBS but that do not have a registration number. Conversely, the analysis includes registered companies that are part of the trade in services survey but that are not covered by the SBS. The total data sample for the analysis thus covers 138,306 enterprises, and the analysis applies to it as the “basic population.”

A sample was drawn from this population; it comprises 4,963 enterprises that either exported or imported services, or did both, in 2006 (table 5). Based on the company register number as the identification criterion, all 14 variables were defined for each enterprise. Whereas the sample represents only a small segment of the population, it contains over one-third of all employ-

ees and more than 40% of sales revenues. Hence, large companies are over-represented in the sample compared with the population. This fact corresponds to the aim of using a random sample based on thresholds in compiling trade in services to cover a high degree of service exports and imports while keeping the number of respondents and the administrative cost to companies as low as possible.

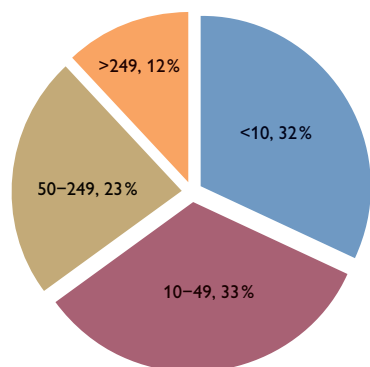
In terms of employment and sales revenues, the sample is approximately as representative compared to the published 2006 SBS data as it is compared to the basic population of the analysis. The comparability of the degree of coverage can be explained by the fact that company register numbers were selected as the identification criterion for the population, so that the smallest companies – personal undertakings that do not require registration – were not taken into account.

Two-thirds of the nearly 5,000 enterprises in the sample were very small and small companies<sup>19</sup> in terms of staff size (chart 12), but the large companies accounted for more than 60% of total sales revenues. This distribution is a first indication of the importance of

<sup>19</sup> Four categories of enterprises by size were defined in line with European conventions: very small companies (less than 10 employees), small companies (10 to 49 employees), medium-sized companies (50 to 249 employees), large companies (250 employees and over). As the results are highly compatible, no additional breakdown of size classes was made.

Chart 12a

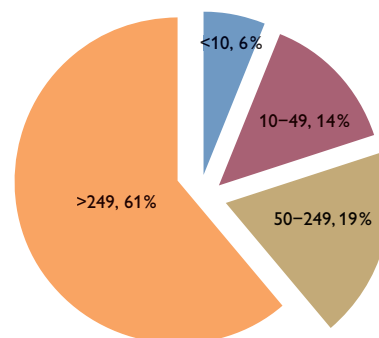
### Description of the Sample: Distribution of Enterprises by Staff Size



Source: OeNB, Statistics Austria.

Chart 12b

### Description of the Sample: Distribution of Sales Revenues by Staff Size



large companies for generating revenues from cross-border trade in services.

The breakdown of enterprises by industry in the sample displays a heterogeneous structure. The size of the sampling fraction differs from industry to industry, which is attributable to the statistical coverage concept that applies to international trade in services: The reporting thresholds were determined to minimize cost to the respective industries and at the same time to ensure that the degree of coverage was sufficient in every service category, which is why it differs among the industry categories.

The sample comprises just under 940 manufacturing companies; these account for 19% of the sample (table 6). The sampling fraction comes to about 6% of the population for the analysis. Most of the companies manufacture machinery and equipment or metals, or are in the publishing or food industry.

222 enterprises or 4% of the sample – less than 2% of the population – are construction companies.

Service providers represent the bulk of the companies in the sample,

i.e. 3,560 companies or almost 72%. However, these service companies represent only 3% of the population, which is indicative of the very fragmented corporate structure in Austria. Most of the service companies belong to the following industries: wholesale trade and commission trade, supporting and auxiliary transport activities (shipping companies and travel agencies), land transport (including transport via pipelines), computer and related activities, management consulting, management of holding companies, architectural and engineering services, and advertising.

Nearly EUR 20 billion of service exports were made by the companies in the sample (table 7). In terms of the 2006 balance of payments, this corresponds to a degree of coverage of 95%. The service imports of the concentration sample account for a volume of EUR 15 billion, which corresponds to a coverage degree of 85%. The degree of coverage is highest for exports of communications services and for merchanting and other trade-related services; it is lowest for personal, cultural, and recreational services and for waste treatment and depollution, agricultural, and mining services. The reason

for the low degree of coverage for personal services is that data from the national accounts complement survey data for the compilation of the balance of payments in this area.<sup>20</sup> The trade in services survey in 2006 was conducted just after the new direct survey system had been introduced in Austria, and it was still in the project stage for agricul-

tural services, which explains their low degree of coverage. Moreover, legal services exhibit a comparatively low degree of export and import coverage (63%) because in Austria, a large proportion of such services are provided within banking groups and are reported by banks (the sample does not include financial intermediaries).

Table 6

### Description of the Sample: Sampling Fraction by Industry Classified According to ÖNACE 2003

Section	Division, designation	Number of enterprises		
A–C	Agriculture, hunting and forestry; fishing; mining and quarrying	17		
D	Manufacturing	15–16	Manufacture of food products and beverages; manufacture of tobacco products	84
		17	Manufacture of textiles	30
		18	Manufacture of wearing apparel; dressing and dyeing of fur	13
		19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	6
		20	Manufacture of wood and of products of wood and cord, except furniture; manufacture of articles of straw and plaiting materials	47
		21	Manufacture of pulp, paper and paper products	23
		22	Publishing, printing and reproduction of recorded media	83
		23–24	Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals and chemical products	55
		25	Manufacture of rubber and plastic products	42
		26	Manufacture of other nonmetallic mineral products	57
		27	Manufacture of basic metals	39
		28	Manufacture of fabricated metal products, except machinery and equipment	104
		29	Manufacture of machinery and equipment n.e.c.	154
		30	Manufacture of office machinery and computers	4
		31	Manufacture of electrical machinery and apparatus n.e.c.	41
		32	Manufacture of radio, television and communication equipment and apparatus	23
33	Manufacture of medical, precision and optical instruments, watches and clocks	33		
34	Manufacture of motor vehicles, trailers and semitrailers	23		
35	Manufacture of other transport equipment	12		
36–37	Manufacture of furniture; manufacturing n.e.c.; recycling	66		
E	Electricity, gas and water supply	40		
F	Construction	222		
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	53
		51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	911
		52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	124

<sup>20</sup> See footnote 14.

### Description of the Sample: Sampling Fraction by Industry Classified According to ÖNACE 2003

Section	Division, designation		Number of enterprises	
H	Hotels and restaurants		66	
I	Transport, storage and communication	60	Land transport; transport via pipelines	314
		61	Water transport	9
		62	Air transport	41
		63	Supporting and auxiliary transport activities; activities of travel agencies	390
		64	Post and telecommunications	36
J	Financial intermediation	67	Activities auxiliary to financial intermediation	57
K	Real estate, renting and business activities	70	Real estate activities	96
		71	Renting of machinery and equipment without operator and of personal and household goods	87
		72	Computer and related activities	302
		73	Research and development	44
		74.11	Legal activities	55
		74.12	Accounting, bookkeeping and auditing activities; tax consultancy	24
		74.13	Market research and public opinion polling	13
		74.14	Business and management consultancy activities	200
		74.15	Management activities of holding companies	186
		74.20	Architectural and engineering activities and related technical consultancy	176
		74.30	Technical testing and analysis	26
		74.40	Advertising	172
		74.50	Labor recruitment and provision of personnel	33
		74.60	Investigation and security activities	4
74.70	Industrial cleaning	7		
74.80	Miscellaneous business activities n.e.c.	135		
M–O	Education; health and social work; other community, social and personal service activities			184
			<b>4,963</b>	

Source: OeNB, Statistics Austria.



Table 7

### Description of the Sample: Degree of Coverage in Each Service Category

Industry	Sample		Degree of coverage	
	Exports	Imports	Exports	Imports
	EUR million		% of the 2006 balance of payments	
<b>Total services</b>	<b>20,434</b>	<b>14,935</b>	<b>95</b>	<b>85</b>
Transportation	7,998	6,878	98	85
Communications services	1,117	878	99	98
Construction services	729	574	94	94
Computer and information services	1,037	705	87	82
Royalties and license fees	379	1,009	89	96
Merchandising and other trade-related services	2,775	425	99	92
Operational leasing	314	126	95	83
Legal services	104	95	63	63
Accounting, auditing, bookkeeping, and tax consulting services	41	37	79	72
Business and management consulting	412	337	90	89
Advertising, market research, and public opinion polling	526	716	85	88
Research and development	1,337	248	94	95
Architectural, engineering, and other technical services	1,710	612	94	93
Agricultural, mining, and on-site processing services	21	60	69	87
Other business services	442	768	80	72
Services between related enterprises, n.i.e.	1,387	1,322	99	98
Personal, cultural, and recreational services	107	144	59	23

Source: OeNB, Statistics Austria.

Note: The sample covers only nonfinancial corporations; insurance and financial services are not sufficiently captured. Moreover, the sample does not contain any administrative data about government services.

### 3.3 Examination of the Basic Population for the Analysis

Four-fifths of all companies in the basic population have no imports or exports (table 8).<sup>21</sup> This corroborates the results of international research about the low participation of companies in external trade, which is attributed to the prohibitively high transaction costs involved in external trade.<sup>22</sup> This group is followed by the 6.8% segment of Austrian companies that perform goods exports and imports and by the 5.9% segment that has goods imports only, and finally by the segment of compa-

nies that exclusively exports goods (2.7%). These segments are followed by the group of firms that are engaged in both goods and service trade.

An examination of companies that do not participate in cross-border trade in services shows that 238 of the total of 694 industries at the six-digit level (most detailed breakdown) of ÖNACE 2003, i.e. nearly 16,000 enterprises, do not record service exports. These firms include coffee houses, take-away stands, tinsmiths and gas stations.<sup>23</sup> Moreover, there are 215 industries encompassing 13,300 companies that do

<sup>21</sup> The roughly 100,000 enterprises covered by the SBS that do not have a company registration number are not likely to engage in any significant external trade, as most of these companies are sole proprietorships that do not require registration.

<sup>22</sup> See Kyvik Nordas (2008).

<sup>23</sup> However, some companies in this industry have travel income, as their work is tourism-related.

Table 8

**External Trade Activities**

Goods exports	Service exports	Goods imports: no	Goods imports: no	Goods imports: yes	Goods imports: yes	Total
		Service imports: no	Service imports: yes	Service imports: no	Service imports: yes	
<i>% of the basic population</i>						
No	No	81.2	0.2	5.9	0.1	<b>87.4</b>
No	Yes	0.3	0.8	0.0	0.3	<b>1.5</b>
Yes	No	2.7	0.0	6.8	0.3	<b>9.8</b>
Yes	Yes	0.0	0.1	0.1	1.0	<b>1.3</b>
<b>Total</b>		<b>84.2</b>	<b>1.2</b>	<b>12.9</b>	<b>1.7</b>	<b>100.0</b>

Source: OeNB, Statistics Austria.

not have any service imports, such as hairdressers, inns (with accommodation), dispensing chemists or old people’s homes.

In addition to the industry to which a company belongs, its sales revenues and number of employees are available, for the basic population, as indicators of company size. As company size varies substantially from industry to industry, this analysis examines the difference between the service exporters and other companies in the same industry (table 9). The analysis reveals that service exporters are roughly ten times the size of the respective industry average. Here, the fact that the survey of

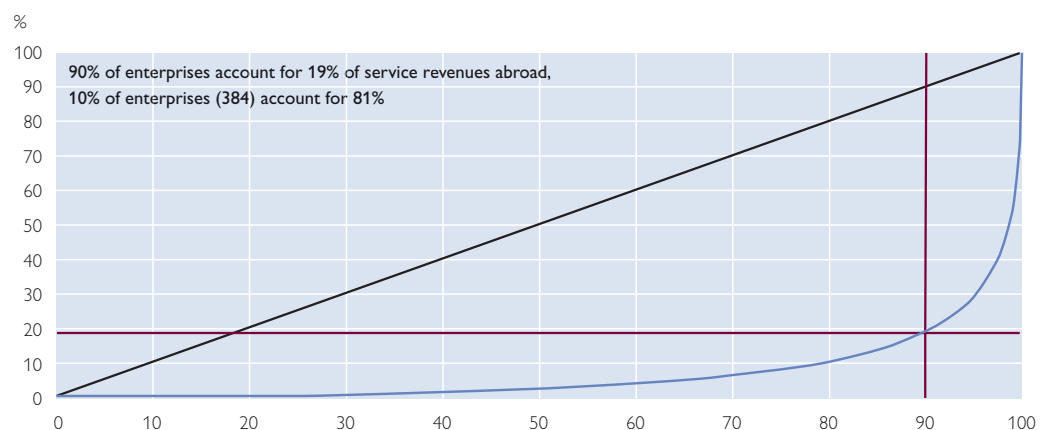
cross-border trade in services is organized as a sample using thresholds comes into play, too. But also for economic reasons, a company must apparently exceed a particular size to be able to engage systematically in service exports.

**3.4 Concentration of Enterprises in Trade in Services**

The sample showed that in 2006, 4,013 Austrian enterprises exported services and that 10% (384) of these companies generated more than 80% of total service export revenues (chart 13), indicating that only a small number of Austrian companies which do business

Chart 13

**Enterprise Concentration in Service Exports**



Source: OeNB, Statistics Austria.

Table 9

**Employment with Service Exporters and Other Enterprises by Industry**

Classification according to ÖNACE 2003

		Service exporter							
		No		Yes		No		Yes	
		Average	Median	Number of enterprises in %					
A–E	Manufacturing	25.4	329	6	149	95.9	4.1		
J	Financial intermediation	32.3	27.5	3	16	98.6	1.4		
LQ	Public administration and defense, compulsory social security	18.9	196.3	3	20	98.4	1.6		
45	Construction	13.3	229.1	6	52	98.7	1.3		
50	Sale, maintenance and repair of motor vehicles and motorcycles, retail sale of automotive fuel	13.1	240.2	6	58	99.0	1.0		
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	10.2	42.9	3	11	95.4	4.6		
52	Retail trade, except of motor vehicles and motorcycles, repair of personal and household goods	14.0	844.7	3	51	99.4	0.6		
55	Hotels and restaurants	9.5	342.6	4	171	99.9	0.1		
60	Land transport, transport via pipelines	13.7	133.4	4	29	93.7	6.3		
61	Water transport	5.8	15.7	2	4	88.5	11.5		
62	Air transport	3.0	299.7	1	14	84.3	15.7		
63	Supporting and auxiliary transport activities, activities of travel agencies	9.9	130.0	3	16	83.5	16.5		
64	Post and telecommunications	23.1	1,409.1	2	49	88.7	11.3		
70	Real estate activities	2.9	42.3	1	9	99.6	0.4		
71	Renting of machinery and equipment without operator and of personal and household goods	4.9	27.7	1	9	94.2	5.8		
72	Computer and related activities	5.6	50.7	1	17	94.5	5.5		
73	Research and development	10.4	66.8	2	26	90.0	10.0		
74.11	Legal activities	8.4	35.8	6	27	90.3	9.7		
74.12	Accounting, auditing, bookkeeping, and tax consulting services	7.5	81.6	3	8	99.1	0.9		
74.13	Market research and public opinion polling	6.2	45.3	2	26	90.0	10.0		
74.14-01	Business and management consultancy activities (except public relations consultancy)	2.6	21.5	1	9	96.3	3.7		
74.14-02	Public relations consultancy activities	3.4	10.8	2	7	94.5	5.5		
74.15	Management activities of holding companies	2.0	28.0	0	7	98.0	2.0		
74.20	Architectural and engineering activities and related technical consultancy	6.0	44.4	2	19	95.8	4.2		
74.30	Technical testing and analysis	8.4	35.2	2	21	95.5	4.5		
74.40	Advertising	4.4	25.0	2	12	94.3	5.7		
74.50	Labor recruitment and provision of personnel	65.3	507.0	19	63	96.9	3.1		
74.60	Investigation and security activities	48.4	599.5	4	600	98.8	1.2		
74.70	Industrial cleaning	42.2	1,686.0	6	205	99.3	0.7		
74.80	Miscellaneous business activities n.e.c.	5.9	38.3	1	14	95.7	4.3		

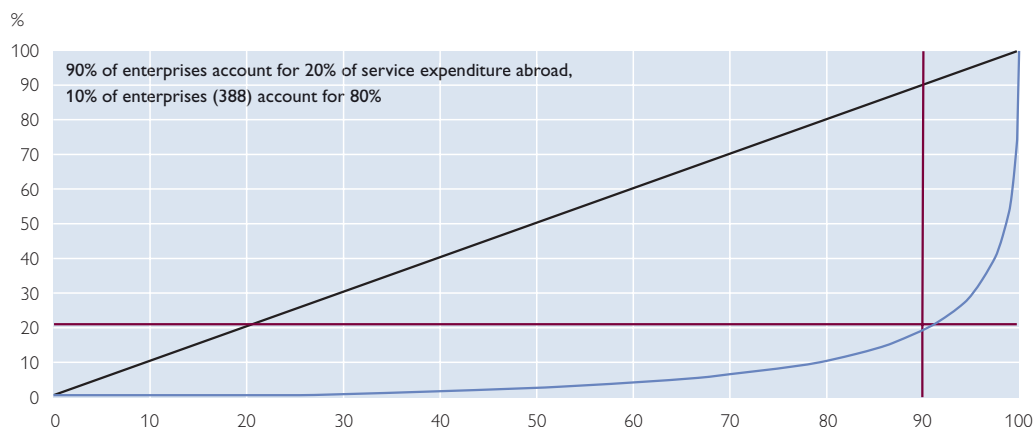
Source: OeNB, Statistics Austria.

abroad account for Austria's service exports. Most of these firms belong to the service sectors (1) supporting and auxiliary transport activities; activities of travel agencies, (2) management activities of holding companies, (3) business and management consultancy activities, (4) wholesale trade and commis-

sion trade, except of motor vehicles and motorcycles, (5) land transport; transport via pipelines and (6) computer and related activities; other companies belong to the categories construction services and manufacture of machinery and equipment. The Gini coefficient for service exports is 0.869.<sup>24</sup>

<sup>24</sup> The Gini coefficient is a measure of statistical dispersion; it is the ratio of the area between the line of equality and the Lorenz curve over the total area under the line of equality. It can range from 0 (equal distribution) to  $n-1/n$ , so that if  $n$  is large, the coefficient is nearly 1 ( $x_n$  amounts for the whole characteristic value).

### Enterprise Concentration in Service Imports



Source: OeNB, Statistics Austria.

The sample showed that in 2006, 4,057 enterprises imported services. This is a similar result as for exports – 10% (388) of all companies account for 80% of import expenditures (chart 14). Most of the companies are in the same sectors as those in which exports are concentrated – (1) supporting and auxiliary transport activities; activities of travel agencies, (2) management activities of holding companies, (3) business

and management consultancy activities, (4) wholesale trade and commission trade, except of motor vehicles and motorcycles, (5) land transport; transport via pipelines; other companies are in advertising and air transport. Most of these companies are in network industries whose external business orientation is inherent to the system, such as transportation. Other industries with (considerable) service imports are in

Table 10

### Concentration of Exporting Enterprises by Service Category

Service Category	Gini coefficient	10% of enterprises	
		Number	Revenues in %
<b>Total</b>	<b>0,869</b>	<b>384</b>	<b>81</b>
Communication services	0,937	20	92
Research and development	0,917	18	88
Merchanting and other trade-related services	0,915	78	87
Transportation	0,911	104	87
Architectural, engineering, and other technical services	0,897	63	85
Operational leasing	0,887	20	82
Personal, cultural, and recreational services	0,867	23	78
Construction services	0,856	19	77
Computer and information services	0,854	66	78
Legal, accounting, management consulting, and public relations	0,853	46	77
Advertising, market research, and public opinion polling	0,829	50	73

Source: OeNB, Statistics Austria.

the machinery manufacturing and the chemical manufacturing industries. The Gini coefficient for service imports is 0.870, indicating that the concentration of companies with service imports is comparable to that of service exporters. In other words, although in principle, every company can purchase services abroad and although the number of companies with service imports slightly exceeds that of companies with service exports, a small group of enterprises accounts for the bulk of total expenditure on service imports.

The five key service exporters and importers in Austria, in alphabetical order, are: Austrian Airlines, LKW WALTER International, Österreichische Elektrizitätswirtschaft, Rail Cargo Austria, Siemens AG Österreich and Sony Austria.

Broken down by service categories, exports by every category show a high degree of concentration (table 10). 10% of the respective exporting enterprises generate between 73% and 92% of total export revenues. The highest concentration of enterprises – where more than 85% of export revenues are concentrated on 10% of exporting enterprises – was established in the network industries, namely among communications services (telecommunications, postal and courier activities), merchandising and other trade-related services, and transportation; moreover, among services related to research and development, architectural and engineering activities.

### 3.5 The Significance of Service Exports for Total Sales

Apart from the issue of the concentration of activities in trade in services, the issue of the importance of external trade for the different service industries is worth being examined. The indicator to measure the importance of external trade is the export ratio, i.e. exports as a percentage of sales revenues (table 11).<sup>25</sup> All service categories together account for 77% of export revenues in the sample.<sup>26</sup> The export ratio comes to 12%, which means that according to this analysis, export revenues account for only one-eighth of Austrian service companies' total sales revenues.

External trade in services is most important for air transport as well as providers of architectural and engineering services, with both categories selling about one-half of their services abroad. These companies are followed by business and management consultants (47% of sales revenues from service exports), technical testing and analysis firms (38%) and companies proffering legal services as well as market research and public opinion polling services (roughly 33% each). With an export ratio of up to 5%, service exports are least important for retailers and motor vehicle traders, investigation and security activities providers, industrial cleaning firms, real estate activities providers, and in wholesale trade and commission trade companies.

<sup>25</sup> In the ÖNACE division research and development, the analysis produces implausible results due to statistical distortions: The survey on cross-border trade in services and the 2006 Structural Business Survey captured data from different years, so that not all companies are recorded with the same date in both surveys.

<sup>26</sup> Including the electricity and construction industries, the service sector share comes to roughly 85%. Agriculture and mining, manufacturing and ÖNACE 2003 sections M through O (education; health and social work; other community, social and personal service activities) account for the remaining 15%.

## Export Ratios in Service Industries

Classification according to ÖNACE 2003

Export ratio

		% of sales revenues
50	Sale, maintenance and repair of motor vehicles and motorcycles, retail sale of automotive fuel	1.8
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	5.4
52	Retail trade, except of motor vehicles and motorcycles, repair of personal and household goods	0.7
55	Hotels and restaurants <sup>1</sup>	1.5
60	Land transport, transport via pipelines	23.5
61	Water transport	27.4
62	Air transport	53.9
63	Supporting and auxiliary transport activities, activities of travel agencies	28.5
64	Post and telecommunications	8.3
67	Activities auxiliary to financial intermediation	22.1
70	Real estate activities	3.5
71	Renting of machinery and equipment without operator and of personal and household goods	9.3
72	Computer and related activities	19.5
73	Research and development	x
74.11	Legal activities	32.4
74.12	Accounting, book-keeping and auditing activities, tax consultancy	12.5
74.13	Market research and public opinion polling	31.9
74.14	Business and management consultancy activities	47.4
74.15	Management activities of holding companies	28.0
74.20	Architectural and engineering activities and related technical consultancy	51.0
74.30	Technical testing and analysis	38.2
74.40	Advertising	11.1
74.50	Labor recruitment and provision of personnel	7.8
74.60	Investigation and security activities	2.0
74.70	Industrial cleaning	2.8
74.80	Miscellaneous business activities n.e.c.	30.9

Source: OeNB, Statistics Austria.

<sup>1</sup> Does not include travel.

Among enterprises not classified under the service sector, service exports are relevant above all for manufacturers of radio, television and communication equipment and apparatus (roughly 4%).

Chart 15 shows the breakdown of exports in the different service industries as well as the importance of industry-related service exports.<sup>27</sup> For in-

stance, in the motor vehicle sales industry, 58% of revenue from abroad stems from exports of industry-related services (trade-related and technical services). About 10% of export revenues stem from research and development (including royalties and license fees); 27% are not classifiable to any service in particular,<sup>28</sup> and 5% stem from other services supporting industry-related

<sup>27</sup> Services are classified as in the balance of payments; these categories are not identical with the ÖNACE 2003 industrial classification. Consequently, we had to classify industry-related and nonindustry-related service exports according to activities which can be assumed as typical of the respective industry.

<sup>28</sup> All items included in the cross-border trade in services survey capture trade between affiliated and nonaffiliated enterprises. The item "services between affiliated enterprises, not included elsewhere" sums up all transactions which by definition may be made only between enterprises within a group and includes mainly administrative expenses. Moreover, the item "other business services" contains revenue and expenditure from transactions that cannot be attributed to a particular balance of payments item. These services include translation and interpretation services as well as security and investigative services.

Chart 1!

### Composition of Exports by Service Industry



Source: OeNB, Statistics Austria.

exports. In the case of motor vehicle sales, these support services consist mostly of transport services.

Service industries with over 90% industry-related exports include various transportation services (sea, air and land transport); transport and travel agencies; communications services; legal services; accounting, auditing, bookkeeping, and tax consulting services; market research and public opinion polling; architectural, engineering, and other technical services; investigative services and security. Service industries that have below-average industry-related exports (less than 50%) include retailing; industrial cleaning; labor recruitment and provision of personnel; and business and management consultancy activities. The last-mentioned sector exports a wide range of services, including computer and information services, technical services and advertising services. Within retail trade, services between related enterprises and advertising, communications, and computer and information

services play an important role. Moreover, retail trade and motor vehicle sales have the second-highest share of revenues from royalties and license fees after the research and development sector.

### 3.6 Service Trade Broken down by Provinces

Table 12 provides a breakdown of the results of the Structural Business Survey and of service export revenues by Austrian provinces. Vienna ranks first, as it accounts for 24% of the companies, 27% of the employees and 36% of the revenues generated by Austrian service exports. Vienna is followed by Lower Austria and Upper Austria. The latter province, like Vienna, displays a disproportionately high share of employees and revenues by relation to companies, meaning that many large service exporters are located in these two provinces. Vienna also occupies first place in terms of its export ratio (the share of service export revenues in total company revenues by province) of

Table 12

### Distribution of Enterprises, Employees and Export Revenues by Austrian Provinces

Company location	SBS 2006						Service export revenues <sup>1</sup>	
	Companies		Employees		Sales revenues		EUR mil- lion	% of SBS 2006
	Number	%	Number	%	EUR mil- lion	%		
Burgenland	8,537	2.9	54,520	2.1	8,441	1.5	197	2.3
Carinthia	19,256	6.6	139,339	5.5	26,080	4.6	473	1.8
Lower Austria	47,987	16.5	416,688	16.3	85,654	15.0	3,838	4.5
Upper Austria	42,275	14.5	437,067	17.1	86,187	15.1	2,032	2.4
Salzburg	23,441	8.1	193,506	7.6	42,208	7.4	821	1.9
Styria	38,103	13.1	314,108	12.3	58,641	10.3	948	1.6
Tyrol	29,261	10.1	215,841	8.4	36,084	6.3	764	2.1
Vorarlberg	13,553	4.7	117,611	4.6	21,522	3.8	787	3.7
Vienna	68,322	23.5	666,860	26.1	204,762	35.9	10,682	5.2
Austria	290,735	100	2,555,540	100	569,579	100	20,542	3.6

Source: OeNB, Statistics Austria.

<sup>1</sup> Including insurance and financial services.

about 5%. Burgenland comes in last in the SBS, but in terms of its service export intensity, it is fifth among Austria's provinces. Vienna and Lower Austria display an above-average propensity to export services when compared to Austria as a whole.<sup>29</sup>

This analysis is ideally suited to determining not just from where in Austria how many services are exported, but also to identifying the export structure. The results show that all Austrian regions export chiefly transport services (table 13). This is Austria's most important service category following travel. A closer look at the regional distribution of exports broken down by service categories again shows Vienna's leading position (chart 16).

These results, however, do not allow any conclusions to be drawn about

whether Austria features a regional specialization on service exports. To analyze this issue, the relative importance of export revenues for each type of service and each province was examined, in other words, the export structure of a province was compared with that of Austria as a whole (chart 17).<sup>30</sup> It turns out that there are several regional specializations in Austria:

- By comparison to Austria as a whole, Burgenland, Salzburg and Tyrol are more engaged in exports of traditional services, in particular transportation, construction and trade.
- Upper Austria, by contrast, has a technology park from which it exports a comparatively high degree of architectural, engineering and other technical services.

<sup>29</sup> When interpreting the results for the individual provinces, the fact must be taken into account that cross-border trade in services by companies at several sites are collected and reported as a total by headquarters. This applies especially to Vienna. Results for Lower Austria are determined by the head office of the largest Austrian airline company, Austrian Airlines.

<sup>30</sup> To allow for a suitable graphical presentation, we grouped several related types of services, e.g. research and development services together with revenues from royalty and license fees.



Table 13

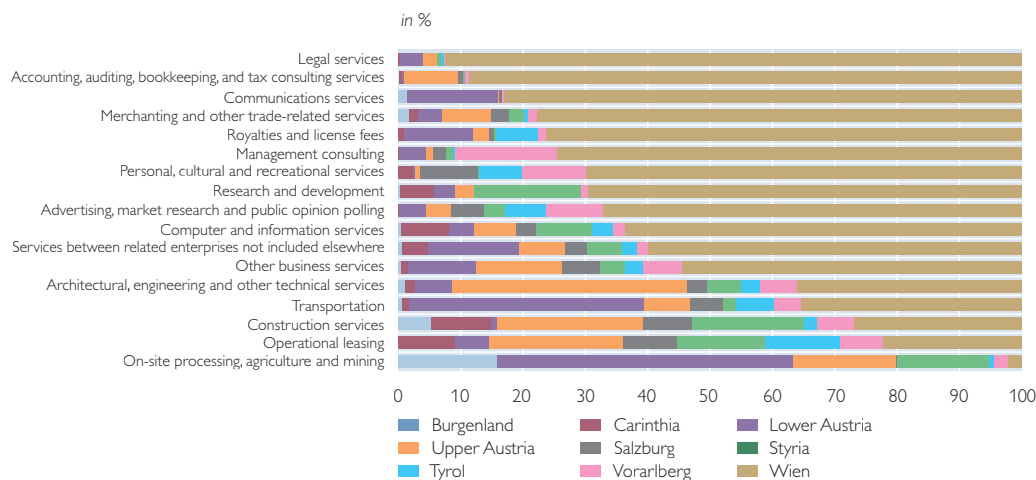
### Distribution of Service Export Revenues by Service Category and Austrian Provinces

Service Category	Province								
	Burgenland	Carinthia	Lower Austria	Upper Austria	Salzburg	Styria	Tyrol	Vorarlberg	Vienna
<i>EUR million</i>									
Transportation	53	81	3,010	603	423	168	486	352	2,823
Communication services	16	0	162	3	5	0	1	3	927
Construction services	38	70	7	171	58	130	15	43	196
Computer and information services	6	78	43	69	33	95	34	19	660
Royalties and license fees	0	4	42	10	3	2	25	5	289
Merchandising and other trade-related services	47	43	104	219	80	64	22	41	2155
Operational leasing services	0	29	17	68	27	44	38	21	70
Legal services	0	0	4	2	0	1	1	0	96
Accounting, auditing, bookkeeping, and tax consulting services	0	0	0	4	0	0	0	0	36
Business and management consulting	0	1	18	5	9	5	2	67	307
Advertising, market research, and public opinion polling	0	1	23	21	28	17	35	49	353
Research and development	5	71	47	39	0	229	2	14	930
Architectural, engineering, and other technical services	20	26	102	645	56	94	49	104	615
Agricultural, mining, and on-site processing services	3	0	10	3	0	3	0	0	0
Other business services	2	6	47	61	27	17	13	28	240
Services between related enterprises, n.i.e.	7	60	201	103	49	77	33	25	831
Personal, cultural, and recreational services	0	3	0	1	10	0	7	11	75
<b>Total</b>	<b>197</b>	<b>473</b>	<b>3,837</b>	<b>2,027</b>	<b>808</b>	<b>946</b>	<b>763</b>	<b>782</b>	<b>10,603</b>

Source: OeNB, Statistics Austria.

Chart 16

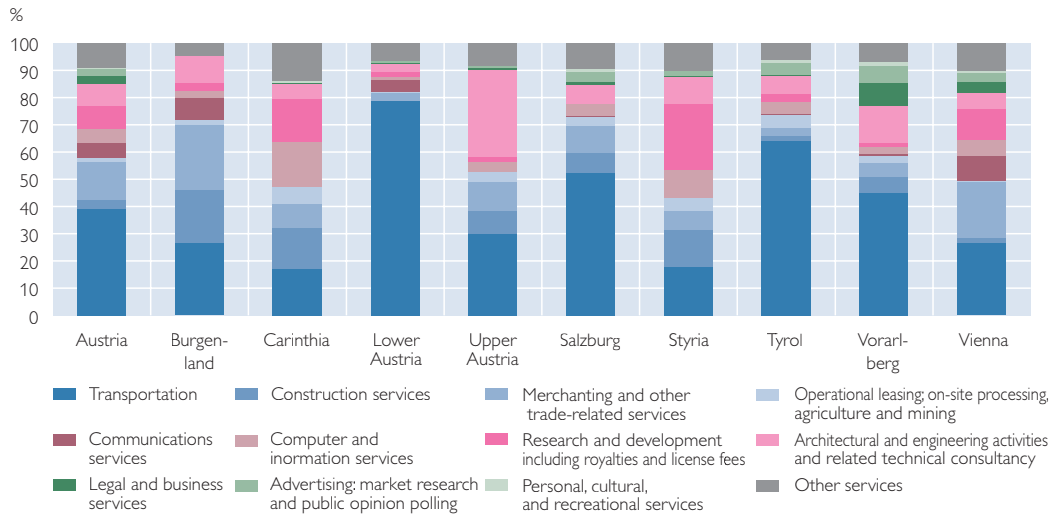
### Distribution of Export Revenues in Each Service Category by Provinces



Source: OeNB, Statistics Austria.

Chart 17

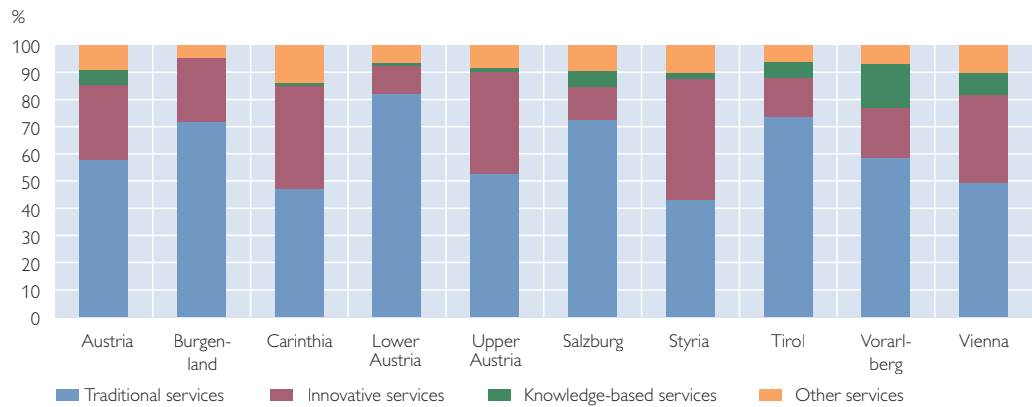
**Relative Importance of Export Revenues in Each Service Category by Provinces**



Source: OeNB, Statistics Austria.

Chart 18

**Distribution of Service Types by Provinces**



Source: OeNB, Statistics Austria.

- For Austria’s southern provinces, Carinthia and Styria, we observe not only a comparatively high share of construction service exports but also innovation centers, which receive revenues from exports of computer and information services as well as research and development services.
- The western province Vorarlberg features a modern, knowledge-based export structure; in an Austrian comparison, the province has a high share of revenue from legal and business services, including business and management consulting, advertising, market research, and public opinion polling as well as technical services.
- Vienna’s relative strength is exports of trade-related services as well as research and development services.
- In Lower Austria, transport service exports predominate.

To sum it up, the regional results may be presented by groups of service categories to illustrate the different specializations of the respective provinces (chart 18). The complex “traditional services” includes transportation, construction, trade, operational leasing, and agricultural and mining (including waste treatment and depollution) services. “Innovative services” comprise communications services; computer and information services; architectural, engineering and other technical services; research and development services; and royalties and license fee revenues. “Knowledge-based services” cover legal, accounting, management consulting, and public relations services; advertising, market research, and public opinion polling; and personal, cultural, and recreational services. “Other services” combine other business services and services between related enterprises not included elsewhere.

### 3.7 Service Trade Range

Apart from the regional specialization on types of services, the regional specialization on trade partners is worth analyzing (table 14 and chart 19). Just like transportation clearly dominates among service types, Germany predominates as the key trade partner for Austrian service exports. Trade relations with Austria’s neighbor Germany prevail in all regions. The regional concentration throughout Austria is comparable with that in goods trade, but as indicated in section 2, the importance of Germany for Austria’s service providers is stagnating, and the country’s importance as a destination for Austrian goods exports is diminishing perceptibly. In a breakdown, the relative share of service export destinations differs between provinces and indicates different focuses in trade:

Compared to Austria as a whole, Burgenland has service exports focusing above all on Eastern and Southeastern Europe, particularly on Hungary, Russia, Serbia, Romania, Croatia, Slovenia, Bulgaria, and Bosnia and Herzegovina.

- In Salzburg, service export revenues from Germany and Italy are especially high, as are revenues from Eastern and Southeastern Europe (Russia, Poland, Serbia and Bulgaria).
- Tyrol is more strongly focused on service trade with Italy than Salzburg is; also, ties to Germany and other EU-15 countries – Sweden, France, the United Kingdom and Spain – are strong.
- Upper Austria has an especially high share of service exports to Germany and China.
- For Carinthia, service exports to Germany, Italy and Asia – above all Singapore and Malaysia – are relatively high. Other destinations of lesser importance are Eastern and Southeastern European countries – Hungary, the Czech Republic, Croatia, Serbia and Latvia.
- Styria’s service exports are concentrated on Germany, the U.S.A. and Southeastern Europe (Croatia).
- Vorarlberg has service export revenues that are more strongly focused on Switzerland and Liechtenstein than those of other provinces.
- Vienna, too, has Switzerland as a key destination for service exports; Germany is also high on the list.
- Lower Austria has a well-developed service export relationship with Japan, the U.S.A. and Canada, and in the EU-15 with Sweden, Finland, France, Belgium, Spain and Denmark.

We may conclude that proximity is a key factor in Austrian corporations’

Table 14

### Ranking of Austria's Main Trading Partners by Austrian Province

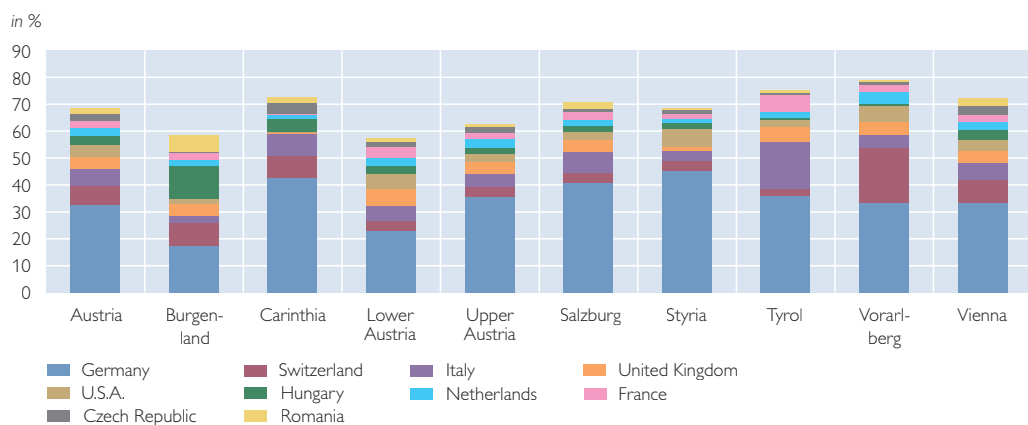
Trade partner		Austria	Burgenland	Carinthia	Lower Austria	Upper Austria	Salzburg	Styria	Tyrol	Vorarlberg	Vienna	
Ranking for Austria as a whole	Country	Percentage share of total export revenues										
1	Germany	32.7	17.3	42.7	23.1	35.6	41.0	45.3	35.8	33.5	33.4	
2	Switzerland	7.0	8.8	8.2	3.6	3.8	3.8	3.7	3.0	20.3	8.6	
3	Italy	6.2	2.3	8.1	5.6	4.6	7.6	3.5	17.1	5.0	6.1	
4	United Kingdom	4.7	4.7	0.5	6.5	4.7	4.6	1.8	5.5	4.7	4.4	
5	U.S.A.	4.3	1.5	0.4	5.6	2.7	2.7	6.3	2.9	5.9	4.3	
6	Hungary	3.1	12.4	5.0	2.7	2.3	2.5	2.4	0.8	1.1	3.7	
7	Netherlands	3.0	2.2	1.1	3.1	3.4	2.1	1.5	2.2	4.1	3.1	
8	France	2.9	2.6	0.5	3.8	2.2	2.8	2.0	6.1	2.8	2.7	
9	Czech Republic	2.5	0.6	4.1	2.2	2.2	1.4	1.2	1.0	1.0	3.1	
10	Romania	2.1	6.1	1.9	1.4	1.0	2.4	0.7	0.9	0.4	2.7	
11	Slovakia	1.9	0.2	0.0	2.1	4.7	0.9	0.9	0.2	0.3	1.7	
12	Sweden	1.9	0.2	0.4	3.5	3.2	0.4	1.1	5.3	0.8	1.2	
13	Belgium	1.7	0.7	1.2	2.8	1.7	1.8	4.0	1.3	1.2	1.3	
14	Poland	1.6	0.3	1.5	1.8	1.1	2.4	1.2	1.2	0.8	1.8	
15	Russian Federation	1.5	9.8	0.4	1.5	1.9	3.9	0.4	1.5	1.5	1.2	
16	Spain	1.4	0.1	0.2	2.3	1.5	2.0	2.7	2.3	1.8	0.9	
17	Slovenia	1.4	3.1	1.7	0.6	0.6	1.2	1.8	0.6	0.3	1.8	
18	Croatia	1.4	4.1	4.4	0.6	0.9	1.4	5.5	0.5	0.6	1.3	
19	China	1.0	0.1	0.0	1.3	3.0	0.2	1.9	0.2	0.2	0.7	
20	Japan	0.9	0.0	0.1	3.5	0.1	0.1	0.2	0.3	0.4	0.4	
22	Turkey	0.8	2.1				2.0	0.8		0.9	0.8	
23	Serbia	0.8	8.6	2.5			2.1					
25	Bulgaria	0.7	1.7				1.9					
27	Ukraine	0.6								0.5		
33	India	0.4			1.5							
35	Canada	0.4		0.5								
37	Malaysia	0.2		2.2								
38	Bosnia and Herzegovina	0.2	0.8									
42	Mexico	0.2								1.7		
43	Singapore	0.1		4.9								

Source: OeNB, Statistics Austria.

Note: The results for Austria as a whole are not identical with those presented in table 3, because different data sources were used (balance of payments statistics for table 3, sample for this table).

Chart 19

### Importance of the Ten Main Trading Partner Countries by Provinces

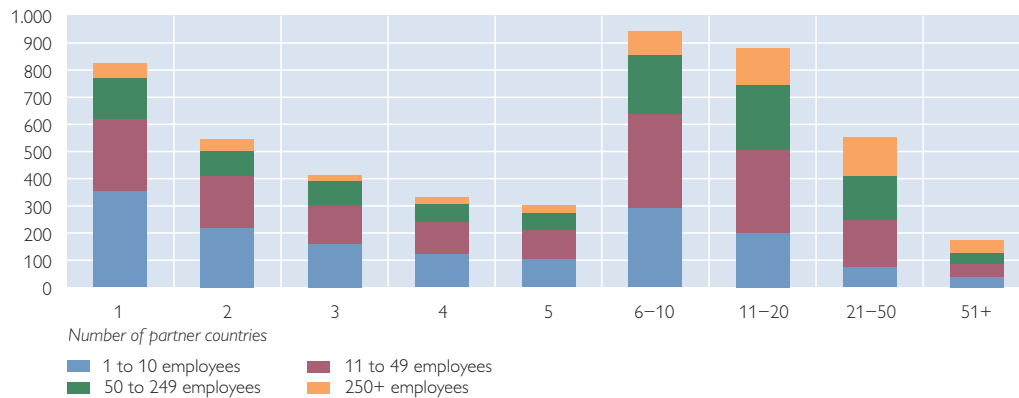


Source: OeNB, Statistics Austria.

Chart 20

### Reach of Trade in Services by Staff Size

Number of enterprises



Source: OeNB, Statistics Austria.

service exports. This applies specifically to Germany, but also to Italy, Switzerland and the neighboring countries of Eastern and Southeastern Europe that receive service exports from the Austrian provinces on the respective borders. Familiarity with a customer's language and culture are evidently important even in an age of globalized service trade, a conclusion which may be drawn from the prominent role of proximity between the service provider and the customer as numerous services require direct interaction between both parties. However, the specialization on trade relations with neighboring countries is not equally pronounced in every province. Much rather, some provinces have a specific regional focus on large, distant sales markets, e.g. the U.S.A., Asian countries, Russia and EU-15 countries.

This analysis uses the number of countries with which a service importer or exporter has economic relations as a simple approximation of the reach of trade in services at the firm level (chart 20). Roughly every fifth respondent is in a service provider or user

relationship with one single partner country, mostly a neighboring country or a country located close by. Conversely, a fairly large number of 29 companies is in touch with over 100 countries through trade in services. The list is topped by 2 companies with 184 and 177 partner countries, respectively. Typically, communications service providers (telecommunications, postal and courier services), airlines, shipping companies and travel agencies have such an extensive reach, which makes sense for the network services such industries are engaged in.

Some two-thirds of the 917 service corporations that trade with a single partner country list Germany as that country. Switzerland comes in second with a share of 7%. The importance of regional proximity is further corroborated by the fact that the third- through sixth-most important countries are also neighbors of Austria, namely Italy, Hungary, the Czech Republic and Slovakia, with shares ranging from 2% to 4%. As explained earlier, there are also atypical cases in which the single trade partner is located in a country

like the U.S.A., Canada, Indonesia or Uruguay.

The reach of trade in services is positively correlated with the size of transaction costs and is a function of company size, with which it has a highly significant positive correlation:

The median number of partner countries for all service traders is 6, for very small companies with up to 10 employees, it is 4, and for large companies with over 250 employees, it is 12.

However, 53 large companies have trade relations with a single country, and 41 small companies have trade relations with more than 50 partner countries.

### 3.8 The Influence of Company Size and Age on Trade in Services

The breakdown of the sample into categories by company size as determined by employment shows a close connection between service export revenue and company size (table 15). Large companies account for nearly half of total revenues, medium-sized enterprises for one-quarter, and small and

very small companies for 27% of total service export revenues. Thus, export revenues are a function of the number of employees. The link to company size is even stronger in the case of service imports. Large enterprises account for more than half of all expenditure on service imports. An analysis at the microlevel confirms this closer link for service import expenditure. The analysis of company concentration produced similar results (section 3.4).

As the contribution of service exports to companies' total revenue indicates, service exports are most important for the value added of very small companies. The export ratio is more than 13% for companies with a maximum of 10 employees, but only half that size for companies with over 250 employees. Accordingly, doing business internationally can be very important for very small service traders. But the dispersion between the individual firms is very large: Some very small companies have specialized on service exports, which appears to be the case for providers of very particular services for a small group of customers that are not located in Austria with its small

Table 15a

#### Link between Service Trade and Company Size

##### Export Revenues

	Employees			
	<10	10 – 49	50 – 249	>249
	EUR million			
Total	2,100	3,540	5,216	9,686
Median	0.3	0.6	1.0	1.9
Dispersion	6.6	14.4	25.5	95.0
Maximum	125	453	533	1,430
	%			
Share of sample	10.2	17.2	25.4	47.2
Export ratio	13.4	10.3	10.9	6.4

Source: OeNB, Statistics Austria.

Note: Including insurance and financial services.

Table 15b

### Link between Service Trade and Company Size

Import Expenditures	Employees			
	<10	10–49	50–249	>249
	EUR million			
Total	1,448	2,208	2,845	8,617
Median	0.2	0.3	0.6	2.1
Dispersion	7.0	7.6	7.7	68.9
Maximum	172	248	94	1,026
	%			
Share of sample	9.6	14.6	18.8	57.0
Export ratio	9.2	6.4	6.0	5.7

Source: OeNB, Statistics Austria.

Note: Including insurance and financial services.

sales market and that can easily be contacted thanks to modern information technology, but most companies see service exports as incidental to their main goal.

To analyze the connection between cross-border trade in services and company size in depth, we broke down to-

tal exports by all four company categories into types of services. In a next step, we determined the relative importance of a service type for the respective company categories (tables 16 and 7). Viewed from a different perspective, we can show the distribution of exports of a particular service by

Table 16

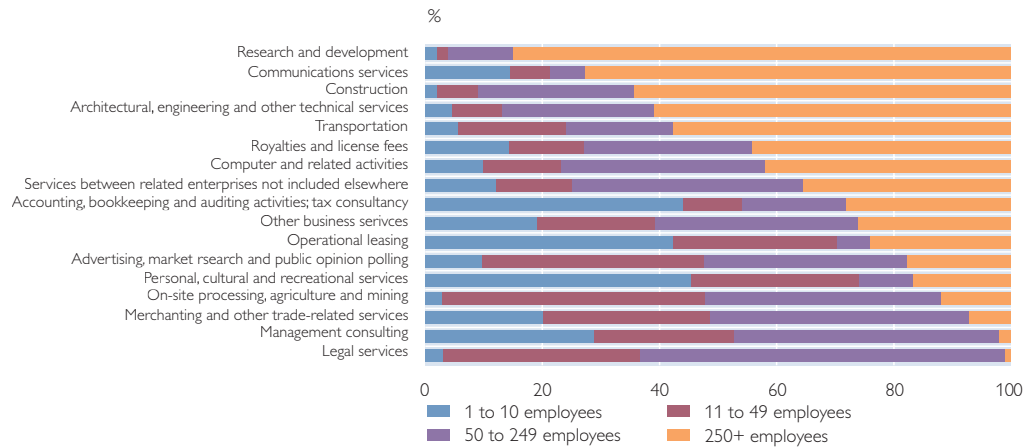
### Exports by Service Category and Company Size

Service Category	Employees			
	<10	10–49	50–249	>249
	EUR million			
Transportation	453	1,474	1,465	4,606
Communication services	163	75	67	811
Construction services	15	51	195	468
Computer and information services	103	139	360	435
Royalties and license fees	54	49	109	167
Merchandising and other trade-related services	557	790	1,230	197
Operational leasing services	133	88	18	75
Legal services	3	35	65	1
Accounting, auditing, bookkeeping, and tax consulting services	18	4	7	11
Business and management consulting	119	99	187	8
Advertising, market research, and public opinion polling	51	199	183	93
Research and development	28	26	147	1,137
Architectural, engineering, and other technical services	79	144	447	1,040
Agricultural, mining, and on-site processing services	1	9	8	2
Other business services	84	90	153	115
Services between related enterprises, n.i.e.	168	180	547	492
Personal, cultural, and recreational services	48	31	10	18
Total	2,077	3,483	5,198	9,676

Source: OeNB, Statistics Austria.

Chart 21

**Link between Exports and Enterprise (Staff) Size by Service Category**



Source: OeNB, Statistics Austria.

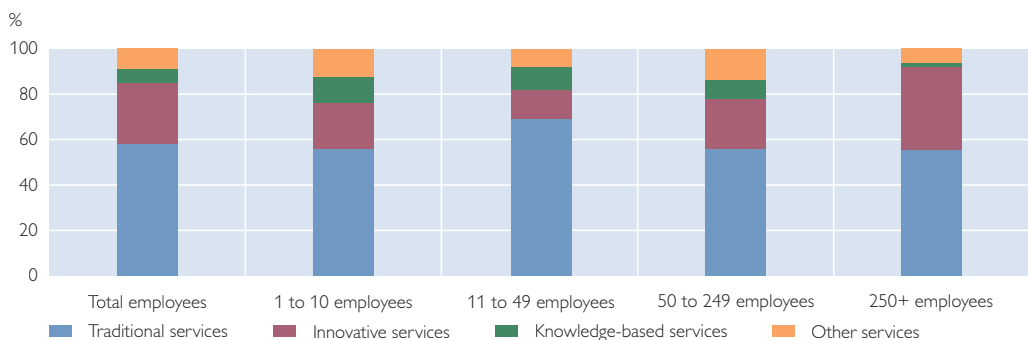
company size (chart 21). This analysis shows that very small enterprises render above all personal services (education, health and cultural services); accounting, auditing, bookkeeping, and tax consulting services; business and management consultancy activities, operational leasing services; and trade-related services. Small enterprises are additionally engaged in waste treatment and depollution and agricultural services as well as advertising, market research, and public opinion polling. Medium-sized enterprises largely export legal and management consultancy activities, advertising services, and computer and information services.

Large companies focus on research and development, communications, construction, architectural and technical services as well as transport services. Also, they have royalty and license fee revenues.

To sum it up, the technical sophistication and innovation content of service exports correlate positively with company size, meaning that as a rule, the higher the degree of sophistication, the larger the company (chart 22). Exports of network services (communications, transport) are also provided mainly by large companies. Trade in knowledge-based services, though, is predominantly transacted by small and me-

Chart 22

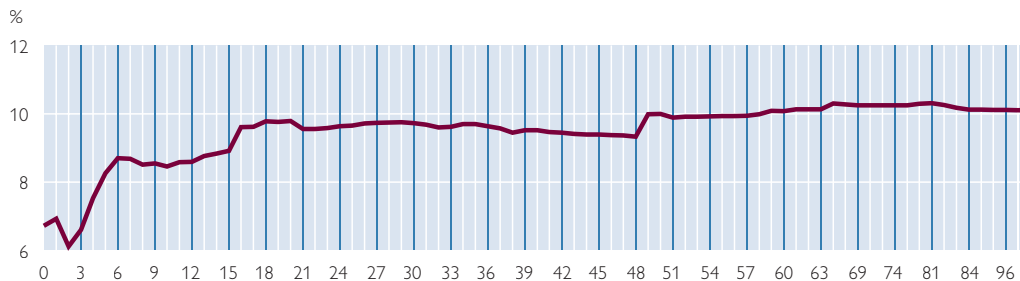
**Distribution of Service Types by Staff Size of Enterprises**



Source: OeNB, Statistics Austria.



Chart 23

**Export Ratio Correlated with Company Age**

Source: OeNB, Statistics Austria.

dium-sized enterprises. Trade-related services – above all merchanting – are exported primarily by small and very small enterprises. This result corresponds to the average number of employees in the respective related industries (table 9). Employment levels are high in engineering- and transportation-related industries not only on average, but also and especially in the companies which export services (see section 3.3).

In addition to the question of how service exports correlate with company size, the question of how they correlate with company age is of interest. Typically, companies are expected to have been established domestically for a certain time to be able to develop internationalization resources, i.e. experience and know-how, for their move into markets abroad.<sup>31</sup> A breakdown of the sample into age groups produces a strong concentration of companies within the categories of enterprises up to 20 years of age. 75% of the companies are in these groups; they account for 67% of total sales and 65% of export revenues. The development of the export ratio against the business period reveals a positive correlation between the two variables within this time span (chart 23). The importance of interna-

tionalization for company sales is higher for companies in the first years after establishment, i.e. for business start-ups. In the higher age categories, the degree of external orientation stabilizes. Only long-established companies 50 years of age and older exhibit a marginally higher degree of internationalization.

### 3.9 Links between Service Trade and Group Activities

Beside goods and service trade and the granting of patents and licenses, companies can resort to a third important form of internationalization of production: cross-border FDI. It would appear logical, then, that companies that belong to a multinational group are especially intensely engaged in cross-border trade in services.

Holdings exceeding 10% of a company's equity are referred to as direct investment. In Austria, some of these direct investment relations date back to the 19th century, others resulted from the demise of the Austro-Hungarian monarchy. When Austria began to draw up direct investment statistics in 1968, the extent of direct investment in Austria was low by international standards, and Austrian investment abroad was virtually nonexistent. The

<sup>31</sup> For an explanation of internationalization theories, see Nowotny and Palme (2008).

Table 17

**Service Exports Correlated with Group Activities**

Indicator	Local companies	FDI		
		Outward	Inward	Outward and inward
<b>Enterprises</b>				
Number	3,002	215	660	121
% of sample	60.5	4.3	13.3	2.4
% of basic population	2.2	0.2	0.5	0.1
<b>Export revenues</b>				
EUR million	9,807	4,526	4,133	1,990
% of sample	48.0	22.2	20.2	9.7
Export ratio in %	11.8	11.1	7.9	7.6
<b>Sales revenues</b>				
EUR million	83,184	40,804	52,439	26,232
% of sample	33.2	16.3	21.0	10.5
% of basic population	14.6	7.1	9.2	4.6
<b>Employees</b>				
Number	310,381	119,336	119,034	67,836
% of sample	40.1	15.4	15.4	8.8
% of basic population	13.5	5.2	5.2	2.9

Source: OeNB, Statistics Austria.

prevalence of small and medium-sized enterprises, the high degree of direct and indirect government ownership and Austria's location at the edge of the Iron Curtain were the main reasons the degree of internationalization was low at the time.

Not until Austria joined the EU and Eastern Europe opened up did internationalization gather momentum. By the end of 2007, Austrian outward and inward FDI had come to exceed an estimated EUR 100 billion. Over 300,000 Austrians work in direct and indirect investment enterprises in Austria, and more than 600,000 persons in first and second-tier affiliates of Austrian direct investment enterprises abroad.<sup>32</sup> Bridgeheads – foreign-controlled resident investors that are part of a multinational group and that have subsidiaries abroad themselves – play a special role. Some 900 of 3,300 Austrian direct

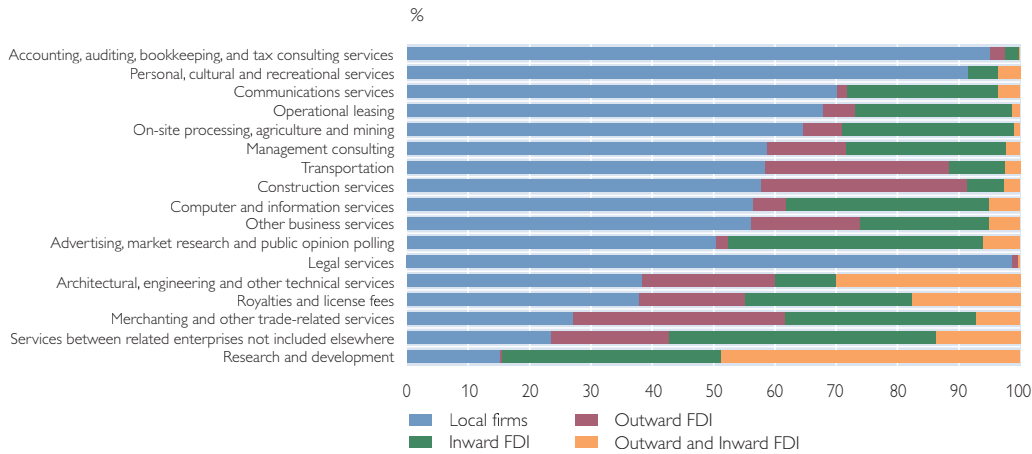
investments abroad are such regional headquarters.

The sample was divided into local companies and companies that are part of an international group to analyze the role of outward and inward FDI and of bridgeheads of multinational groups. The findings show that most companies with service export revenues are Austrian-owned resident companies (table 17). Such firms account for about 15% of total sales, 14% of employees and roughly half of all export revenues. More than half of all Austrian service exports, however, are attributable to companies with investment ties to a foreign group, with activities by Austrian companies that have affiliates abroad – these companies are among the largest in the sample in terms of sales and employees – being most prominent. As measured by export ratio (around 12%), local companies

<sup>32</sup> See *Dell'mour (2008)*.

Chart 24

**Exports by Local and Group Companies Broken down by Service Categories**



Source: OeNB, Statistics Austria.

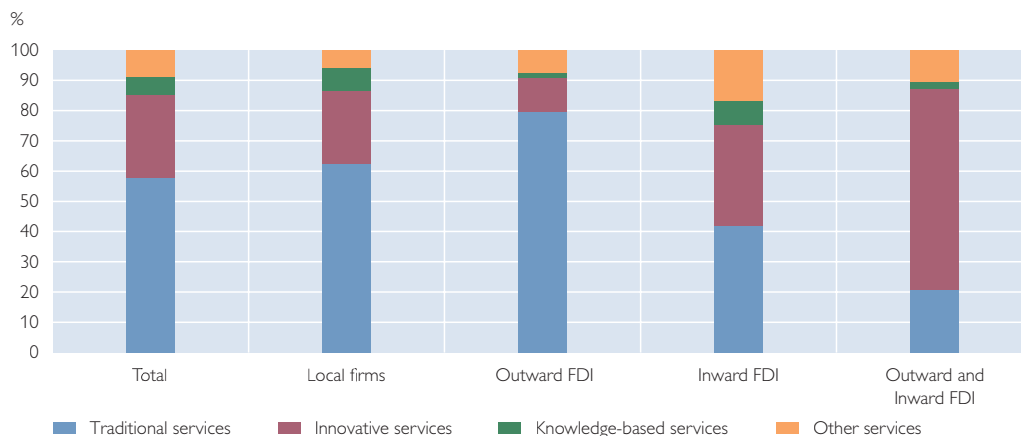
nevertheless have the highest degree of export orientation.<sup>33</sup>

The analysis of the different service categories signals that local firms predominate in exports of knowledge-based services, such as legal services; accounting, auditing and bookkeeping, and tax consulting services; and personal, cultural, and recreational ser-

vices (chart 24). Moreover, more than 50% of management consulting and advertising services are likewise provided by local companies, also of communications, transport, construction, and computer and information services. Companies with inward or outward FDI generate over half the export revenue from research and

Chart 25

**Exports by Type of Service Broken down by Local and Group Activities**



Source: OeNB, Statistics Austria.

<sup>33</sup> In this context, the criterion for an inward direct investment is direct foreign control of at least 50% of a company's capital. Therefore, the influence of activities of international groups on trade in services must be assumed to be even larger than the analysis showed, as it did not cover inward FDI from 10% to 50% or indirect FDI. Future analyses will be able to capture inward FDI more broadly.

Table 18

### Service Imports Correlated with Group Activities

Indicator	Local companies	FDI		
		Outward	Inward	Outward and inward
<b>Enterprises</b>				
Number	2,923	231	757	122
% of sample	58.9	4.7	15.2	2.5
% of basic population	2.1	0.2	0.5	0.1
<b>Export revenues</b>				
EUR million	7,107	2,851	3,420	1,628
% of sample	47.6	19.1	22.9	10.9
Export ratio in %	7.1	6.9	5.7	5.4
<b>Sales revenues</b>				
EUR million	100,132	41,410	59,732	30,086
% of sample	40.0	16.5	23.9	12.0
% of basic population	17.5	7.3	10.5	5.3
<b>Employees</b>				
Number	369,464	123,885	142,688	88,334
% of sample	47.7	16.0	18.4	11.4
% of basic population	16.0	5.4	6.2	3.8

Source: OeNB, Statistics Austria.

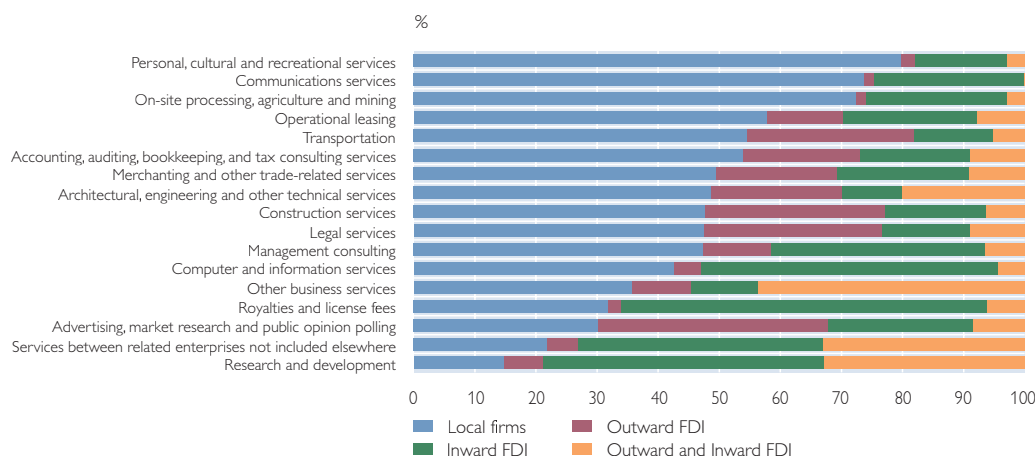
development; architectural, engineering and other technical services; and merchanting and other trade-related services. The share of royalty and license fee revenue is correspondingly high (34%). The share of foreign-controlled companies in export revenues of research and development services is particularly high – some 85%.

The relative weight of the different types of service exports by companies as broken down by corporate form illustrates the findings (chart 25):

- Local companies – the predominant type of company, and thus the biggest influence on the result – export a very high share of knowledge-based services,

Chart 26

### Imports by Local and Group Companies Broken down by Service Categories



Source: OeNB, Statistics Austria.

Table 19

**Link between Trade in Services and Trade in Goods**

	Enterprises			Service exports		Service imports		Goods exports		Goods imports	
	Number	% of the sample	% of the basic population	EUR million	% of the sample	EUR million	% of the sample	EUR million	% of the basic population	EUR million	% of the basic population
<b>Service exports</b>											
Excluding goods	423	8.5	0.3	424	2.1						
Including goods exports	49	1.0	0.0	55	0.3			10	0.0	96	0.1
Including goods imports	69	1.4	0.0	128	0.6					225	0.2
Including goods exports and imports	167	3.4	0.1	640	3.1			2,086	2.3	1,484	1.6
<b>Service imports</b>											
Excluding goods	292	5.9	0.1			356	1.7				
Including goods exports	23	0.5	0.0			15	0.1	25	0.0		
Including goods imports	160	3.2	0.1			230	1.1			444	0.5
Including goods exports and imports	439	8.8	0.3			1,000	4.9	14,953	16.7	9,008	9.6
<b>Service exports and imports</b>											
Excluding goods	1,222	24.6	0.8	2,915	14.3	1,980	9.7				
Including goods exports	173	3.5	0.1	331	1.6	215	1.1	59	0.1		
Including goods imports	421	8.5	0.3	2,433	11.9	1,518	7.4			2,213	2.4
Including goods exports and imports	1,327	26.7	1.0	12,741	62.4	9,803	48.0	40,785	45.5	39,442	42.2

Source: OeNB, Statistics Austria.

- local companies with outward FDI are engaged chiefly in traditional services, above all transportation, and
- companies with inward FDI are focused mainly on exports of innovative services.

Over 50% of service import expenditure in Austria is attributable to companies with foreign group investments, even though such companies account for a relatively smaller number of firms (table 18). Unlike in the case of the export structure, though, the activities of companies majority-owned by nonresidents are highly important. Local companies account for the bulk of imports of personal, cultural, and recreational as well as communications services, followed by operational leasing services, transportation, and accounting, auditing and bookkeeping, and tax con-

sulting services. Companies with outward and inward FDI are most strongly represented in imports of research and development services, spending on royalties and license fees and imports of advertising, market research and public opinion polling services as well as of computer and information services.

### 3.10 Links between Trade in Services and Trade in Goods

Services play an important role in the production, quality assurance and sales of goods.<sup>34</sup> We examined the sample in this analysis to determine the links between enterprises' exports and imports of services and their goods exports and imports (table 19) and found that companies with trade in services only account for just 39% of the sample. Most of these companies import and export services and account for no more than

<sup>34</sup> See Kyvik Nordas (2008).

Table 20

**Link between Service Exports and Goods Exports in Manufacturing**

Classification according to ÖNACE 2003		Service exports		Goods exports		Service ratio
		EUR million	% of the sample	EUR million	% of the basic population	% <sup>1</sup>
15–16	Manufacture of food products and beverages; manufacture of tobacco products	31	0.2	987	1.1	3.1
17	Manufacture of textiles	15	0.1	580	0.6	2.6
18	Manufacture of wearing apparel; dressing and dyeing of fur	2	0.0	471	0.5	0.5
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	2	0.0	302	0.3	0.7
20	Manufacture of wood and of products of wood and cord, except furniture; manufacture of articles of straw and plaiting materials	68	0.3	823	0.9	8.2
21	Manufacture of pulp, paper and paper products	72	0.4	1,277	1.4	5.7
22	Publishing, printing and reproduction of recorded media	39	0.2	847	0.9	4.6
23–24	Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals and chemical products	438	2.1	4,886	5.4	9.0
25	Manufacture of rubber and plastic products	119	0.6	1,351	1.5	8.8
26	Manufacture of other nonmetallic mineral products	87	0.4	1,546	1.7	5.6
27	Manufacture of basic metals	20	0.1	2,049	2.3	1.0
28	Manufacture of fabricated metal products, except machinery and equipment	307	1.5	2,186	2.4	14.1
29	Manufacture of machinery and equipment n.e.c.	387	1.9	5,866	6.5	6.6
30	Manufacture of office machinery and computers	7	0.0	12	0.0	60.3
31	Manufacture of electrical machinery and apparatus n.e.c.	283	1.4	2,570	2.9	11.0
32	Manufacture of radio, television and communication equipment and apparatus	879	4.3	2,374	2.6	37.0
33	Manufacture of medical, precision and optical instruments, watches and clocks	35	0.2	509	0.6	6.9
34	Manufacture of motor vehicles, trailers and semitrailers	221	1.1	5,508	6.1	4.0
35	Manufacture of other transport equipment	54	0.3	1,062	1.2	5.1
36–37	Manufacture of furniture; manufacturing n.e.c.; recycling	56	0.3	974	1.1	5.8
		3,122	15.3	36,180	40.3	8.6

Source: OeNB, Statistics Austria.

<sup>1</sup> Service exports as a share of goods exports.

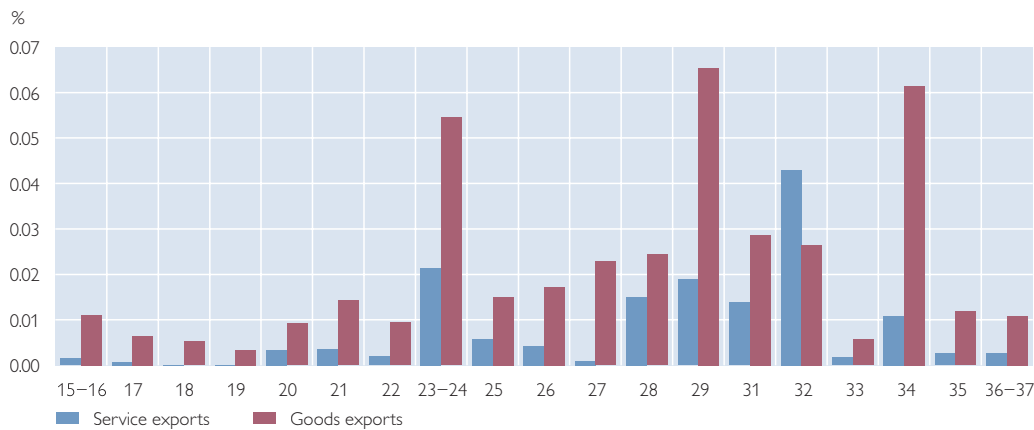
some 16% of export revenues and 11% of import expenditure, in other words, shares that are smaller than these companies' representation in the sample. Hence, the lion's share of Austrian companies involved in trade in services also trade in goods.

As the analysis of the basic population showed, most Austrian enterprises do not engage in external trade. This group is followed by the second-largest group of companies, all of which export and import goods. If those companies in the sample are analyzed that export and import services as well as goods, the following picture emerges:

- 1,327 firms, i.e. 27% of the sample and 1% of the basic population, export and import both goods and services.
  - These enterprises account for some two-thirds of all service exports (EUR 12.7 billion) and for 48% of service imports (EUR 9.8 billion).
  - Moreover, these companies account for nearly half of all goods exports (EUR 40.8 billion) and 42% of all goods imports (EUR 39.4 billion).
- Below, we take a closer look at those manufacturing enterprises (section D of ÖNACE 2003) that deliver goods and services abroad (table 20 and

Chart 27

### Correlation of Service Exports and Goods Exports



Source: OeNB, Statistics Austria.

chart 27<sup>35</sup>) to obtain insights into the link between trade in goods and services on the one hand and specific industries on the other: Which industries export system packages of goods and services as a method to provide a unique product that gives it a competitive advantage?

Overall, manufacturing enterprises that export goods and services account for approximately 40% of goods exports and 15% of service exports. Companies belonging to the ÖNACE division manufacture of radio, television and communication equipment and apparatus garner the highest share of service export revenues (about 4%), followed by manufacturers of chemicals, engineering companies, companies engaged in the manufacture of fabricated metal products, companies that manufacture electrical machinery and apparatus, and enterprises in the motor vehicle manufacturing industry. The two industries with the largest shares of goods exports – engineering and motor vehicle manufacturing –

have service export revenues that are far lower than their goods export revenues. Nevertheless, their service revenues are in the triple-digit millions. A similar pattern applies to the chemicals industry. With a service-to-goods export ratio of 37%, the share that manufacturers of radio, television and communication equipment hold in total service exports is larger than their share in goods exports. For the manufacture of fabricated metal products, the ratio is 14%, and for the electrical machinery and apparatus industry, it is 11%; the ratio is 9% each for chemicals and for producers of rubber and plastic products.

Thus, this analysis reveals that above all exports by the technology-intensive manufacturing industry are closely tied to service exports. Most of the industries identified are also engaged in service imports. Apparently, some of the services provided in exports of system packages require imports of intermediate inputs.

<sup>35</sup> To facilitate proper presentation in the chart, the statistical outliers in the division manufacture of office machinery and computers were excluded.

## Exports of System Packages in Manufacturing

Classification according to ÖNACE 2003    The 3 Main Types of Services

15–16	Manufacture of food products and beverages; manufacture of tobacco products	royalties and license fees	merchanting and other trade-related services	advertising, market research, and public opinion polling
17	Manufacture of textiles	research and development	merchanting and other trade-related services	computer and information services
18	Manufacture of wearing apparel; dressing and dyeing of fur	merchanting and other trade-related services	computer and information services	business and management consulting services
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	transportation	merchanting and other trade-related services	computer and information services
20	Manufacture of wood and of products of wood and cord, except furniture; manufacture of articles of straw and plaiting materials	royalties and license fees	computer and information services	architectural, engineering, and other technical services
21	Manufacture of pulp, paper and paper products	merchanting and other trade-related services	computer and information services	architectural, engineering, and other technical services
22	Publishing, printing and reproduction of recorded media	advertising, market research, and public opinion polling	computer and information services	research and development
23–24	Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals and chemical products	research and development	royalties and license fees	merchanting and other trade-related services
25	Manufacture of rubber and plastic products	architectural, engineering, and other technical services	research and development	transportation
26	Manufacture of other nonmetallic mineral products	advertising, market research, and public opinion polling	merchanting and other trade-related services	computer and information services
27	Manufacture of basic metals	merchanting and other trade-related services	research and development	architectural, engineering, and other technical services
28	Manufacture of fabricated metal products, except machinery and equipment	construction services	architectural, engineering, and other technical services	transportation
29	Manufacture of machinery and equipment n.e.c.	architectural, engineering, and other technical services	research and development	transportation
30	Manufacture of office machinery and computers	research and development	computer and information services	transportation
31	Manufacture of electrical machinery and apparatus n.e.c.	architectural, engineering, and other technical services	transportation	computer and information services
32	Manufacture of radio, television and communication equipment and apparatus	research and development	communication services	architectural, engineering, and other technical services
33	Manufacture of medical, precision and optical instruments, watches and clocks	architectural, engineering, and other technical services	computer and information services	research and development
34	Manufacture of motor vehicles, trailers and semitrailers	research and development	operational leasing services	architectural, engineering, and other technical services
35	Manufacture of other transport equipment	architectural, engineering, and other technical services	transportation	royalties and license fees
36–37	Manufacture of furniture; manufacturing n.e.c.; recycling	research and development	architectural, engineering, and other technical services	merchanting and other trade-related services

Source: OeNB, Statistics Austria.

The composition of service exports by manufacturers may provide insights into what kinds of services are linked to goods exports and hence what types of

services may support different industries in exporting goods (table 21). The analysis focused above all on industries where a close link between service and



goods exports could be identified – radio, television and communication equipment manufacturing, chemicals, engineering, the manufacture of fabricated metal products, the manufacture of electrical machinery and apparatus, the motor vehicle industry and the production of rubber and plastic products. These industries are shown to export mainly technical services, which suggests that the services are linked directly to manufacturing – assembly, repair and maintenance services – or to research and development. Computer and information services are third-most important. These innovative services are among the most important exports also in the remaining manufacturing industries. Trade and transport services linked to the distribution of goods are also high on the list.<sup>36</sup> In line with the internationalization stages theory, we might assume that the most innovative manufacturing industries provide innovative services and logistics services along with goods exports at the outset, only to outsource these services to subsidiaries at a later stage.

### 3.11 Regression Analysis

We performed a step-by-step regression analysis to determine the influence of existing and potentially explanatory variables on the volume of service exports and imports.<sup>37</sup> We chose employment and sales as well as goods trade as possible explanatory variables and represented outward and inward direct investment relationships by means of dichotomous dummy variables. Additionally, we assumed the potential advantage of company headquarters in

Vienna, and finally modeled industry affiliation by means of dummies. Because the distribution is extremely skewed, the logarithm of the cardinally scaled variables was taken. Companies that do not export or import any services were excluded from the analysis.

The result of the analysis on the size of exports may explain one-third of the observed variance ( $r^2_{\text{corr}} = 0.3256$ ;  $N = 1516$ ) (table 22).

Both sales and employment have a significant positive impact on the service export volume with an elasticity of 0.24 and 0.34, respectively, which means that a 10% increase in employment raises service exports by 2.4% and a 10% boost in sales raises exports by 3.4%. If the company holds direct investments abroad, *ceteris paribus* this increases service exports by a factor of 1.8 ( $= \exp(0.59)$ ). Being headquartered in Vienna has an effect of the same size. The number of head offices in Vienna is above average. The strongest effect in terms of industry affiliation is observed for the network industries transport and telecommunications. Other typical service exporters are enterprises classified under section K of ÖNACE 2003, real estate activities providers, rental activities, other business services, research and development, advertising, management consulting, engineering services and holding companies. Enterprises in manufacturing with a comparatively low degree of technical sophistication, such as the food, the textiles and the other nonmetallic mineral products industry have a negative correlation with service exports.

<sup>36</sup> Exports of construction services in the division manufacture of fabricated metal products, except machinery and equipment are attributable to an exceptional case in the survey on cross-border trade in services. Otherwise, construction services are classified solely under construction, meaning that any construction services exported by other industrial divisions are classified as architectural and engineering activities and related technical services.

<sup>37</sup> *Merchanting was excluded.*

Table 22

**Regression Model for Service Exports**

Model		Coefficient B	Standard error	T	Significance
	(constant)	1.673	0.326	5.131	0.000
	LNEMP	0.241	0.052	4.622	0.000
	LNUMS	0.336	0.046	7.230	0.000
Direct investor	Outward FDI	0.590	0.144	4.089	0.000
Headquartered in Vienna	DVienna	0.592	0.108	5.470	0.000
I – Transportation, storage and communication	DUMBR18	1.875	0.170	11.005	0.000
K – Real estate, renting and business activities	DUMBR20	1.323	0.155	8.538	0.000
DA – Manufacture of food products, beverages and tobacco	DUMBR3	-2.122	0.318	-6.681	0.000
F – construction	DUMBR15	0.548	0.221	2.483	0.013
DB – manufacture of textiles and textile products	DUMBR4	-1.651	0.384	-4.301	0.000
DI – manufacture of other nonmetallic mineral products	DUMBR8	-1.074	0.329	-3.262	0.001
G – wholesale and retail trade; repair of motor vehicles, motorcycles a. personal a. household goods	DUMBR16	-0.445	0.147	-3.016	0.003
DJ – manufacture of basic metals and fabricated metal products	DUMBR9	-0.527	0.237	-2.224	0.026

Source: OeNB.

Note: The variables goods exports and foreign control as well as the other industry dummies have been left out of account because they are insignificant.

Table 23

**Regression Model for Service Imports**

Model		Coefficient B	Standard error	T	Significance
	(constant)	-1.113	0.296	-3.760	0.000
	LNEMP	0.067	0.040	1.665	0.096
	LNUMS	0.668	0.044	15.289	0.000
Located in Vienna	DVienna	0.332	0.094	3.548	0.000
Foreign control	FC	0.510	0.092	5.531	0.000
I – Transportation, storage and communication	DUMBR18	2.018	0.178	11.365	0.000
K – Real estate, renting and business activities	DUMBR20	0.529	0.139	3.806	0.000
DA – Manufacture of food products, beverages and tobacco	DUMBR3	-0.586	0.201	-2.909	0.004
Direct investor	Outward FDI	0.295	0.123	2.402	0.016
Goods exports	LNXG	0.053	0.018	2.963	0.003
Goods imports	LNMG	-0.047	0.023	-2.030	0.043

Source: OeNB.

Note: All remaining industry dummies have been left out of account because they are insignificant.

The analysis result is not as clear for service imports. While it was possible to explain a larger variance share ( $r^2_{\text{corr}} = 0.4271$ ;  $N = 1607$ ), the coeff-

icients cannot be interpreted as clearly (table 23).

Employment has a lower explanatory power than sales, which dominate

service imports with an elasticity of 0.668,<sup>38</sup> and the impact of being headquartered in Vienna is somewhat weaker, but still significantly positive. Unlike in the case of service exports, foreign control, i.e. majority ownership by a nonresident in the reporting company, has a significantly positive effect and enlarges the import volume 1.7-fold ( $\exp(0.51)$ ). In this case, payment of management costs and of royalties and license fees or purchases of intermediate inputs from affiliated enterprises may be involved. At the same

time, outward FDI increases the expected amount of service imports; this may be explained by the bridgehead function of Austria for the activities of multinational groups. Three of the industry dummies were already discussed under service exports, namely, the network industries and other business services, which both have far larger than average import volumes and the food industry, which has hardly any service imports. Finally, goods exports and imports exhibit a weak significance with opposite interdependency.

<sup>38</sup> Strictly speaking, employment should be eliminated from the model because it lacks significance. At a bivariate  $r = 0.787$ , there should not be a true multicollinearity problem.

## 4 Conclusions

As the time series presentation in the balance of payments statistics demonstrates, business services are an important source of net trade revenue in Austria. Imports and exports of these kinds of services developed much more dynamically between 1998 and 2008 than travel did. Consequently, Austria no longer depends solely on tourism revenues; it has become a modern service provider. However, trade in service flows remain low compared to goods exports and imports, which may be linked to the fact that services are less tradable and that nontariff trade barriers still exist.

Exports and imports of traditional services are most important in Austria, in particular transport services connected to the trade in goods. The services with the highest growth, though, are innovative services. Austria has a competitive advantage in providing research and development services and technical services, but it has a comparative disadvantage in earning cross-border royalties and license fees. Moreover, Austria has a negative competitive position in trade with knowledge-based services, among other things legal services; accounting, auditing, bookkeeping, and tax consulting services; business and management consulting; and advertising, market research, and public opinion polling. This means that foreign providers were better poised to gain a foothold in the Austrian market than vice versa.

By regions, Austria trades most with other EU Member States, chiefly with Germany. Whereas the share of service exports to Germany is stagnating, that of goods exports is contracting. A comparison of Austria with the remaining EU-27 Member States reveals Austria to be specialized on travel, but that Austria's relative competitive ad-

vantage in trade with other services is on the decline.

Apart from analyzing Austrian balance of payments statistics, we also performed a company analysis to identify the determinants of the developments observable in service trading. The analysis is based on the 2006 structural business survey (SBS), which is limited to registered companies; these data were complemented by information from the company register and the OeNB's company database. These data combined thus provided information about some 138,300 firms: the location of the company headquarters, the year of establishment, the industry in which the company operates as classified in ÖNACE 2003, employment and sales, goods exports and imports, and inward and outward FDI. A sample using thresholds of just under 5,000 companies was then taken from this basic population of some 138,300 firms. The sample covers nonfinancial enterprises that export services, import services, or do both. The trade in services data are from the survey on cross-border trade in services in 2006.

The analysis shows that the majority of Austrian enterprises do not trade goods or services internationally. This majority is followed by a much smaller group of companies that trade in goods only, and the third group is that of companies that are engaged in goods and service trade. Only a small group of Austrian companies exclusively exports or exclusively imports services, and the external trade share of total sales by Austrian service providers is small as well. The strong correlation between goods and service trade results from a close link between the content of service and goods trade – e.g. providing transport, assembly, repair and maintenance, planning and

training services to provide a unique product and to generate competitive advantages. In addition, research and development services go hand in hand with goods exports.

The analysis also provides evidence that the supply of services to Austria and the demand for services from abroad is very unevenly distributed in Austria and is concentrated on a small number of enterprises, above all service providers such as shipping companies and travel agencies, transport and trade companies, holding companies, management consultancies and advertising companies as well as computer and related companies. Manufacturing companies – manufacturers of machinery and equipment and of radio, television and communication equipment and apparatus – also export and import services. Thus, outside of the inherent external trade orientation that applies to network industries, trade in services is dependent on a high degree of technical sophistication and knowledge content.

This analysis identified all these factors – goods trade, external orientation, technical and knowledge content – as well as company size as significant determinants of trade in services and its strong concentration on a small number of enterprises. The analysis distinguished construction and transport as well as communications, research and development and finally architectural and engineering service exports and imports as dependent on company size. Conversely, external trade in knowledge-based services is focused above all on SMEs. Consequently, company structure appears to be a key criterion for the degree of technical sophistication of service exports and for the country's positive or negative competitive position.

In addition to the five determinants of participation in cross-border trade in services, the analysis identified being part of an international group as an important influence. While the number of companies with inward and/or outward FDI that trade services internationally is smaller than that of firms without FDI, these companies account for more than half of Austria's cross-border trade in services. In particular research and development services and cross-border payments of royalties and license fees are linked to group activities. International service traders owned by residents have specialized on exports of traditional services and exports of knowledge-based services, such as legal consultancy, accounting, auditing and bookkeeping, and tax consulting services; business and management consultancy activities; and advertising services. The findings are that service export revenues are most important for total sales in Austrian-owned companies.

The analysis also identified various regional specializations in Austria's service trade. Exports of innovative services represent one area in which there is a clear regional specialization: Styria and Carinthia in southern Austria, as well as Upper Austria, have specialized on research and development services, architectural, engineering and other technical services, computer and information services. Traditional services also exhibit regional differences, with trade, transportation and construction services coming mainly from Burgenland, Salzburg and Tyrol. Finally, Vorarlberg has specialized on exports of knowledge-based services, e.g. legal and business consultancy, advertising and market research.

The analysis of Austria's main service trade partners shows that proxim-

ity plays a key role. However, some firms also export services to or import them from large, distant markets. The reach of trade in services in terms of the number of a given company's trade partner countries depends both on the type of service offered – in particular innovative services and network services – and on company size.

To sum it up, Austria does not feature “typical” service exporters. Much rather, it is possible to distinguish between various types of service traders: (1) network industries, where exports are intrinsic to the system (the postal, telecommunications and transport ser-

vices); (2) technology-intensive parts of the manufacturing industry, including e.g. the automotive industry, chemicals and the manufacture of radio, television and communication equipment and apparatus; (3) transnational enterprises that organize their production on a world-wide basis and operate centers for research and development in Austria; (4) group management providing a broad range of services, e.g. advertising, legal consultancy and financial services; and (5) local, specialized companies in areas such as technology and management consultancy.

# 5 Appendix

Table A1

## Employment, Sales Revenues, Exports and Imports by ÖNACE 2003 Categories 2006

Classification according to ÖNACE 2003	Employment	Sales revenues	Goods exports	Goods imports	Service exports	Service imports	
<i>EUR million</i>							
<b>A-C</b>		1,947	1,344	265	137	21	77
<b>D</b>	15-16	20,439	6,348	1,715	1,265	31	106
	17	7,098	1,203	819	458	15	25
	18	3,837	532	519	380	2	24
	19	2,116	511	397	383	2	22
	20	10,627	3,263	2,008	732	68	99
	21	10,178	3,977	2,514	794	73	108
	22	7,768	2,264	872	330	77	527
	23-24	19,522	14,077	5,290	6,221	438	454
	25	11,291	2,945	1,895	1,196	122	52
	26	17,249	3,253	1,673	607	88	75
	27	23,367	9,605	5,689	3,155	20	174
	28	21,209	4,973	2,666	1,250	317	205
	29	42,888	10,886	7,044	2,941	389	396
	30	457	124	73	37	7	9
	31	16,918	4,073	2,857	1,529	283	196
	32	22,467	6,172	2,940	2,398	879	562
	33	4,846	763	590	168	38	26
34	22,976	10,741	6,186	5,440	221	205	
35	9,941	2,454	1,499	603	55	60	
36-37	12,993	2,766	1,460	770	58	68	
<b>E</b>		18,578	10,847	698	2,437	655	104
<b>F</b>		43,407	8,191	188	194	669	281
<b>G</b>	50	11,738	8,941	870	5,151	159	50
	51	41,371	54,335	6,280	10,966	2,902	1,962
	52	98,499	17,394	496	2,812	120	258
<b>H</b>		8,901	769	1	36	11	45
<b>I</b>	60	42,744	7,355	194	350	1,724	968
	61	173	92	11	2	25	6
	62	9,057	3,245	832	891	1,750	1,261
	63	45,888	14,963	21	60	4,261	3,525
	64	47,722	10,699	6	170	893	892
<b>J</b>	67	1,584	671	0	1	149	84
<b>K</b>	70	3,951	1,747	7	5	62	59
	71	2,472	2,434	156	158	227	59
	72	16,186	3,265	67	66	637	300
	73	2,274	207	5	11	228	91
	7411	1,936	305	0	0	98	19
	7412	1,772	272	0	0	34	12
	7413	545	78	0	1	25	12
	7414	3,726	792	15	9	375	185
	7415	5,729	2,539	400	277	712	493
	7420	7,397	1,482	434	82	756	243
	7430	880	109	1	2	42	10
	7440	4,044	1,987	2	6	220	171
	7450	14,803	637	0	4	46	25
	7460	3,476	105	0	0	2	2
7470	10,117	274	1	1	8	4	
7480	4,426	1,215	81	52	375	250	
<b>M-O</b>		30,585	3,059	34	51	175	280
Total of all industries		774,115	250,283	59,771	54,589	20,544	15,121

Source: OeNB, Statistics Austria.

Note: Limited to companies with a company registration number.

**Service Exports and Imports Broken down by Type of Company 2006**

Service category according to balance of payments statistics	Local companies		Companies with					
			Outward FDI		Inward FDI		Outward and inward FDI	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	<i>EUR million</i>							
<b>Transportation</b>								
Sea transport, passenger	11	9	0	0	0	0	0	0
Sea transport, freight	124	318	20	22	239	398	45	52
Sea transport, other	7	9	0	0	11	36	0	0
Air transport, passenger	344	368	1,318	409	25	125	2	55
Air transport, freight	65	100	140	166	72	44	25	25
Air transport, other	191	108	134	365	0	21	0	0
Rail transport, passenger	101	96	0	0	0	0	0	0
Rail transport, freight	393	495	420	530	25	30	0	15
Rail transport, other	18	16	1	11	5	6	0	0
Road transport, passenger	27	8	0	0	1	1	0	0
Road transport, freight	2,739	2,027	339	276	98	206	121	205
Road transport, other	421	44	4	5	4	4	0	0
Inland waterway transport, passenger	34	14	0	0	0	0	0	0
Inland waterway transport, freight	32	61	0	23	3	2	0	0
Inland waterway transport, other	5	1	0	0	0	0	0	0
Pipeline transport and electricity transmission	148	35	7	2	231	0	0	0
Other supporting and auxiliary transport services	11	7	0	44	23	1	0	1
<b>Communications services</b>								
Telecommunications services	526	500	19	14	176	154	39	1
Postal services	197	97	0	0	3	10	0	0
Courier services	59	50	0	0	96	51	0	0
<b>Construction services</b>								
Construction abroad	419	132	245	7	43	44	19	24
Construction in the compiling economy	2	142	0	162	0	50	0	11
<b>Computer and information services</b>								
Computer services	459	220	56	30	319	299	52	29
News agency services	2	7	0	0	11	37	0	0
Other information provision services	120	73	0	2	11	5	0	1
<b>Royalties and license fees</b>								
Franchises and similar rights	2	7	9	0	1	2	0	3
Other royalties and license fees	138	314	55	22	99	603	65	58
<b>Other business services</b>								
Merchanting	593		759	0	733	0	192	0
Other trade related services	159	205	194	83	133	89	4	38
Operational leasing services	212	73	16	16	80	27	4	10
Legal services	101	45	1	28	0	14	0	8
Accounting, auditing, bookkeeping, and tax consulting services	39	20	1	7	1	7	0	3
Business and management consulting and public relations services	242	159	53	38	107	118	9	22
Advertising, market research, and public opinion polling	264	216	10	270	218	169	31	60
Research and development	203	37	4	16	477	114	649	81
Architectural, engineering, and other technical services	654	298	372	131	169	60	513	123
Agricultural, mining, and on-site processing services	13	44	1	1	6	14	0	2
Other business services	241	274	77	74	90	83	22	335
Services between related enterprises, n.i.e.	322	286	263	68	594	525	188	432
<b>Personal, cultural, and recreational services</b>								
Audiovisual and related services	59	80	0	0	2	14	4	1
Education services	6	16	0	3	1	8	0	3
Health services	14	1	0	0	2	0	0	0
Other personal, cultural and recreational services	18	18	0	0	0	0	0	0
<b>Total services</b>	<b>9,735</b>	<b>7,030</b>	<b>4,518</b>	<b>2,825</b>	<b>4,109</b>	<b>3,371</b>	<b>1,984</b>	<b>1,598</b>

Source: OeNB, Statistics Austria.



Table A3

## Service Exports and Imports Correlated with Goods Trade 2006

Service category according to balance of payments statistics Companies with

	Goods exports		Goods imports	
	Service exports	Service imports	Service exports	Service imports
<b>Transportation</b>				
<i>EUR million</i>				
Sea transport, passenger	3	0	3	3
Sea transport, freight	257	383	291	429
Sea transport, other	1	5	7	12
Air transport, passenger	1,372	422	1,530	608
Air transport, freight	241	244	275	304
Air transport, other	296	413	322	473
Rail transport, passenger	101	96	101	96
Rail transport, freight	505	681	555	850
Rail transport, other	6	20	6	22
Road transport, passenger	5	3	4	3
Road transport, freight	2,511	2,152	2,657	2,314
Road transport, other	11	18	415	38
Inland waterway transport, passenger	0	0	24	12
Inland waterway transport, freight	21	68	11	60
Inland waterway transport, other	0	1	1	0
Pipeline transport and electricity transmission	43	4	343	37
Other supporting and auxiliary transport services	1	45	3	46
<b>Communications services</b>				
Telecommunications services	658	566	730	628
Postal services	200	107	200	107
Courier services	121	86	154	100
<b>Construction services</b>				
Construction abroad	641	151	671	159
Construction in the compiling economy	1	293	2	343
<b>Computer and information services</b>				
Computer services	593	420	614	471
News agency services	0	2	13	43
Other information provision services	2	7	121	76
<b>Royalties and license fees</b>				
Franchises and similar rights	11	9	11	10
Other royalties and license fees	250	824	268	918
<b>Other business services</b>				
Merchandising	1,561	0	1,740	0
Other trade related services	355	358	408	372
Operational leasing services	267	104	248	109
Legal services	29	58	38	60
Accounting, auditing, bookkeeping, and tax consulting services	3	17	14	30
Business and management consulting and public relations services	108	159	236	231
Advertising, market research, and public opinion polling	266	570	362	623
Research and development	1,278	237	1,311	241
Architectural, engineering, and other technical services	1,491	545	1,561	572
Agricultural, mining, and on-site processing services	20	57	13	57
Other business services	254	641	300	667
Services between related enterprises, n.i.e.	1,025	1,120	1,120	1,213
<b>Personal, cultural, and recreational services</b>				
Audiovisual and related services	7	35	13	62
Education services	1	23	4	26
Health services	14	1	13	2
Other personal, cultural and recreational services	2	1	12	8
Total services	14,532	10,946	16,725	12,435

Source: OeNB, Statistics Austria.

## 6 References

- Dell'mour, R. 2008.** Direktinvestitionen 2006 – Österreichische Direktinvestitionen im Ausland und ausländische Direktinvestitionen in Österreich. Stand per Ende 2006. Statistiken Sonderheft. December 08. Vienna: OeNB.
- Egger, P. and M. Pfaffermayr. 2005.** The Determinants of Intra-firm Trade: In Search for Export-Import Magnification Effects. Discussion Paper Series 1: Economic Studies, 2005, 12. Frankfurt am Main: Deutsche Bundesbank, Research Centre.
- Francois, J. and J. Wörz. 2007.** Producer Services, Manufacturing Linkages and Trade. FIW Working Paper 002. Vienna: FIW.
- Kox, H. and H. Kyvik Nordas. 2007.** Services Trade and Domestic Regulation. Trade Policy Working Paper No. 49. Working Party of the Trade Committee. Paris: OECD.
- Kyvik Nordas, H. 2008.** The Impact of Services Trade Liberalisation on Trade in Non-agricultural Products. Trade Policy Working Paper No. 81. Working Party of the Trade Committee. Paris: OECD.
- Lamel, J., Mesch, M. and J. Skolka. 1990.** Österreichs Außenhandel mit Dienstleistungen. Wirtschaftswissenschaftliche Beiträge 27. Heidelberg: Physica Verlag.
- Nowotny, K. and G. Palme. 2008.** Fokus Ostintegration: Grenzüberschreitende Dienstleistungserbringung in die neuen EU-Länder. FIW Studie Nr. 006. Vienna: FIW.
- Statistik Austria. 2008.** Leistungs- und Strukturstatistik 2006. Vienna: Statistics Austria.
- United Nations, European Commission, International Monetary Fund, Organisation for Co-operation and Development, United Nations Conference on Trade and Development, World Trade Organisation. 2008.** Revised Manual on Statistics of International Trade in Services. Room Document 1. Paris: OECD, Working Party on International Trade in Goods and Trade in Services Statistics.
- Utkulu, U. and D. Seymen. 2004.** Revealed Comparative Advantage and Competitiveness: Evidence for Turkey vis-à-vis the EU 15. Nottingham: European Trade Study Group.
- Walter, P. 2009.** Die neue Leistungsbilanz. In: Statistiken – Daten & Analysen Q3/08. Vienna: OeNB.
- Wolfmayr, Y. 2008.** Producer Services and Competitiveness of Manufacturing Exports. FIW Research Report 009. Wien: FIW.

## 7 Overview of the “Statistiken – Daten & Analysen” Series

The electronic (PDF) versions of “Statistiken – Daten & Analysen” (analyses in German, executive summaries in English) can be accessed at [www.oenb.at/de/presse\\_pub/period\\_pub/statistik/statistik.jsp](http://www.oenb.at/de/presse_pub/period_pub/statistik/statistik.jsp).

Individual articles can be downloaded from [www.oenb.at/de/stat\\_melders/statistische\\_publika/statistische\\_publikationen\\_uebersichtsseite.jsp](http://www.oenb.at/de/stat_melders/statistische_publika/statistische_publikationen_uebersichtsseite.jsp).

### Special Issues

#### **July 2008**

Banking Statistics Yearbook for 2007

#### **October 2008**

Financial Accounts 2007

#### **December 2008**

Austria’s International Investment Position in 2007

Direct Investment 2006 – Austrian Outward and Inward Direct Investment at the end of 2006