

STATISTIKEN

Special issue

Austria's services exports.
Development and enterprise
characteristics 2011–2019

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Austria's services exports – development and enterprise characteristics 2011–2019

Patricia Walter¹

In 2024, the European Commission will start publishing a new set of statistics, called Services Trade by Enterprise Characteristics (STEC). Following the existing merchandise trade statistics, the new trade in services statistics will provide a breakdown by characteristics of the trading enterprises. The Oesterreichische Nationalbank (OeNB) already publishes relevant experimental statistics on its website and has reported on them in its publications. This special issue of STATISTIKEN describes the statistical principles underlying the new set of EU statistics, which is based on microdata linking of existing enterprise statistics and company register information, and examines the evolution and structure of Austrian trade in business services between 2011 and 2019. The observation period was selected to accommodate the source data available at the time of the analysis as well as the underlying macroeconomic conditions. It covers the period between the recovery from the financial and economic crisis of 2008 and the resulting collapse of trade volumes, to the outbreak of the COVID-19 pandemic. The choice of this observation period, between two economic turning points, has enabled us to look at the underlying structure of services trade in Austria as well as the leading players, i.e. enterprises and multinational corporations. We have found the typical service exporter in Austria to be a large enterprise in the services sector, with outward foreign direct investments.

This publication focuses on Austria's international trade in services, in particular its exports. According to the definition provided by the International Monetary Fund (IMF), which sets out global rules for statistics of external trade as part of countries' balance of payments, services exports are transactions between residents headquartered in Austria for more than one year and nonresidents. Within real external trade, which comprises goods and services exports (or *tradables* and *non-tradables*), the IMF defines services as “*the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets*” (IMF, 2009). “*Services are not generally separate items over which ownership rights can be established and cannot generally be separated from their production*” (IMF, 2010). However, as a result of increasing digital transformation of external trade, services are no longer necessarily bound to their provider (meaning they are no longer *nontradable* as such), and the focus is shifting to the mode of provision and extended customized product offers. Therefore, the IMF also says: “*However, ... some knowledge-capturing products, such as computer software and other intellectual property products, may be traded separately from their production, like goods... Some services, particularly manufacturing services, repairs, and freight transport, also relate to goods... In general, charges for electronically delivered products are usually included in services*” (IMF, 2009).

According to the IMF, the *main components of trade in services* are:

- Manufacturing services on physical inputs owned by others
- Maintenance and repair services
- Transport

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- Tourism²
- Construction
- Insurance and pension services
- Financial services
- Charges for the use of intellectual property n.i.e.
- Telecommunications, computer and information services
- Other business services
 - Research and development services
 - Professional and management consulting services
 - Technical, trade-related and other business services
- Personal and cultural services
- Government goods and services n.i.e.²

Trade in services and the different types of services are defined in more detail in the *Manual on Statistics of International Trade in Services* (MSITS) with regard to the monitoring of the implementation of international trade agreements, in particular the most prominent and extensive one, the *General Agreement on Trade in Services* (GATS). You will find the detailed *Extended Balance of Payments Services Classification* (EBOPS) in the annex. The MSITS also distinguishes between the ways in which services are provided internationally. These are the four modes of supply: (1) cross-border and therefore international as in goods trade (without personal interaction between supplier and consumer), (2) consumption abroad (with the consumer traveling to the supplier's country), (3) commercial presence abroad (by establishing a branch in the country of the consumer) and (4) presence of natural persons abroad (with the supplier traveling to the consumer's country for the duration of service provision)³ (UN, 2011). In line with the definition of external trade provided by the IMF as used for the balance of payments, this publication focuses on services traded across borders, consumed abroad, or provided abroad by somebody who traveled abroad for that purpose. Commercial presence recorded in the *Foreign Affiliates Statistics* (FATS) is not covered in this analysis as it goes beyond external trade in the narrower sense, which focuses on resident traders.

In particular, this publication looks at business services. Business services are mainly provided *by and for* enterprises. In external trade, they (1) are part of, or even a prerequisite for global production and value chains (for interaction or transfer between different levels of production), (2) contribute to customizing exports and to increasing customer loyalty, thus (3) opening up the possibility of raising the quality and therefore the price of exports in order to ultimately (4) achieve a higher domestic value added.⁴ According to the IMF's classification, travel and government services are not included under business services. Contrary to the narrow definition of business services, however, this publication does include personal services,

² Not a business service.

³ In addition to the four modes of supply defined in the GATS framework, economic scientific literature also defines a fifth mode. It comprises services incorporated as production inputs in goods that are then traded across borders. These services are not recorded separately as services exports; instead they increase a priori the value added of goods exports.

⁴ "Trade in services creates welfare gains for society through a more efficient allocation of resources, greater economies of scale, and an increase in the variety of services on offer... An important avenue through which services trade benefits societies is the improvement in firms' competitiveness, both in the services and manufacturing sectors" (WTO, 2019).

such as audiovisual or educational services, as they are also provided by *and for* enterprises. Therefore, we introduce the term *business services in the broadest sense*.

Austria uses a model-based estimation method to calculate tourism revenue and expenditure generated to a large extent by private consumption by households, but also by seasonal and border workers. This methodology is based on tourism statistics (number of arrivals and overnight stays) and complemented by data from payment cards, short-term statistics and price statistics (spending behavior). Meanwhile, data on business services in the broadest sense are mostly derived from mandatory enterprise surveys, namely quarterly and annual *cut-off surveys*. On behalf of the OeNB, a total of around 5,000 enterprises in Austria are regularly surveyed on cross-border trade in services (EBOPS classification). The results are supplemented with administrative data, in particular for model-based data augmentation, with other statistical data and with national accounts data – on transactions that cannot be directly observed (estimates of insurance services, indirectly charged financial services and the shadow economy). All of this provides detailed information about exports (and imports) of services by type of service (EBOPS) and by partner countries for Austria as a whole. The results feed into the preparation of the Austrian balance of payments, in particular the current account and the contribution of exports to Austria's GDP. The legal basis is an EU regulation and an ECB guideline on the balance of payments⁵ as well as the 2004 Austrian Foreign Exchange Act and relevant OeNB reporting regulations.

Apart from feeding into the balance of payments for Austria, the results of the enterprise surveys on trade in services may be analyzed at entity level. To that end, the results are enriched with business-related variables from other enterprise surveys and the Austrian company register (*microdata linking*). The selected variables are (1) economic activity (based on the classification of economic activities within the European Union: NACE 2008), (2) enterprise size (average number of employees per year), (3) cross-border control relationships (domestic vs. foreign control, determined by a capital share of at least 50%), (4) cross-border direct investment relationships (outward FDI) and (5) participation in merchandise trade. The extended business-related results allow us to present Austria's trade in services by enterprise characteristics and capture any shifts. With this, we aim to pinpoint possible microeconomic business-specific explanations for current developments in external trade observed in the balance of payments that go beyond macroeconomic conditions. Balance of payments components that come from secondary sources (model-based estimates, data supplemented from the national accounts) rather than enterprise surveys are not linked. The OeNB has been monitoring the microstructure of trade in business services since 2006, when Austria introduced enterprise surveys, both for reasons of quality assurance of survey results and external trade analysis. The results, representing an experimental dataset for now, are available with a lag of T-2 years, depending on the completion of the necessary enterprise statistics (structural business statistics – SBS; foreign direct investment – FDI statistics; foreign affiliate statistics – FATS). The European Commission issued a

⁵ Regulation (EU) 2016/1013 of the European Parliament and of the Council of 8 June 2016 amending Regulation (EC) No 184/2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment; Guideline (EU) 2018/1151 of the European Central Bank of 2 August 2018 amending Guideline ECB/2011/23 on the statistical reporting requirements of the European Central Bank in the field of external statistics (ECB/2018/19).

regulation requiring the publication of selected results (STEC) from the reporting year 2022 (first publication in 2024).⁶

Section 1 below describes the development of trade in business services in the broadest sense for Austria based on the balance of payments statistics. The observation period spans from 2011 through 2019, that is, nine years. It covers the period between various global upheavals – from the slump in international trade resulting from the global financial and economic crisis of 2008 and the following recovery, which mainly took place in 2009 and 2010, up until the economic ramifications of the COVID-19 pandemic containment measures in 2020. Comparisons are made with trade in goods, tourism, and developments in other EU countries. *Section 2* presents the STEC results for Austria and compares them with the corresponding *experimental statistics* from Eurostat. It also describes the underlying sample. The focus is on enterprise size, control relationships and principal economic activity. At the time of publication, microdata were available up to 2019 and therefore show how the structure of Austria's trade in services had developed until the outbreak of the COVID-19 pandemic. *Section 3* broadens the view of the structure of Austrian trade in services to include enterprises' participation in merchandise trade. *Section 4* summarizes the different enterprise characteristics in a panel – a closed dataset containing one data line for every entity per year. The descriptive analysis is supplemented by the statistical derivation of the main determinants of exports of business services in the broadest sense using a linear regression model. The key results are summarized in *Conclusion and outlook*.

⁶ Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics repealing 10 legal acts in the field of business statistics.

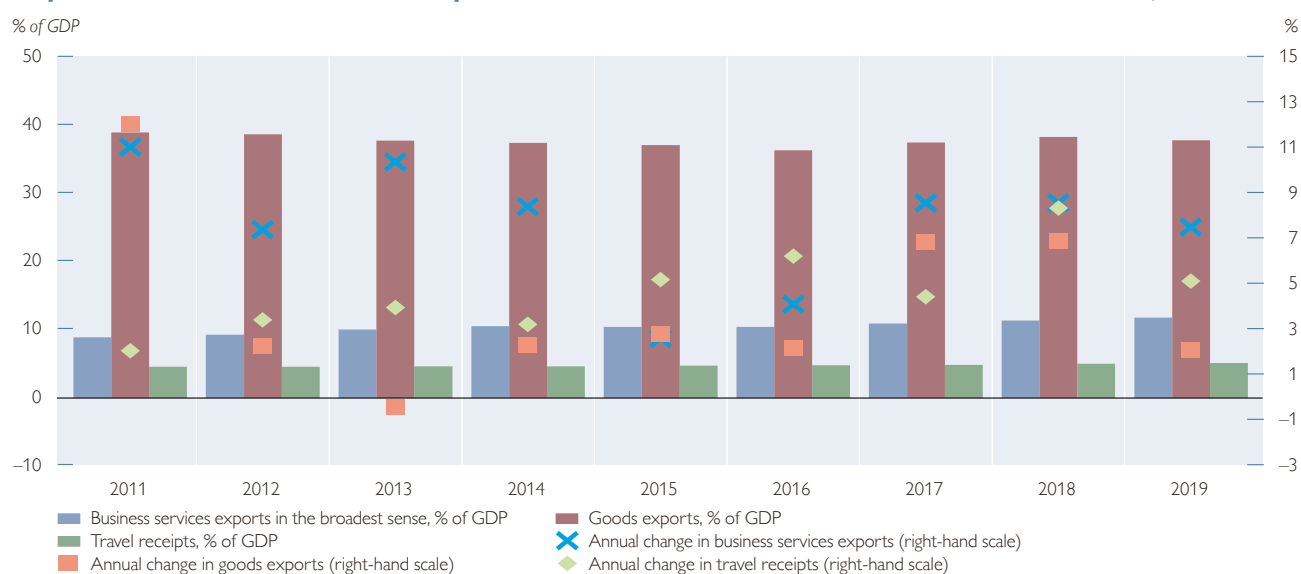
1 Trade in services in Austria's external sector¹

1.1 Trade in business services, trade in goods and tourism

In 2019, Austria's revenues from exports of business services in the broadest sense amounted to EUR 47.3 billion, or close to 12% of GDP. This was the situation before the COVID-19 pandemic struck worldwide, bringing about economic implications for international trade – business and border closures, disruptions to production and supply chains, material shortages, energy price increases and a general rise in catch-up inflation. The underlying data are Austria's balance of payments and thus the results from the regular enterprise surveys complemented by estimates of transactions by entities below the reporting threshold and transactions that are not directly observable. To put this into perspective: The revenues from goods exports amounted to just under EUR 152 billion, or 38% of GDP², and the revenues from tourism totaled EUR 20.5 billion, or close to 5% of GDP. Since 2011, following the immediate recovery from the global trade slump in the wake of the financial and economic crisis of 2008, revenues from exports of business services in the broadest sense have grown by a nominal average of 7.2% p.a., which is significantly quicker than for trade in goods (3.7% p.a.) and tourism (4.3% p.a.). However, such growth was not sufficient to sustainably reduce the *traditional gap* –

Chart 1

Importance of business services exports in the broadest sense for Austria's external trade, 2011–2019



Source: OeNB, Statistics Austria.

¹ Data for Austria refer to the publication/revision date of October 2021.

² Trade in goods is also measured based on balance of payments data, including transactions that involve an economic transfer of ownership between residents and nonresidents. This is why traditional merchandise trade statistics are adjusted for transactions that do not involve a transfer of ownership of goods (manufacturing, transport, insurance and tax components) and adjusted to include transactions that do not involve the cross-border element as a reporting requirement of merchandise trade statistics (merchandising, trade in goods as part of international production chains). As a last step, the results are aligned with the goods and services account of the national accounts (adjusted for nonresident entities and adjusted based on input-output statistics).

as measured by export ratios – between *services as nontradables and trade in goods, or tradables* (chart 1).

A comparison with the other 26 EU countries (excluding the United Kingdom, which officially left the EU in 2020) aims to show whether exports of business services in the broadest sense lagging behind trade in goods is a general EU phenomenon. It would suggest that, despite the digital transformation that the services sector is undergoing globally and despite the gradual deregulation of the EU single market for services³, inherent barriers to trade make it difficult for trade in services to catch up with trade in goods. The Organisation for Economic Co-operation and Development (OECD) states that services have become increasingly more tradable in the 21st century, thanks to significantly lower trade costs (OECD, 2022). This applies primarily to the most advanced economies. In addition to regional trade agreements and the increased supply as well as cheaper air travel, this has mostly been facilitated by information and communication technology.⁴ However, the growth potential of the international exchange of services is far from being realized. The World Trade Organization (WTO) estimates that the share of the services sector in global trade could grow by 50% by 2040 (WTO, 2019). Nevertheless, it is worth noting that, depending on the services sector, personal contact between the provider and the customer may be necessary, meaning that supply and consumption cannot be separated, making in-person real-time interaction between service providers and consumers necessary. Naturally, this implies cultural and linguistic barriers. In addition, country-specific and heterogeneous market access rules hamper in particular the services classified as mode 4 – supply in the customer's country.

One factor suggesting that trade restrictions still persist is that, in 2019, the significance of business services exports in the broadest sense, in terms of GDP, was broadly similar in the EU-27 as a whole and in Austria; the gap to trade in goods was also only marginally smaller than in Austria (chart 2). Throughout the observation period, which is actually close to ten years, the two trade flows hardly converged in the EU in terms of their significance. The average growth momentum was somewhat higher than in Austria (+8% p.a.). The highest growth momentum in trade in business services was recorded in Ireland and Cyprus as well as Eastern European member states, including Romania and Poland.⁵ In terms of export revenues to GDP, the highest-ranked countries were Luxembourg, Malta, Ireland and Cyprus. For the following analysis of the business structure of trade in services, it is worth noting that the turnover/output of enterprises controlled by nonresidents to GDP in the EU is the highest in Luxembourg and Ireland (almost or more than 100%). The ratio in Malta is over 50%. *Austria's export revenues to GDP put it in 14th place, together with Greece, behind Sweden and Slovenia and ahead of*

³ *The Services Directive for the European internal market came into force at the end of 2006. Member states had until the end of 2009 to enact the directive into national law. The key elements are: removing barriers to the free movement of services, cutting red tape and increasing legal certainty. However, implementation in the member states proceeded very slowly; in Austria, it did not happen until 2012.*

⁴ *"Trade costs in services are almost double those in goods, but they fell by 9 per cent between 2000 and 2017 thanks to the spread of digital technologies, the lowering of policy barriers, and investment in infrastructure" (WTO, 2019).*

⁵ *Complete time series data since 2011 were not available for all EU member states.*

Finland. The large economies of Italy, Spain and Germany were ranked the lowest among EU countries.

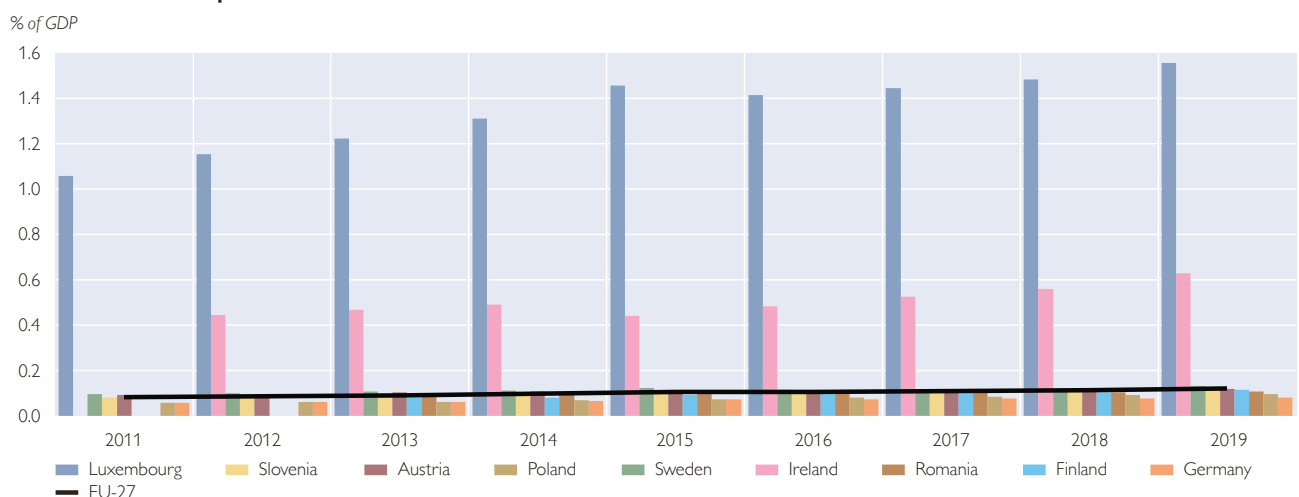
To put this into perspective: For trade in goods, the ratio of Austrian export revenues to GDP was slightly above the EU average, putting it again in 14th place, followed by Germany. However, Austria's growth momentum was lower than for the EU as a whole (+4.4% p.a.) and Germany (+4% p.a.). Trade in goods was most important for Eastern European member states, such as Slovenia. With the exception of Ireland, trade in goods was of minor importance for the other leading exporters of business services, so that while the value added gap was de facto closed in Ireland, it was negative in the other countries – meaning that the importance of trade in business services was higher than that of trade in goods. Austria's two reference countries, Sweden and Finland, were significantly below the EU average in terms of exports of goods.

Compared with exports of business services in the broadest sense and of goods, Austria's revenues from tourism to GDP were much more significant in EU comparison – Austria ranked 11th, above the value for the EU as a whole and well ahead of the major tourism destinations Italy and France. Within the EU, the highest indicator values were reported for the small Mediterranean countries Croatia, Cyprus, Malta, Greece and Portugal. Like in Italy and France, growth of tourism in Austria was relatively low in EU comparison. Ireland and Eastern European member states recorded the strongest growth.

Chart 2.1

External sector components in selected EU countries

Business services exports in the broadest sense



Source: Eurostat.

Chart 2.2

External sector components in selected EU countries

Goods exports

% of GDP



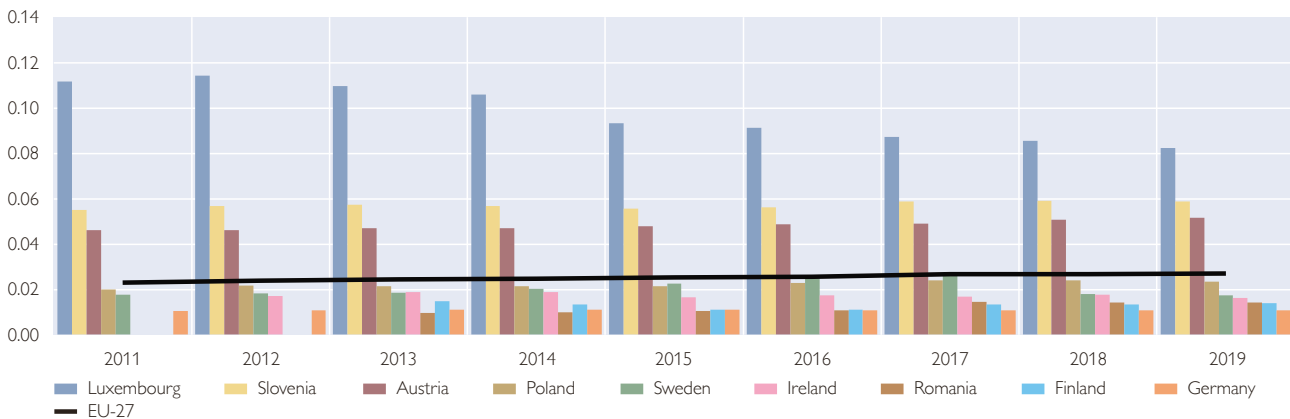
Source: Eurostat.

Chart 2.3

External sector components in selected EU countries

Travel receipts

% of GDP



Source: Eurostat.

1.2 Export markets

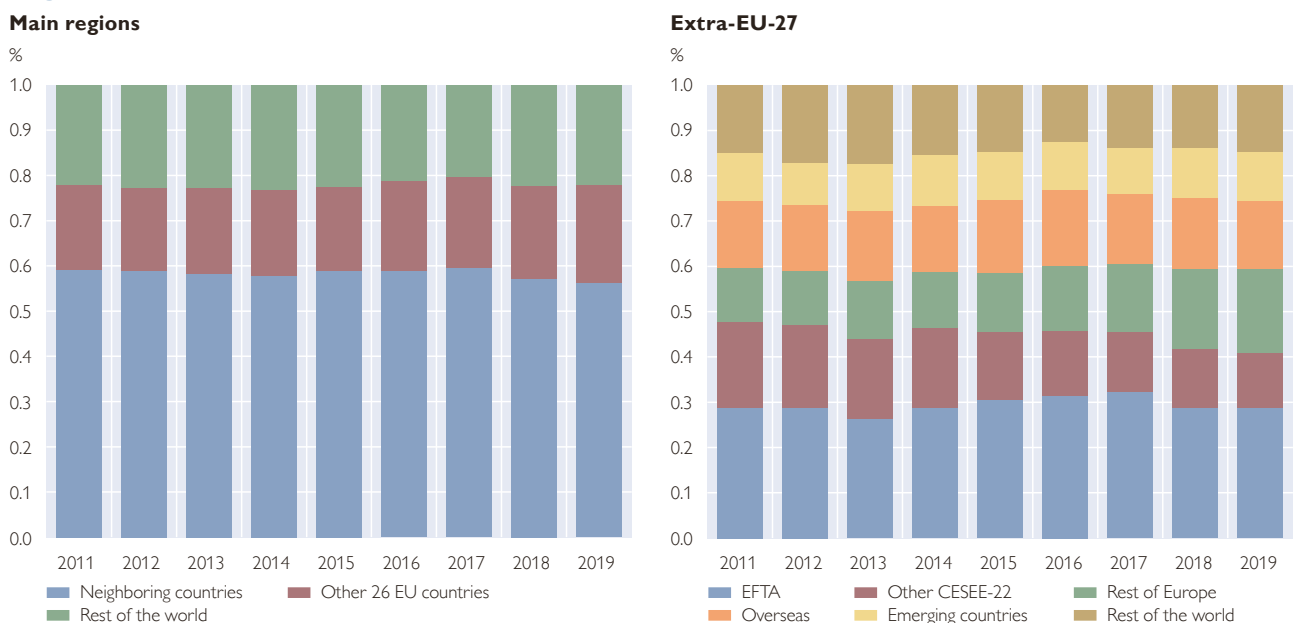
One aspect of the development of business services exports in the broadest sense is their reach. How much of a focus does Austria as a services provider place on its neighboring countries? To what extent was Austria able to tap additional export and growth markets? In 2019, 56% of export revenues came from Austria's neighboring countries – around 37% from Germany alone – with close to 22% coming from the other 26 EU member states and another 22% from other countries (chart 3). In the 2011–2019 observation period, the importance of Austria's neighbors against other

EU countries decreased only marginally while diversification toward the rest of the world stagnated. Regarding Austria's export relations with the other EU countries, the significance of the EU-14 increased at the expense of the countries that joined the EU from mid-2000 onward. Outside the EU, the strongest trade in services was recorded with European Free Trade Association (EFTA) countries, in particular Switzerland, although its significance stagnated (at around 29% in 2019). Central, Eastern and Southeastern European (CESEE) countries (excluding EU member states) became less important for Austrian exports of business services in the broadest sense in the reporting period (2019: 12%). Export revenues from the rest of Europe grew, mainly from the United Kingdom (2019: around 19%), which was still an EU member in the observation period. The importance of countries outside Europe for Austria's trade in services stagnated; this holds true for both the traditional overseas destinations (United States, Canada, Japan, South Korea, Australia and New Zealand; 2019: 15%) and the emerging economies (Asian and other emerging economies; 2019: 11%). A country breakdown reveals high regional concentration of exports of business services in the broadest sense: The three leading export markets Germany, Switzerland and the United Kingdom accounted for half of Austria's total export revenues in 2019. The United States and China were the only non-European countries among the top 20 export markets, accounting for around 3% and 1% of export revenues, respectively.

Compared with exports of business services in the broadest sense, Austria's goods exports in 2019 focused less on neighboring countries (around 49%) and was more diversified toward export markets outside the EU (around 30%). Trade relations outside the EU-27 centered on overseas markets (32%) and emerging economies, in particular in Asia (26%). Both regions became more important in

Chart 3

Regional breakdown of business services exports in the broadest sense



Source: OeNB, Statistics Austria.

the observation period. Concentration on Germany was less prominent (28%) than in the case of exports of business services in the broadest sense. Behind Germany and ahead of Italy, the United States was the second-largest trade partner, accounting for around 8% of exports. Malaysia, alongside China (around 3%), was also among the top 20 destinations. For tourism, long-term structural shifts since the 1970s have contributed to larger regional diversification. Such shifts are hardly observable in the short term. In 2019, Germany remained the leading country of origin, accounting for 45% of total travel revenue. Three main countries of origin – Germany, Switzerland and the Netherlands – accounted for almost 60% of total revenue. Among the top 20, there were three non-European countries of origin: the United States (around 3%), China and Israel (1% each). A total of 65% of travel revenue was accounted for by Austria's neighbors.

To summarize Austria's trade in services within the EU-27, *in 2019, the other member states accounted for around 70% of all export revenues from business services in the broadest sense.* The share was stable throughout the observation period. Only Eastern European member states (Slovenia, Slovakia and Estonia) showed a similarly high concentration of trade in services in the single market. Austria's reference countries, Finland and Sweden, generated around 50% and 41% of their export revenues, respectively, in the EU; here, it is also worth noting their historical economic link with Norway, which is an EFTA country. This means that Sweden was even more active as a provider of business services in export markets outside the EU-27 than within. The same applies to Germany and Ireland, where export revenues from the EU-27 only accounted for around 41% and 30%, respectively.⁶ By comparison, at around 66%, Austria's trade in goods was also concentrated more on the EU-27 in 2019 than that of Finland (54%) and Sweden (53%), but this was still significantly less than the share recorded by Eastern European countries such as Czechia, Hungary and Slovakia (around 80% each). Germany generated around half of its revenue from trade in goods from the EU-27, while for Ireland the share was some 31%. This means that, unlike in Austria, in Germany, Sweden and Finland trade in business services in the broadest sense was even more diversified between the EU and third countries than trade in goods.

1.3 Types and imports of services

What kind of services and which sectors determined the way exports of business services developed and how did the types of services provided by residents evolve (chart 4)? In line with EBOPS, services are grouped into main classes by type in order to reflect the key services sectors, in particular in terms of their relation with trade in goods and technology and knowledge intensity:

- “Goods-related services”: manufacturing services, maintenance and repair services
- Transport
- Technology-intensive services: telecommunications, computer and information services, charges for the use of intellectual property, research and development, architecture and engineering
- Professional and management consulting services: legal, tax, business consulting, advertising and market research

⁶ Comparable data were not available for all EU countries.

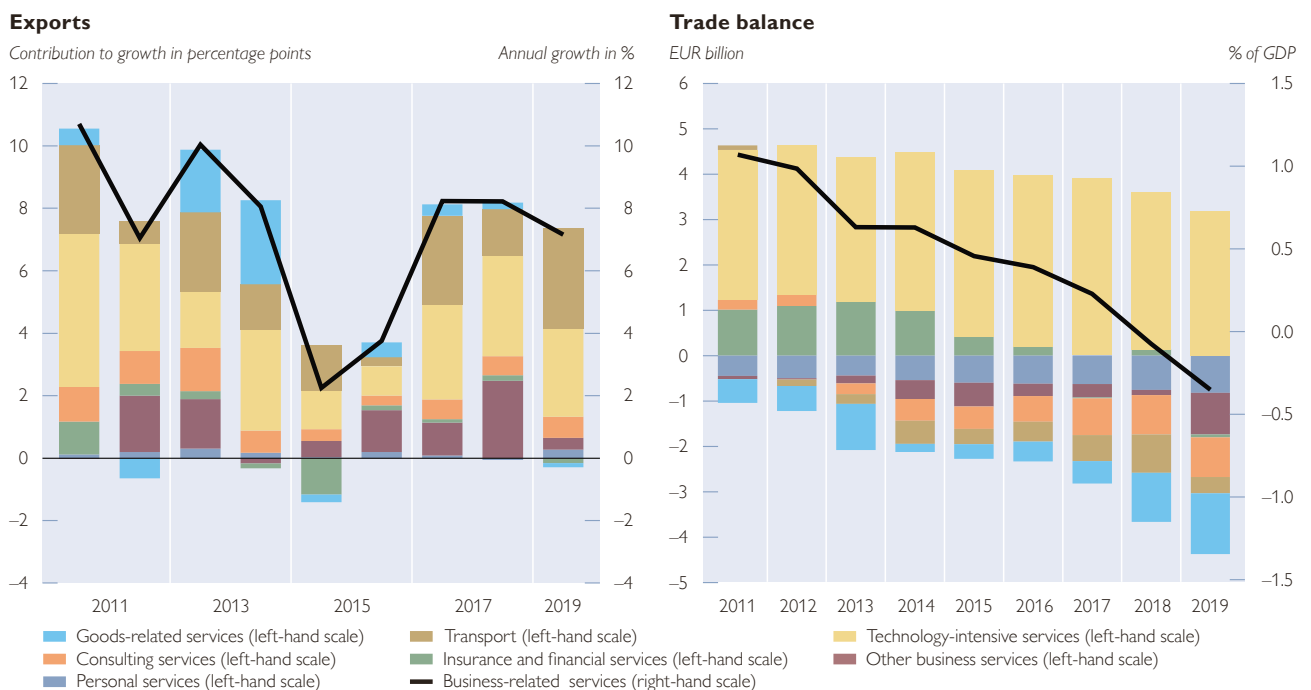
- Insurance and financial services
- Other or traditional business services, in particular construction, agriculture, renting and leasing, trade services as well as in-house cost allocation
- Personal services for education, health, culture and leisure

In 2019, the two sectors with the highest export revenues in Austria were transport and technology, each accounting for around one-third of total exports. While goods-related services and consulting services recorded the strongest growth throughout the nine-year observation period (+16% and +10% p.a., respectively), the largest contribution to business services in the broadest sense was made by the technology sector (+25.6 percentage points). Put simply, Austria's focus shifted from traditional services, mainly revolving around transport, toward a second foothold – the technology sector. Computer and information services exports played a key role in this. Breaking down the sectoral export revenues into those from EU countries and third countries, the revenues from non-EU countries are more technology-intensive. There, the technology sector contributed almost 40% to the total revenue in 2019, while within the EU this amounted to around 30%. Within the EU, trade in services thus remained driven by the transport sector.

On average, Austria's imports grew more strongly than its exports between 2011 and 2019 (+9.5% p.a.), which resulted in a significant import surplus/revenue deficit of –EUR 1.2 billion or –0.3% of GDP (chart 5). As such, Austria ranked last in the EU in 2019, together with Finland and Italy, which suggests that it became less competitive in international trade in services. While Luxembourg, Malta and Cyprus recorded double-digit revenue surpluses, Ireland's deficit presented an

Chart 4

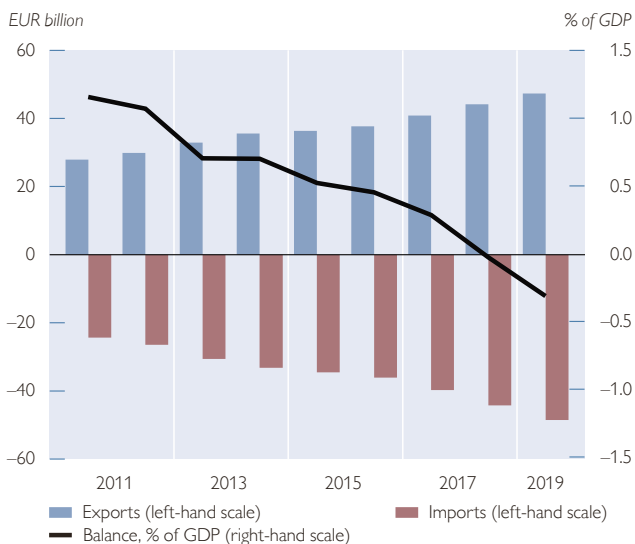
Austria's business services exports by type of services in the broadest sense



Source: OeNB, Statistics Austria.

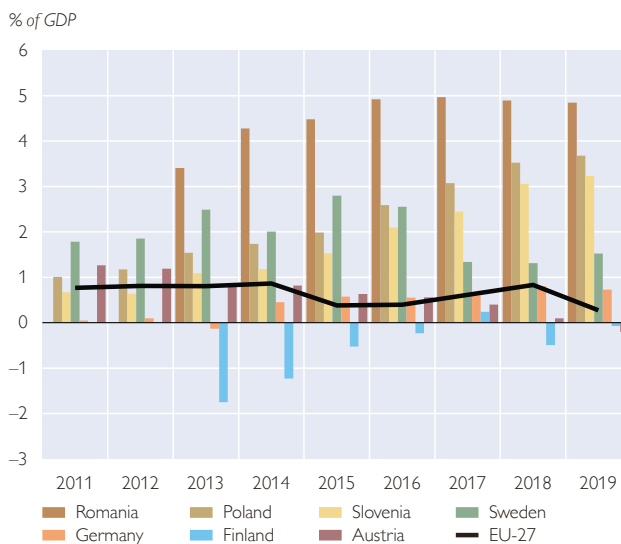
Trade balance in business services

Austria



Source: OeNB, Statistics Austria.

Selected EU countries



Source: Eurostat.

Note: Including government services n.i.e. due to data availability. Excluding the statistical outliers Luxembourg and Ireland.

outlier, amounting to almost -30% of GDP. The EU-27 as a whole in 2019 recorded a revenue balance of around 0.3% of GDP.

Austria's goods trade balance was positive, at around 1% of GDP, which was below that for the EU as a whole. Apart from Ireland, the Netherlands and Germany were in the lead. At about 2.5% of GDP, Austria's tourism revenue surplus was high compared with other EU member states and the EU as a whole. The top-ranked countries were again the Mediterranean countries Croatia, Malta, Greece, Cyprus and Portugal.

The composition of imports in 2019 was more fragmented than that of exports. While transport also accounted for around one-third of Austria's expenditure on business services, both traditional types of services and consulting services were comparatively more important than in the case of exports. By contrast, the technology sector accounted for only around one-quarter of import expenditures. *On balance, only the technology sector recorded a revenue surplus for Austria in 2019, yet failed to fully offset the deficits in the other services sectors.* Ultimately, the structure of trade in business services in the broadest sense reflects the modern, highly industrialized profile of the Austrian economy, which tends to export technological know-how and import less technology-intensive services from abroad. Nevertheless, technology also made the largest contribution to growth in Austrian imports in the observation period; this was even stronger than in the case of exports (+29.9 percentage points).

The technology sector also accounted for the largest share of the export revenue from business services in the broadest sense in the EU-27 (around 35%), followed at some distance by transport (around 22%). On balance, however, technology had a significant negative impact, alongside consulting services. This means that *the EU*

was a net exporter of transport as well as insurance and financial services, while importing (on balance) technological know-how from the rest of the world. Among Austria's reference countries – Germany, Finland and Sweden – technology also contributed most to net export revenues (alongside the financial sector in Germany). In Eastern European countries (Slovenia, Poland and Romania) too, the technology sector showed a positive trade balance; however, transport played a much larger role there. By contrast, in countries where the economy is dominated by international corporations (Luxembourg and particularly Ireland), technology made a significant negative contribution to the services trade balance. These countries recorded net exports of insurance, financial and transport services.

1.4 Comparison with 2020 and 2021

The year 2020, when the COVID-19 pandemic broke out in Europe, saw Austrian export revenues for business services in the broadest sense fall by around 7% against 2019. Transport and personal service providers suffered the most as a result of the pandemic containment measures. The technology sector hardly budged compared with 2019. In nominal terms, the losses in business services were already more than offset in 2021, with revenues rising by 5.5% against 2019. By comparison, goods exports fell by around 9% in 2020 year on year, before bouncing back strongly in the following year (+11% against 2019); this was due to pent-up demand as well as price effects linked to increasing prices for commodities and intermediate goods. Tourism suffered unprecedented double-digit losses due to the outbreak of the COVID-19 pandemic in 2020, which continued in 2021.

2 STEC or “Who drives Austria’s services exports?”

In June of last year, Eurostat (2022) published an article on *Services Trade by Enterprise Characteristics* (STEC) on its *Statistics Explained* website, accompanied by the following tweets:

“Small and medium enterprises account for more than 50% of the exports of services trade in Luxembourg (73%), Estonia (61%), Hungary (53%), Iceland (53%) and Norway (52%).”

“Traders in transport and storage activities tend to export the biggest volumes of services, having relatively high export intensity, while the traders in the sector of wholesale and retail trade are mostly operating on local markets.”

“Foreign controlled enterprises are predominant in Ireland and Luxembourg: they are responsible for 80% of services exports and 87% of the imports from Ireland; and 78% of Luxembourgish exports and imports.”

Microdata linking techniques make it possible to analyze the enterprises participating in international services trade, in anonymized form, beyond the balance of payments results for the whole economy. So far, 15 EU member states, including Austria, voluntarily provide Eurostat with STEC data. For methodology, please refer to *Eurostat-OECD Compilers Guide for Statistics on Services Trade by Enterprise Characteristics*, in the drafting of which Austria was involved. Essentially, data on international trade in services reported by enterprises are linked with register information through a general identifier (mostly the official company register number). Data that are not reported by enterprises, and therefore cannot be linked, are listed under non-linked services, to enable data users to arrive at aggregate figures for trade in services in line with the balance of payments. Estimated data that are not associated with a specific enterprise cannot be linked. These include in particular travel, national account estimates (such as implicitly charged bank fees or illegal activities) and estimates for enterprises below the reporting threshold. *Eurostat publishes STEC data in three different forms*; the results in this publication refer mainly to 2019 to the extent that country data were available at the time of publication. You will find the tables for Austria in the annex. STEC is shown by:

- NACE Rev.2 activities and enterprise size class (number of employees),
- NACE Rev.2 activities and type of service (EBOPS, 2010) and
- NACE Rev.2 activities and cross-border relationships (foreign control greater or less than 50% of capital).

2.1 Description of sample

In Austria, surveys on cross-border trade in business services are divided between nonfinancial and financial enterprises. For the nonfinancial sector, surveys are carried out on behalf of the OeNB by Statistics Austria on a quarterly and annual basis. These surveys address all enterprises that do not belong to the agriculture and forestry, banking and insurance or public or nonprofit sectors. The surveys are conducted as census surveys with cut-off sampling, also called cut-off surveys. In

order to limit the reporting burden for businesses, statistical surveys are designed to enable high coverage of the subject while keeping the group of respondents to a minimum. In line with the applicable reporting regulation, a uniform threshold of EUR 500,000 has been applied to the total annual services exports or imports since the reporting year 2013. The threshold was set in such a way as to ensure coverage of at least 90% of services exports and imports in all two-digit ÖNACE¹ sectors. For below-threshold entities, administrative sources (*Value added tax Information Exchange System – VIES*) are used as an estimation basis for statistical model calculations. In the same vein, OeNB conducts cut-off surveys among banks and insurance companies, applying sector-specific thresholds. Only own account transactions of Austrian insurance corporations are collected with a census survey without cut-offs, subject to data reconciliation with supervisory statistical reporting requirements. In the period under review, around 5,000 enterprises were surveyed on cross-border trade in business services per quarter in Austria.

The distribution of the surveyed enterprises across the different economic sectors applied in this analysis is highly heterogeneous; this is due to the statistical aim to achieve high coverage in every sector with as few respondents as possible, and due to the corporate structures prevailing in Austria. The services sector is covered by two-thirds of the surveyed enterprises (roughly 3,770 entities) in the 2019 sample, which is representative of the period under review (table 1). The sample includes those enterprises that have an active company register number and whose survey results can be linked to other business statistics. The manufacturing sector accounted for around 1,000 enterprises, or 20% of the sample. 132 enterprises, or around 3%, belong to the construction sector. Most of the enterprises from the manufacturing sector can be classified as belonging to the metalworking, machinery and equipment, chemical and pharmaceutical as well as computers and electronic industry. In the services sectors, the majority of enterprises came from trade (particularly wholesale trade) and professional services (mostly business administration and consulting) as well as transport and postal services.² Around 330 enterprises, or close to 7% of the sample, came from the insurance and finance sector.

There is a high concentration of exports of business services in the broadest sense, or a *very skewed distribution of export revenues, whereby 10% of the sampled enterprises account for 76% of the total export volume recorded*. The 20 largest exporters represent around one-quarter of the total export volume in 2019. These were mainly enterprises active in transport and postal services, computers, electronic and optical, chemical, synthetic materials and pharmaceutical industry, wholesale, vehicle construction, information technology and energy supply. A high concentration in services exports was also found in a major empirical study of enterprise data for the United Kingdom (Breinlich and Criscuolo, 2011). Stehrer and Dachs (2022) also found a high concentration on a handful of enterprises in exports of goods – both in Austria and, based on comparative studies, internationally. “They showed

¹ Austrian Statistical Classification of Economic Activities.

² Since the main activity of the accommodation and food services sector (I) – travel – is not covered by the survey, data for this sector are not meaningful. Therefore, they were merged with the transport and storage (H) sector.

Table 1

Description of the 2019 sample: enterprises by industry (NACE 2008)

Section	Group/class	Industry	Number of enterprises
A–B		Agriculture, mining	13
C		Manufacturing	1,003
	10–12	Food products, beverages, tobacco products	82
	13–15	Textiles and textile products, leather and leather products	53
	16–18	Wood, paper, printing	92
	19–22	Chemicals, petroleum products, pharmaceuticals	115
	23	Nonmetallic mineral products	29
	24–25	Basic metals and fabricated metal products	189
	26–27	Computers, electronic and optical products	113
	28	Machinery and equipment	168
	29–30	Manufacture of transport equipment	56
	31–33	Other products, repair and installation	106
D–E		Electricity, water supply, waste collection and treatment	57
F		Construction	132
G		Trade	1,080
	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	69
	46	Wholesale trade, except of motor vehicles and motorcycles	877
	47	Retail trade, except of motor vehicles and motorcycles	134
H–I		Transportation and storage, accommodation and food service activities	665
	49–51	Transport (land, air, sea)	263
	52–56	Storage, postal and courier activities, accommodation and food service activities	402
J		Information and communication	572
	58	Publishing activities	76
	59–61	Film and music recording, broadcasting, telecommunications	64
	62–63	Computer programming and information service activities	432
K		Insurance, finance	326
L		Real estate activities	24
M		Professional, scientific and technical activities	732
	69	Legal and accounting activities, auditing	65
	70	Activities of head offices; management consultancy activities	313
	71	Architectural and engineering activities; technical testing and analysis	148
	72	Research and development	48
	73	Advertising and market research	126
	74–75	Other professional, scientific and technical activities	32
N		Administrative and support service activities	280
	77	Rental and leasing activities	84
	78	Employment activities	22
	79	Travel agency, tour operator; reservation service and related activities	90
	80–82	Security and investigation activities, services to buildings and other activities	84
O–U		Public and personal services	87
Other			8
Total			4,979

Source: OeNB, Statistics Austria.

that a small number of exporters account for the bulk of a country's aggregate exports."³

³ "Trade is concentrated. International trade is extremely concentrated across firms. In 2000, the top 1 percent of trading firms by value ... accounted for over 80 percent of the value of total trade, while the top 10 percent of trading firms accounted for over 95 percent ..." (Bernard et al., 2007).

Table 2

Description of 2019 sample: coverage of services exports

Type of service	Sample	Coverage
	EUR million	% of balance of payments aggregate
Manufacturing services	1,536	96.3
Maintenance and repair services n.i.e.	582	81.5
Transport	14,866	92.6
Construction	804	91.1
Insurance and pension services	546	113.6
Financial services	731	30.5
Charges for the use of intellectual property n.i.e.	1,167	91.2
Telecommunications, computer and information services	6,653	87.5
Other business services		
Research and development services	2,307	88.6
Professional and management consulting services	3,109	78.0
Technical, trade-related and other business services	8,016	87.5
Personal, cultural and recreational services	209	30.7
<i>Total</i>	<i>40,525</i>	<i>85.4</i>

Source: OeNB, Statistics Austria.

The value of exports of business services in the broadest sense covered by the 2019 sample amounts to EUR 40.5 billion. This accounts for around 85% of total volume recorded for Austria in the balance of payments statistics (table 2). The highest coverage ratio (over 90%) is achieved for manufacturing services, transport, construction and fees for the use of intellectual property (patents, licenses, franchise). A coverage ratio of more than 100% means that the data were reviewed and adjusted during the compilation of the balance of payments survey results. Cases in point are insurance services where new information from the national accounts was used to calculate the service charge, or value added through earned insurance premiums. In principle, the survey results are completed after T+2 years – until then,

enterprises may add or correct data; however, corrections with regard to national accounts data reconciliation are possible up to T+3 years. A coverage ratio of close to or below 50% of the balance of payments suggests a high degree of model-based data integration and a high share of transactions that are not directly observable. Cases in point are personal services, information on which comes from the national accounts and administrative data sources, and financial services, since financial fees may also be charged indirectly and therefore need to be supplemented with model calculations.

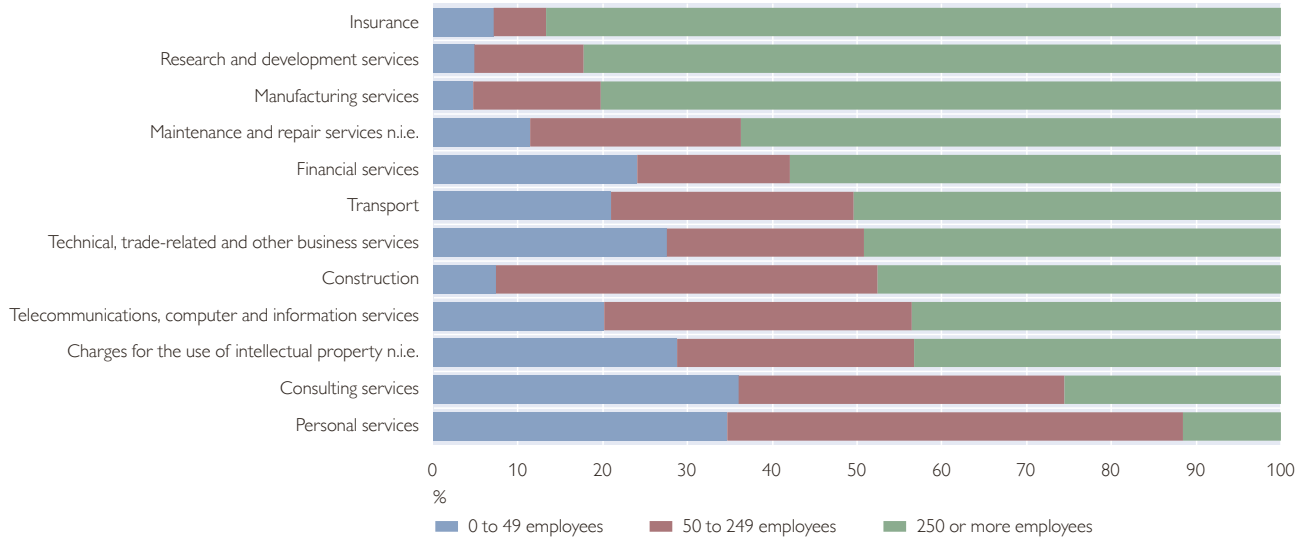
2.2 Exports of business services in the broadest sense by enterprise size

The different enterprise size classes used are: *small* (up to 49 employees), *medium* (50 to 249 employees) and *large* (250 or more employees). In 2019 in Austria, large enterprises accounted for around half of the exports of business services in the broadest sense (chart 6). Large enterprises played the most important role (80% and more) in exporting insurance services, research and development services and manufacturing services on physical inputs owned by others. However, in the observation period (since 2011), a trend has emerged of large enterprises overall losing importance to medium-sized enterprises in the area of exports of business services in the broadest sense. This is particularly evident in transport, construction and financial services. In 2019, small enterprises had a share of more than one-third in just two services sectors: exports of professional and management consulting services and exports of personal services. However, their importance has declined over time.

Eurostat’s data show major differences in the size structure of exporting enterprises among EU countries (chart 7). They also include an “unknown” category since they take into account non-linkable parts of the balance of payments, such as travel. Looking at business services in the broadest sense that can be shown per enterprise, only in Luxembourg and Estonia do small enterprises account for 50% or more of exports. Large enterprises are the main players in Denmark, Ireland, Finland and

Chart 6

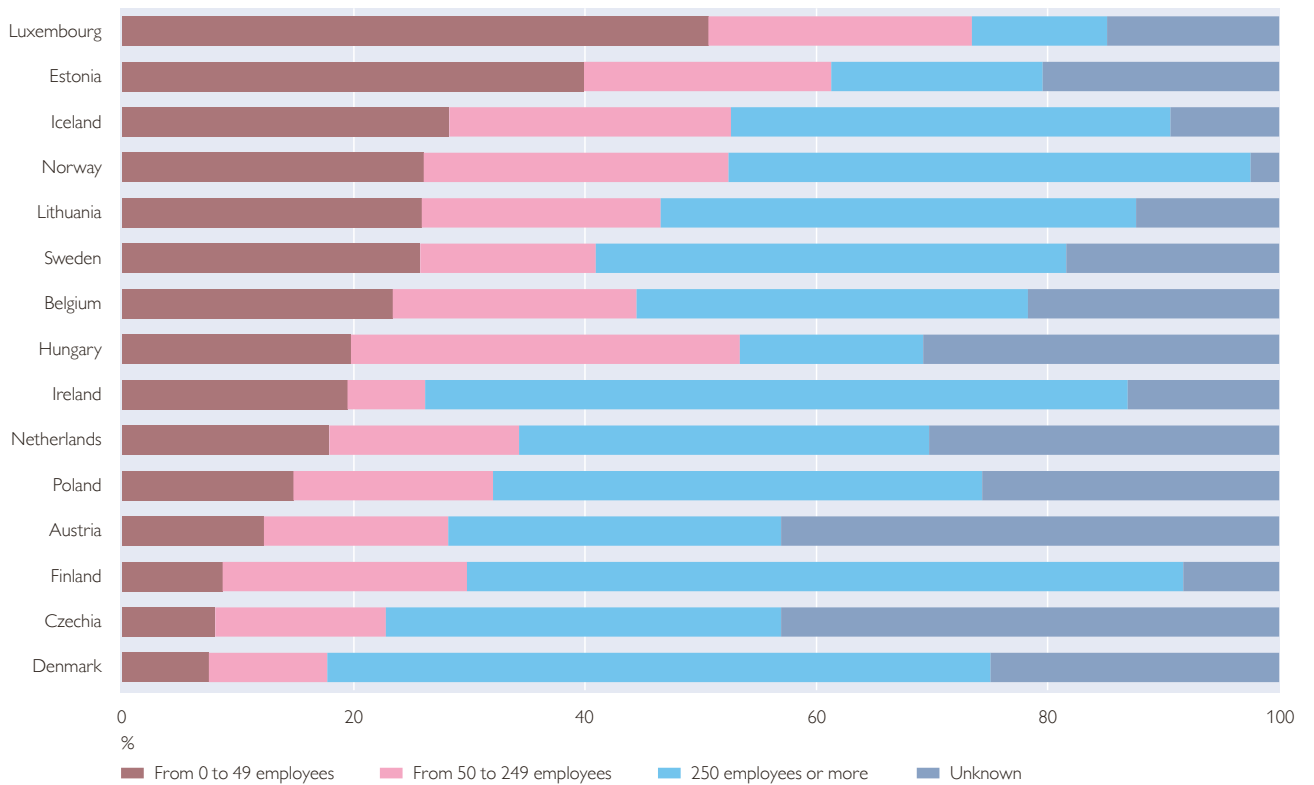
Distribution of Austria's business services exports in the broadest sense by enterprise size (number of employees) in 2019



Source: OeNB, Statistics Austria.

Chart 7

Services trade by enterprise size class and country: exports to "rest of the world" partners



Source: Eurostat (online data code: [ext_stec01])

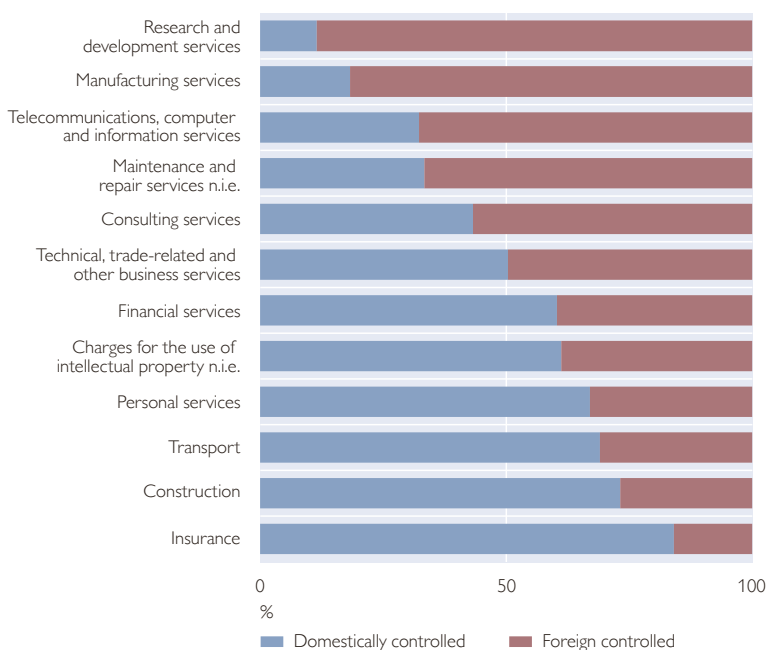
Note: Estonia, Ireland, Lithuania, Austria, Poland and Norway - 2019 data; Luxembourg, the Netherlands, Finland and Iceland - 2018 data; Denmark - 2016 data; Belgium, Hungary, Sweden - 2014 data; Czechia - 2013 data.

Poland. In Sweden, as in Austria, the ratio is 50%. Luxembourg is one of the leading exporters of business services in the broadest sense and its corporate structure is significantly shaped by the presence of international groups; it is striking how it differs from other countries in terms of both the ratio of merchandise trade to trade in services as well as in terms of corporate structure. Luxembourg's trade in services evidently reflects the high concentration of *special purpose entities (SPEs)*, which have few or no employees. As defined by the International Monetary Fund (IMF), SPEs are enterprises that have little economic presence or activity in a specific country, but have been set up there for reasons of financial optimization; they show high-volume transactions within the group, and hence internationally, through investment management or intangible assets such as patents and licenses. Among the SPEs operating in the real economy in Austria, we have not yet identified any foreign-controlled SPE belonging to an international group:

"An SPE, resident in an economy, is a formally registered and/or incorporated legal entity recognized as an institutional unit, with no or little employment up to maximum of five employees, no or little physical presence and no or little physical production in the host economy. SPEs are directly or indirectly controlled by nonresidents. SPEs are established to obtain specific advantages provided by the host jurisdiction with an objective to (i) grant its owner(s) access to capital markets or sophisticated financial services; and/or (ii) isolate owner(s) from financial risks; and/or (iii) reduce regulatory and tax burden; and/or (iv) safeguard confidentiality of their transactions and owner(s). SPEs transact almost entirely with nonresidents and a large part of their financial balance sheet typically consists of cross-border claims and liabilities" (IMF, 2020).

Chart 8

Distribution of Austria's business services exports in the broadest sense by control relationships (domestic or foreign control) in 2019



Source: OeNB, Statistics Austria.

2.3 Exports of business services in the broadest sense by control relationships

In 2019, Austria's trade in business services in the broadest sense was split roughly equally between foreign-controlled and domestically controlled enterprises (where control is defined as having at least a 50% capital share) (chart 8). The data take into account both direct control of an undertaking in Austria as well as indirect control through multiple investments or a chain of investments. Domestic providers played the biggest role (more than 50%) in exporting insurance, construction and transport services. By contrast, *foreign-controlled enterprises led the exports of research and development, manufacturing, telecommunications, computer and information services*. Overall, domestic enterprises lost their dominance in exports of business services in the broadest sense within the period under review.

Chart 9

This trend was observed in several services sectors, including manufacturing services, transport, financial services, telecommunications, computer and information services as well as technology, trade-related services and other business services.

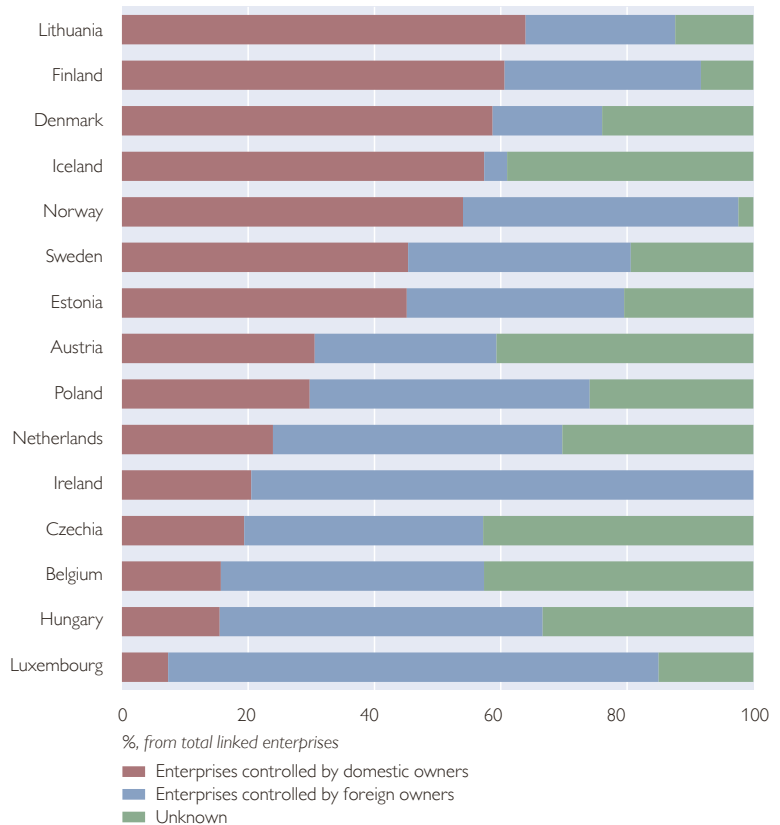
Eurostat notes that foreign control of a country's trade flows should be interpreted as a positive indicator of integration in international markets and in the global value chains (Eurostat, 2022). This positive assessment must be qualified, however, as services flows (e.g. charges for the use of intellectual property) from groups may be channeled through SPEs that have no productive activity in the country and have mostly been set up there due to taxation and financial law considerations. *Foreign-controlled enterprises dominate (i.e. account for more than 50% of) services exports in Luxembourg and Ireland, Belgium and the Netherlands as well as Hungary, Czechia and Poland. In contrast, the leading exporters of business services in the broadest sense in Denmark, Lithuania, Finland and Sweden are domestically controlled enterprises (chart 9).*

What is the distribution of trade in business services between the different enterprise forms in Austria according to their degree of internationalization?

To assess this, enterprises reporting exports of business services in the broadest sense in Austria are divided – according to their foreign control and their outward FDI – into (1) domestic enterprises, (2) domestic enterprises with foreign direct investment, (3) foreign-controlled enterprises and (4) foreign-controlled enterprises with outward FDI, i.e. enterprises with an economic *hub function* in Austria. An investment held or a direct foreign investment made means that a domestic enterprise holds at least a 10% share in an enterprise abroad. The investment can be direct or indirect, through multiple corporate relationships. Sister company relationships between enterprises that belong to the same direct investor but that do not exert control or influence on each other are not considered.

In Austria, the majority of services exporters (55%) in 2019 were purely domestic enterprises, without direct foreign investments or foreign control (table 3). Around 40% were enterprises that were foreign-controlled, but without having outward FDI themselves. There were few domestic exporters of business services in the broadest sense that had foreign direct investments, or enterprises that were part of multinational groups being foreign-controlled and with outward FDI.

Services exports to "rest of the world" partners by control relationships and country



Source: Eurostat (online data code: [ext_stec03])

Note: Estonia, Ireland, Lithuania, Austria, Poland and Norway - 2019 data; Luxembourg, the Netherlands, Finland and Iceland - 2018 data; Denmark - 2016 data; Belgium, Hungary, Sweden - 2014 data; Czechia - 2013 data.

Table 3

Distribution of services exporters and exports by control relationships, 2019

		Share of enterprises	Share of services exports	Average services exports	Share of enterprises	Share of services exports	Average services exports
		%	%	EUR million	%	%	EUR million
		Foreign affiliates (outward FDI)					
		No			Yes		
Foreign control (> 50%)	No	55.1	45.4	6.7	3.4	5.2	12.6
	Yes	38.8	42.1	8.8	2.8	7.3	21.4

Source: OeNB, Statistics Austria.

However, looking at the distribution of services exports by enterprise type, foreign-controlled enterprises are roughly as important as domestic enterprises (42% against 45%). The picture changes significantly when analyzing the average export of business services in the broadest sense in the individual enterprise types. This is because enterprises that are part of multinational groups and have an economic hub function in Austria are among the key exporters. Their average services export revenue in 2019 was EUR 21.4 million. This is more than three times as much as the average revenue of purely domestic enterprises, which come last in this assessment. Average exports from domestic enterprises with outward direct foreign investment amounted to EUR 12.6 million in 2019, followed by foreign-controlled enterprises, with around EUR 9 million. *The conclusion can therefore be drawn that the importance of exports of business services in the broadest sense is significantly higher for value added by foreign-affiliated enterprises, especially as part of multinational groups or with outward direct investments, than for purely domestic enterprises.*⁴

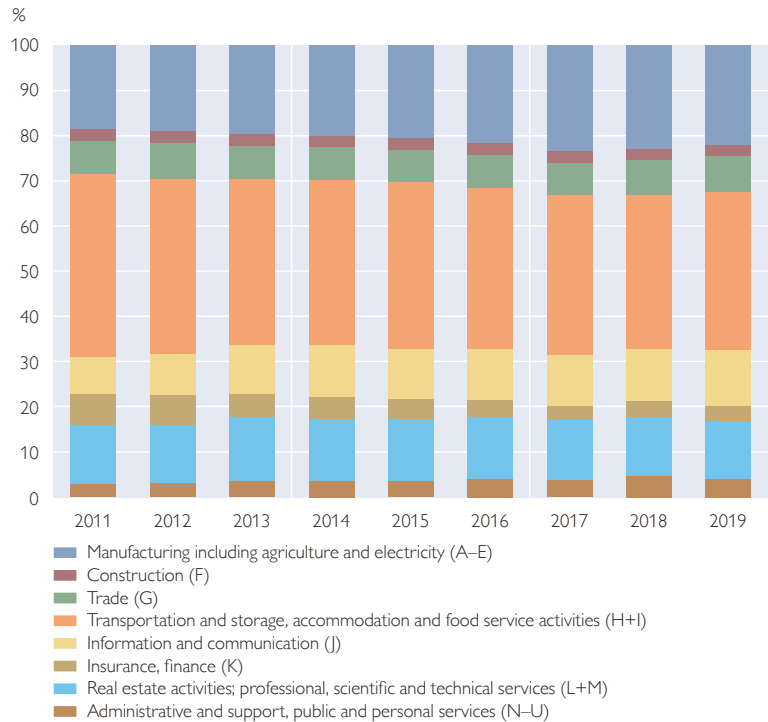
2.4 Exports of business services in the broadest sense by economic sector

The key insight from one analysis of enterprise data on trade in services is that services are being exported not only by firms classified as service firms, but by firms from all industries (Kelle and Kleinert, 2010). The providers of economic services – retail/wholesale industry, transport and storage, accommodation and food services, information and communication, financial and insurance services, real estate, professional, scientific and technical activities as well as administrative and support service activities – accounted for the bulk (around 75%) of the exports of business services in the broadest sense in 2019. Broken down by sector, the transport sector was the dominant exporter of business services in the broadest sense (35%, chart 10). However, its importance has been sustainably declining over time. *By contrast, there has been an increase in the importance of services exported by the manufacturing sector (20%).* This suggests a connection between the value

⁴ In addition to enterprise type, it must be borne in mind that enterprises that have an economic hub function in Austria – foreign-controlled and with outward direct investments – are on average around three and a half times larger than domestic enterprises (measured by the average number of employees). Enterprises with foreign direct investments are two and a half times as large.

added of goods and services in external trade, in particular with regard to customer-specific offerings, customer loyalty beyond the lifecycle of the goods and the achievement of a specialized market position, which improve competitiveness and price-setting opportunities. In addition, Austria is a highly industrialized country at the top of international value chains. This tends to mean outsourcing simpler production steps abroad while enhancing goods production domestically using specialized know-how. By the same token, this means that enhancing goods production which requires a high degree of know-how tends to take place domestically. Within the services trade by goods manufacturers, the chemical and pharmaceutical industry had the highest share and recorded the strongest growth, followed by computers and electronic as well as machinery and equipment. In the last two years of the observation period, the importance of the manufacturing sector for the services exports has somewhat declined, however, owing to the increasing significance of information technology and retail/wholesale trade. The large group of professional, scientific and technical service providers maintained a stable share in Austria’s export revenues (13%); exporters of information and communication services have been steadily closing the gap. In the long term, the importance of the financial sector in cross-border trade in services has been decreasing.

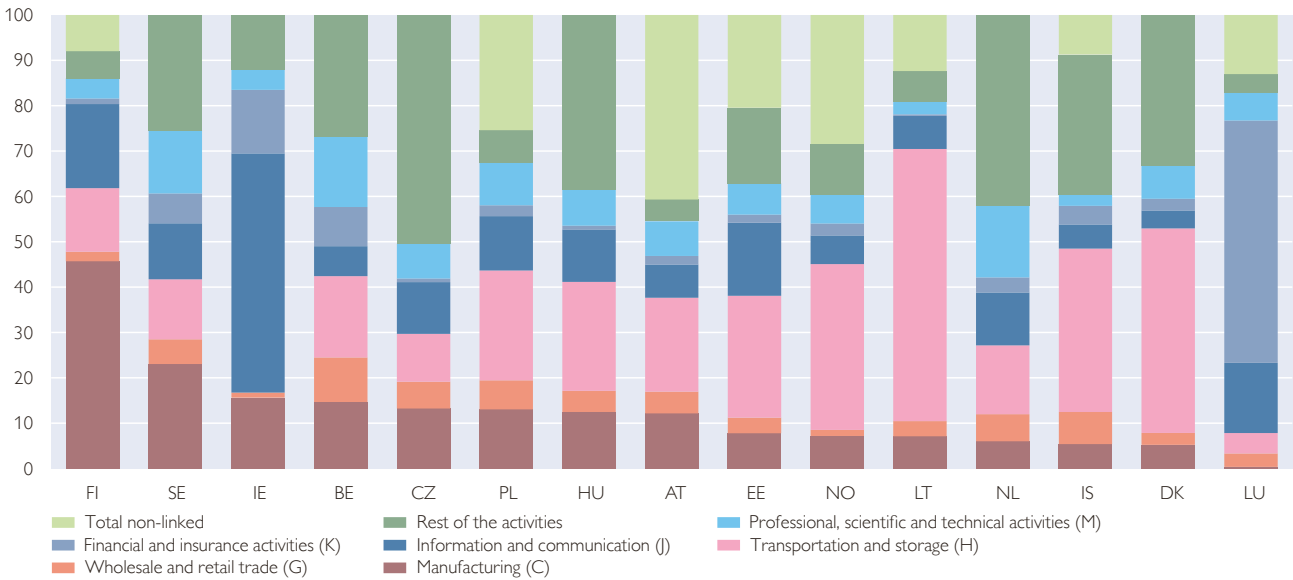
Distribution of Austria’s business services exports in the broadest sense by industry (NACE 2008) in 2019



Source: OeNB, Statistics Austria.

Services exports by economic activity of the enterprise to "rest of the world" partners

%, from total linked enterprises



Source: Eurostat (online data code: [ext_stec03])

Note: Estonia, Ireland, Lithuania, Austria, Poland and Norway - 2019 data; Luxembourg, the Netherlands, Finland and Iceland - 2018 data; Denmark - 2016 data; Belgium, Hungary, Sweden - 2014 data; Czechia - 2013 data.

According to Eurostat’s data, *the manufacturing sector has the largest share in the exports of business services in the broadest sense in Finland and Sweden. The transport sector is dominant in Denmark and the Eastern European countries (Poland, Hungary, Estonia, Lithuania) while the information sector accounts for most of Ireland’s export revenues, and the financial sector for most of Luxembourg’s export revenues (chart 11).*

3 Services exports and merchandise trade

In the context of developing Statistics on Services Trade by Enterprise Characteristics (STEC), *microdata linking* has evidenced the relevance of the manufacturing industry for exporting business services in the broadest sense – that is, for Austria, but even more so for its peer countries like Finland and Sweden (see section 2). It thus makes sense to take a closer look at the relationship between merchandise trade and services exports. As a population proxy for the analysis of Austria’s foreign trade as a whole, we use the companies surveyed for the compilation of structural business statistics for 2019. This annual survey elicits primary data from around 35,300 enterprises (legal entities) (Statistics Austria, 2022). The data reported in 2019 were representative of around 75% of payroll employment and 87% of sales revenues in Austria. To be able to cover also companies below the reporting thresholds, missing data were modeled using register and administrative microdata. Thus, we arrived at a population of 359,660 legal entities doing business in Austria in 2019. Restricting the sample to firms with active company register numbers narrowed the sample for our review to around 283,360 entities. We then linked this sample to the corresponding merchandise trade statistics and the enterprise survey on trade in services. Our data on merchandise trade with non-EU countries build on customs duty declarations (EXTRASTAT). Data on merchandise trade with other EU countries are collected directly via the EU-wide INTRASTAT statistical survey from around 13,200 respondents with a trade value of EUR 750,000 or more for commodities exported to or imported from other EU member states, thus covering around 97% of all merchandise exports (Statistics Austria, 2021). Again, the amount and value of intra-EU trade below the reporting threshold is proxied, based on data from firms’ advance VAT returns. Using balance of payments data on trade in goods, which reflect the economic transfer of ownership between domestic and foreign entities, was not an option as the corresponding datasets are incomplete at the micro (firm) level. Instead, we use merchandise statistics as reported as a proxy for goods exports. Linking these data with data from the enterprise survey on trade in services inherently produces some inconsistencies and double-counting, in particular with regard to goods traded for processing abroad, as such transactions are recorded as imports and exports of goods in the merchandise trade statistics and as exports and imports of contract processing services in the enterprise survey on trade in services.

The dataset linked to the 2019 structural business statistics shows that *the vast majority of Austrian companies* – around 95% – *do not export any merchandise or business services in the broadest sense* (table 4). Only 4.6% of companies actually export merchandise. This is very much in line with a conclusion from one of the fundamental empirical studies, based on US microdata, on the role of enterprises in international trade in goods: “Exporting is a relatively rare firm activity. . . ., just 4 percent engaged in exporting” (Bernard et al., 2007). In Austria, the share of companies that export business services in the broadest sense or that export merchandise *and* services is even lower, namely 0.8% and 0.6%, respectively. From the available data – based on NACE 5-digit sectors – we know that more than 10% of the firms that did not report any export business in 2019 were in the leasing and rentals business or providers of business administration services. Restaurants and hotels are also among the industries with hardly any export business. In a tourist destination like Austria, this is, however, a statistical artifact, as the data on travel are not compiled through enterprise surveys but with a hybrid compilation framework that

includes macroeconomic estimations. It is intuitively understandable that retail establishments,¹ real estate-related enterprises and personal service providers (such as hairdressing and cosmetics salons or astrologists and dating agencies) as well as utility providers, plumbers and concierges would focus on providing their services within the country in which they have set up their business. But other enterprises that do not participate in exporting belong to sectors which typically provide business services in the narrower sense, such as advertising agencies, engineering and architecture offices, auditors and IT providers. *Typically, service providers without any international business are small enterprises with up to 49 employees.*² The market access restrictions described above constitute export barriers especially for small enterprises, as outlined by the OECD (2017): “...complex and restrictive regulatory environments limit the volume of services that firms are able to trade as well as the number of firms that engage with those markets... Such barriers do not affect all firms equally. Restrictive services trade regulations disproportionately discourage SMEs.” Moreover, the cost of meeting regulatory requirements is lower for firms that offer a range of services on top of exporting goods than for services-only exporters.

The total sales revenues of Austrian companies are best derived from the structural business statistics. When we break down the sales revenue data by company category, depending on whether companies export merchandise and/or business services in the broadest sense, we get a very different perspective on the relevance of external trade in 2019 (chart 12). *Enterprises with no export business accounted only for around 30% of total sales revenues.* Of the remaining 70% of sales revenues, more than half were attributable to enterprises that exported both, merchandise and services. These enterprises accounted for 65% of total merchandise export revenues and 58% of export revenues from business services in the broadest sense.³ If

Table 4

Distribution of services exporters among Austrian enterprises according to the 2019 structural business statistics

		Goods exports	
		No	Yes
		%	
Business services exports in the broadest sense	No	94.0	4.6
	Yes	0.8	0.6

Source: OeNB, Statistics Austria.

we go back in time about one decade, we see that Austria's participation in external trade and its importance for total sales has generally been very stable: According to the structural business statistics for 2011, 92% of firms were exporting neither merchandise nor business services. These companies were generating only around 28% of total sales revenues. At the same time, however, the share of companies exporting merchandise *and* services in total merchandise exports increased significantly

¹ There is no business survey on the ancillary expenditure of foreign tourists in Austria, such as the money they spent in retail establishments.

² Empirical studies for the United Kingdom also found that service exporters are larger enterprises than non-exporters (Breinlich and Criscuolo, 2011). Based on OeNB corporate data on Austrian trade in services, Wolfmayr et al. (2013) concluded that: “...service export participation is very low and highly concentrated among a few firms and that service exporters are on average larger... than non-exporters.” With regard to international studies on exports of goods, “comparisons of exporters with non-exporters typically revealed that firms engaged in exporting are larger in terms of output and employment” (Stehrer and Dachs, 2022).

³ Regarding services exports, the share of the manufacturing industry in exports of business services in the broadest sense is significantly higher than established in section 2, because goods are not exported by manufacturers alone but by service providers as well.

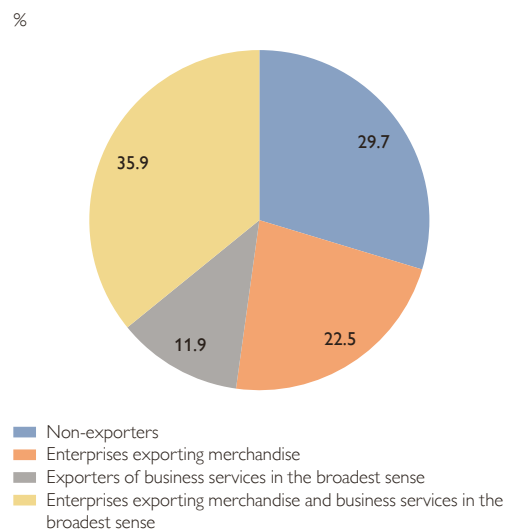
over the period under review, namely by close to 20 percentage points. In other words, this is an indication that the share of services in merchandise trade is apparently becoming increasingly relevant.⁴

Having addressed the question of how large the group of exporters is that export goods as well as services and how important they are for total sales generated in Austria, let us turn to the question if services-only exporters export other types of services than firms that export both goods and services. The latter question relates to Austria's major services sectors as outlined in section 1 for Austria as a whole, clustered by the connection with merchandise trade as well as the implicit technology and knowledge intensity of services (chart 13). The results are straightforward: *While services-only exporters tend to be concentrated in the transport business, companies that export both merchandise and services lean toward technology.*

More than half of the export revenues from services-only exports come from the transport business (just under 53%), mainly from road freight transport, and only 18% from technology-intensive services, with IT services (consulting, support, maintenance) accounting for the largest share. Among enterprises that provide cross-border business services as an add-on to merchandise exports, the highest degree of concentration is in the field of technology-intensive knowledge transfers (close to 45%). Apart from IT services, exporters above all provide engineering services (planning, construction, assembly and maintenance of machinery and equipment). Among merchandise exporters, goods-related services by definition (wage processing, repair) account for a higher share of services provided, but other or traditional business services are also more important than among services-only exporters. This is a pattern we find not only in construction, which is by definition goods-based, but also in trade-related services and intra-group settlements. In comparison, business advisory services and in particular insurance and financial services account for a comparatively higher share of services among services-only exporters.

Chart 12

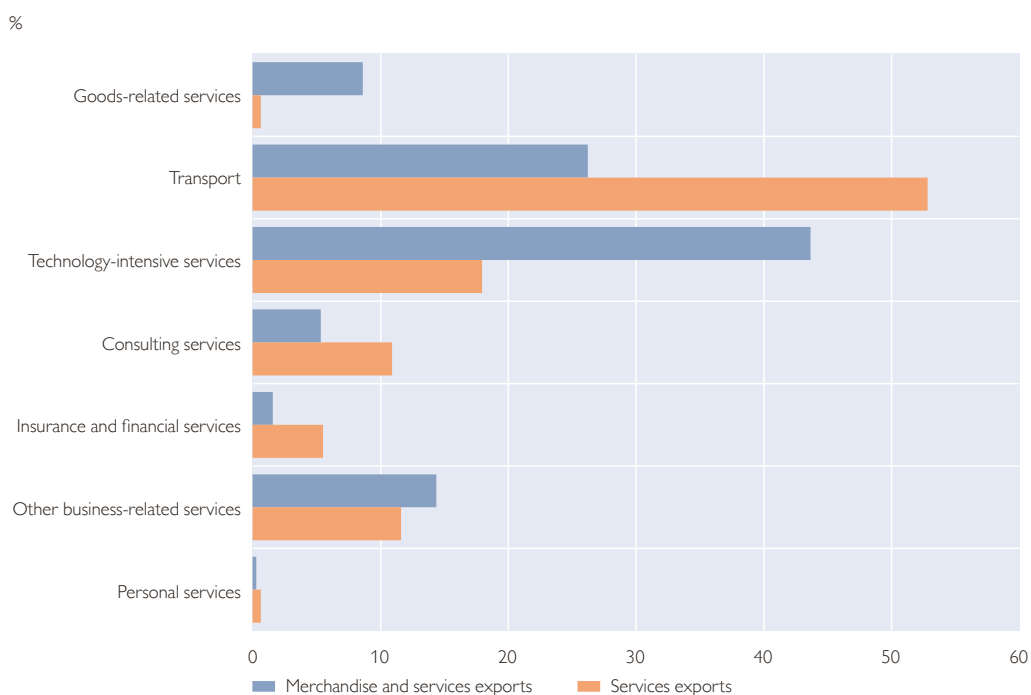
Distribution of sales revenue among Austrian enterprises according to the 2019 structural business statistics survey



Source: OeNB, Statistics Austria.

⁴ To some extent, the rising importance of services in merchandise trade can also be explained with a statistical artifact, namely the introduction of the Sixth Balance of Payments Manual by the IMF. Accordingly, the provision of contract processing services for goods owned by other entities has been included in the figures for trade in services since the 2013 reporting year.

Composition of business services exports in the broadest sense as related to merchandise trade in 2019



Source: OeNB, Statistics Austria.

To enhance the understanding of trade flows, we also looked into the geographical reach of exports and potential regional differences between services-only exporters and exporters of merchandise and services. In 2019, around 2,710 enterprises, or slightly more than half of the enterprises in the survey sample, exported just business services in the broadest sense. Some enterprises (17 companies, i.e. less than 1%) were exporting to 100 countries or more. The company with the largest geographical reach exported to as many as 179 countries. By contrast, around 290 enterprises, or around 11%, targeted a single country. On average, firms served 16 export markets. The providers with the largest numbers of export markets were mainly credit institutions, travel agents and IT services providers (software, data processing, hosting and web portals). Slightly less than half of the firms in the sample, i.e. 2,197, were exporters of business services in the broadest sense as well as merchandise exporters. Again, around 1% of these firms were exporting to 100 countries or more. This segment included, in particular, manufacturers of data processing devices, electronics and optics, beverage producers but also services sector enterprises (postal and transport services, credit institutions, telecommunications). One company had export relations with as many as 219 countries. Only around 5% of exporting enterprises did business with just one other country. On average, exporting companies served 18 different export markets each.

Looking at the geographical reach in terms of the number of trading partners, we did not find significant differences between firms that supply only business services in the broadest sense and firms that export merchandise as well. Next, let us

compare exports to other EU countries and exports to non-EU countries. In 2019, services exporters that do not trade goods received the bulk of their export revenues, i.e. around 76%, from the other 26 EU countries. Compared with the regional distribution of all exports of business services in the broadest sense from Austria (section 1), this is a disproportionately high degree of concentration. Most exports going beyond EU-27 borders (around 68%) went to European countries, especially the United Kingdom, which was legally still a member of the EU during the observation period. By contrast, the EU played a significantly lesser role for “holistic providers”: Austrian exporters of services *and* merchandise generated 63% of their services revenues within EU-27 borders. Likewise, a smaller share of the exports went to other European countries outside the EU (around 57%), in particular to the EFTA countries, above all Switzerland. Furthermore, the data show that *both overseas markets and emerging market economies in particular play a greater role for exporters of merchandise and services than for services-only exporters.*

Finally, how high is the share of exports of business services in the broadest sense for the various sectors of the economy, in the manufacturing industry and the services industry (table 5)? Based on the proxied population underlying the 2019 structural business statistics, the average export quota as an indicator for the export intensity of services in the manufacturing industry accounted for 4% of total sales revenues. *The highest export quota of services was recorded in the area of electrical, electronics and optical equipment as well as repairs (more than 7%), followed by the machinery industry and the chemical-pharmaceutical industry (around 6%).* When we look at weighting in external trade, i.e. at the ratio of services exports to merchandise exports, we find the high propensity to provide services in these sectors largely confirmed, especially in repairs (around 28%). Besides, glass and stone manufacturers also have a high export share of business-related services (around 11%). However, in Austria’s major export sectors, machinery and transport equipment in particular, the share of services exports in total external trade continues to remain below 10%.

In the services sectors, the average export quota was highest in R&D (around 38%), followed by transport and postal services (around 33%) and IT (around 28%). Conversely, in the group of professional, scientific and technical service providers, legal and economic consultants as well as architects and engineers stand out with a low propensity to trade abroad. The low export share in the insurance and financial sector can mainly be explained in terms of the modes of supply (see introduction), namely the importance of a commercial presence abroad (mode 3), rather than cross-border trade in services (modes 1, 2 and 4) in these sectors.

Over the roughly ten years we selected as our observation period, the average export quota of business-related services in the broadest sense almost doubled in the manufacturing industry. The increase runs across all sectors but was strongest in the chemical-pharmaceutical industry. The ratio of services exports to merchandise exports reflects rising demand for nontradables, specifically for chemicals and pharmaceuticals, repairs as well as glass and stone manufacturing. In the services sector, increases in the share of exports were highest in the IT area (the share of exports in total sales revenues increased by 13 percentage points on average) and in transport and postal services. By contrast, the export intensity of R&D has decreased significantly (–11 percentage points).

Table 5

Export ratio and services ratio of business services, 2019

NACE 2008 industries		Export ratio	Services ratio
		% of sales revenue	Relation of services exports to goods exports, %
<i>Manufacturing of goods</i>			
C	Food products, beverages, tobacco products	4.0	8.1
10–12	Textiles and textile products, leather and leather products	0.6	1.9
13–15	Wood, paper, printing	1.8	2.5
16–18	Chemicals, petroleum products, pharmaceuticals	1.6	3.4
19–22	Nonmetallic mineral products	5.5	11.7
23	Basic metals and fabricated metal products	2.2	10.7
24–25	Computers, electronic and optical products	2.1	3.6
26–27	Machinery and equipment	7.5	14.1
28	Manufacture of transport equipment	5.9	9.4
29–30	Other products, repair and installation	3.6	6.5
31–33	Other goods, repair	7.2	27.6
<i>Services</i>			
G	Wholesale and retail trade and repair of motor vehicles and motorcycles	1.2	
H–I	Transportation and storage, accommodation and food service activities	32.6	
49–51	Transport (land, air, sea)	26.5	
52–56	Storage, postal and courier activities, accommodation and food service activities	38.3	
J	Information and communication	19.5	
58	Publishing	8.4	
59–61	Film and music recording, broadcasting, telecommunications	8.4	
62–63	Computer programming and information service activities	27.7	
K	Insurance, finance	2.6	
L	Real estate activities	0.3	
M	Professional, scientific and technical activities	14.8	
69	Legal and accounting activities; auditing	7.2	
70	Activities of head offices; management consultancy activities	18.7	
71	Architectural and engineering activities; technical testing and analysis	7.1	
72	Research and development	37.7	
73	Advertising and market research	12.0	
74–75	Other professional, scientific and technical activities	16.4	
N	Administrative and support service activities	4.6	
77	Rental and leasing activities	6.9	
78	Employment activities	1.0	
79	Travel agency, tour operator, reservation service and related activities	4.3	
80–82	Security and investigation activities, services to buildings and other activities	4.9	

Source: OeNB, Statistics Austria.

4 Panel analysis

Sections 1 to 3 described the development of exports of business services in the broadest sense from Austria, with reference to available firm characteristics that may serve as explanatory factors. These factors include (1) the principal activity of exporting enterprises (according to NACE 2008 classification in Austria), (2) company size (average number of employees per year), (3) cross-border control relationships (domestic vs. foreign control, determined by a capital share of at least 50%), (4) cross-border direct investment relationships (outward FDI) and (5) participation in merchandise trade. We were able to enhance these variables with annual sales data from the structural business statistics. To round off the study, we ran a linear regression analysis to determine the explanatory influence of said variables on exports of services. To this effect, we performed a panel data analysis, or longitudinal study, of all enterprises that reported services exports within the observation period from 2011 to 2019. The panel is balanced, i.e. it contains data points for all of the above variables in all years of observation. Apart from excluding any enterprises that did not report business services in the broadest sense in the period under review, the dataset is restricted to firms with company register numbers through which primary data can be linked. Due to the heavily skewed distribution of the cardinal or metric measures we use as explanatory and dependent variables, we logarithmized them (exports of services, employees, exports of goods). To model the three explanatory variables principal economic activity,¹ foreign control and outward FDI we used dichotomous dummy variables (1/0 and yes/no). All in all, the dataset consists of 80,955 observations for nine variables, including 8,995 expressions for the company register number variable and nine different expressions for the year variable. We analyze whether company size, the area of principal economic activity, merchandise trade and foreign enterprise relations (foreign control and outward FDI) have any effects on exports of business services in the broadest sense and how strong these effects are.

The panel data can be written as follows:

$$(X_{it}, Y_{it}), i=1, \dots, n \text{ and } t=1, \dots, T, \quad (1)$$

where the index i refers to the entities under review and t to the time period, i.e. the given year. We have observations on n entities in $T \geq 2$ time periods.²

Before addressing the results of the regression, let us consider export status information: *How many enterprises are into exporting for the long haul*, so that exports of business services can be observed in all years? In the panel, this is the case for around 20% of enterprises, which means that the continuity of exports is very low: Over the entire observation period from 2011 to 2019, less than a quarter of enterprises kept exporting business services in the broadest sense year upon year. Possible explanations include the time constraints of projects and the statistical constraints of cut-off sampling, where some enterprises will remain below the reporting threshold. Alternatively, the export status may also be expressed as the average number of firms that continued to export in the following year, i.e. that were

¹ We distinguish between private sector service providers and other entities. Service providers include enterprises in NACE sectors G (trade), H (transportation and storage), I (accommodation, food and beverages), J (information and communication), K (financial and insurance services), L (real estate), M (free-lance professional, scientific and technical services) and N (other business services).

² The analysis follows the methods described in Hanck et al. (2021).

exporters in both T and $T+1$. From this perspective, the export status rises to around 41% of all enterprises in the panel. The data also show that the rate of sample entry (48%) of enterprises that did not report any exports in $T-1$ is slightly higher than the corresponding rate of sample exit (41%). 2013 is a statistical outlier marking a major methodological shift in the business survey, that is the switch to the Sixth Edition of the IMF Balance of Payments Manual, and further the adoption of VIES (Value Added Information Exchange System) to establish the scope of respondents for exports as well as imports. Adjusted for 2013, the annual rates of sample entry and exit are broadly aligned.

To derive the drivers of exports of business services in the broadest sense from the panel data, we start the regression analysis with a simple linear regression model.

$$Y_i = \beta_0 + \beta_1 X_i + u_i, \quad i=1, \dots, n \quad (2)$$

where Y_i represents the dependent variable (regressant) and X_i represents the independent variable (regressor) and where u_i is the error term. Furthermore, we divided the panel into two subgroups, one relating to 2011 and one relating to 2019. First, the link between services exports and merchandise exports is tested at the start and at the end of the observation period. We thus arrive at the following regression function estimations:

$$\text{exports of services} = 4.70 + 0.39 \times \text{merchandise exports} \quad (\text{data for 2011}) \\ (0.08) \quad (0.01) \quad (3)$$

$$\text{exports of services} = 5.22 + 0.42 \times \text{merchandise exports} \quad (\text{data for 2019}) \\ (0.08) \quad (0.01)$$

We find a positive and slightly increasing relationship between the two variables, with the coefficient rising from 0.39 to 0.42: In 2019, a 10% increase in merchandise exports increased exports of services by 4.2%. The F-stat and p-values were found to be significant (<0.05). Although R^2 also increases from 2011 to 2019, it remains low (0.15) as an indicator of the share of the explained variance in the total variance of exports of services.

What about the effect of foreign control of exporting companies? Again, we perform a linear regression to estimate regression functions for the two observation periods:

$$\text{exports of services} = 4.67 + 6.27 \times \text{foreign control} \quad (\text{data for 2011}) \\ (0.08) \quad (0.16) \quad (4)$$

$$\text{exports of services} = 5.04 + 7.56 \times \text{foreign control} \quad (\text{data for 2019}) \\ (0.08) \quad (0.14)$$

The estimated coefficient of the independent variable, or the positive relationship between exports of services and foreign control, is several times higher than

for exports of goods, and it likewise increases between the two observation periods. Although R^2 also increases in the regression equation with foreign control (namely to 0.19 in 2019), its explanatory quality remains small. Therefore, we extend the model to a multiple regression, to integrate previously unobserved factors (covariates such as sales or employees).

Before moving on to the results of this analysis, let us cross-check the impact of merchandise exports and foreign control determined with the simple linear regression based on the panel data for two time periods (“before and after” comparison). In this case, $T = 2$ with $t = 2011, 2019$. The regression equations are:

$$\begin{aligned} \text{exports of services}_{it} &= \beta_0 + \beta_1 \text{merchandise exports}_{it} + \beta_2 Z_i + u_{it} \\ \text{exports of services}_{it} &= \beta_0 + \beta_1 \text{foreign control}_{it} + \beta_2 Z_i + u_{it} \end{aligned} \quad (5)$$

where Z_i represents firm-specific characteristics that differ across entities but remain constant over time (e.g. headquarters). We can eliminate Z_i by regressing the difference in exports of services between 2011 and 2019 on the difference in merchandise exports and foreign control, respectively, between the two periods. We then generate an estimate for β_1 , which is robust to a possible bias due to the omission of Z_i , because the model framework rules out the possibility of such an influence. We thus obtain the following regression equations:

$$\begin{aligned} & \text{exports of services}_{i2019} - \text{exports of services}_{i2011} \\ &= \beta_1 (\text{merchandise exports}_{i2019} - \text{merchandise exports}_{i2011}) + u_{i2019} - u_{i2011} \\ & \text{exports of services}_{i2019} - \text{exports of services}_{i2011} \\ &= \beta_1 (\text{foreign control}_{i2019} - \text{foreign control}_{i2011}) + u_{i2019} - u_{i2011} \end{aligned} \quad (6)$$

As a result, we arrive at the following regression function estimates:

$$\begin{aligned} \text{exports of services}_{i2019} - \text{exports of services}_{i2011} &= 0.67 + 0.37 x (\text{merchandise exports}_{i2019} - \\ & \quad \text{merchandise exports}_{i2011}) \end{aligned} \quad (7)$$

(0.10) (0.01)

$$\begin{aligned} \text{exports of services}_{i2019} - \text{exports of services}_{i2011} &= 0.63 + 7.10 x (\text{foreign control}_{i2019} - \\ & \quad \text{foreign control}_{i2011}) \end{aligned}$$

(0.10) (0.16)

The results confirm the interpretation of the simple linear regression: When merchandise exports rise by 10% from 2011 to 2019, exports of services increase by 3.7% in tandem. And a 10% rise in the foreign control of exporting enterprises in Austria drives up exports of services by 71%. This seems very high, even though we know from the descriptive analysis that direct investment relationships across borders are of great importance for the export of business services.

Next, we move on to estimate a multiple regression including the other independent variables – principal economic activity, number of employees, sales, outward FDI. The regression equation is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + u_i, i=1, \dots, n \quad (8)$$

We thus estimate the effect of a change in regressor X_{li} on Y_i , with the other regressors $X_{2i}, X_{3i}, \dots, X_{ki}$ remaining unchanged. The error term u_i captures disruptive influences on the dependent variable that cannot be observed as an explanatory variable. The estimated regression functions for the two observation periods 2011 and 2019 are as follows (isolated, without error term):

$$\begin{aligned} \text{exports of services} &= 0.64 + 3.10 \times \text{industry} + 0.30 \times \text{employees} + 0.44 \times \text{sales} \\ &\quad - 0.07 \times \text{merchandise exports} + 1.71 \times \text{outward FDI} + 0.38 \times \text{foreign control} \\ &\quad (\text{data for 2011}) \end{aligned} \quad (9)$$

$$\begin{aligned} \text{exports of services} &= 0.65 + 3.32 \times \text{industry} + 0.60 \times \text{employees} + 0.40 \times \text{sales} \\ &\quad - 0.06 \times \text{merchandise exports} + 2.06 \times \text{outward FDI} + 0.83 \times \text{foreign control} \\ &\quad (\text{data for 2019}) \end{aligned}$$

When we include the remaining independent variables in the analysis, R^2 adjusted (adjusted for the number of predictor variables) as a measure of the model quality increases to 0.61 (2011) and 0.67 (2019), respectively. The p-values of the T-statistic show that, unlike the other explanatory variables, the two preselected variables – merchandise exports and foreign control – do not have a significant impact on exports of services as a dependent variable (the beta coefficients of the two independent variables do not differ significantly from zero.) The sign of the estimate of the coefficient for merchandise exports changes in the multiple regression when the model is expanded to include the other independent variables. One possible explanation is that it is not merchandise exports that drive the export of business services in the broadest sense, but that it is actually the supply of accompanying services that is instrumental for the amount or value of goods exported. This would also be consistent with the theoretical assumptions we made above about the importance of services, not only in modes of supply 1 to 4, but also as intermediate inputs in merchandise trade, mode 5. Rather, being a service provider and an outward FDI investor, in particular, has a significant positive influence on the level of services exports. The importance of the service industries even increases during the observation period. This effect echoes the descriptive analysis, namely the growing importance of information technology in Austrian exports of services, which dampened the expansion of the share of the manufacturing goods industry in the data at the current edge. The influence of outward direct investment relationships also increased during the observation period. A 10% increase of outward FDI leads to a 21% increase in exports of services on the basis of data for 2019.

In a next step, we apply a *fixed-effects* model to the panel data, which can be written as follows:

$$Y_{it} = \beta_1 X_{1,it} + \dots + \beta_k X_{k,it} + \alpha_i + u_{it} \quad (10)$$

where $i = 1, \dots, n$ and $t = 1, \dots, T$. α_i are entity-specific intercepts that capture the unobserved time-invariant heterogeneity across entities. Using panel data for the period from 2011 to 2019, we estimate the regression equation as follows:

$$\text{exports of services}_{it} = \beta_1 \text{outward FDI} + \text{unit-fixed effects} + u_{it} \quad (11)$$

with 8,800 binary regressors, one for each company register number.³ This will provide:

$$\text{exports of services}_{it} = 7.10 \times \text{outward FDI} + \text{unit-fixed effects}. \quad (12)$$

(0.15)

The calculated coefficient is positive and significant. It follows that an increase of 10% in outward FDI over the sample period implies an estimated 70% increase in exports of services, which is exceptionally high. Time-fixed effects will therefore be introduced as well in the next step. The combined model allows controlling both for a bias due to unobservable effects that change over time but are constant across entities, as well as for factors that differ between entities but are constant over time. The corresponding regression equation is:

$$\text{exports of services}_{it} = 7.10 \times \text{outward FDI} + \text{unit-fixed effects} + \text{time-fixed effects} \quad (13)$$

(0.15)

The result is the same as that with a regression with unit-fixed effects alone. We can therefore conclude that the estimated (panel-based) relationship between exports of services and outward FDI is not distorted by factors that are constant over time and are not observed.

Still, the result is not satisfactory as it shows an exceptionally high impact of outward FDI on exports of services. Last but not least, we therefore add all panel variables (covariates) that had tested as significant in the multiple regression into the analysis, one by one, ultimately estimating six regression equations (including the company register number and the period of time). The results are summarized in table 6.⁴

The estimation results in columns 2 and 3 were obtained by applying the unit- and time-fixed regression models to the independent variable representing outward FDI. The results in column 1 were obtained by running a simple linear panel regression of services exports on outward FDI without fixed effects. The resulting

³ The regression was run using the function *plm* from the R package named *plm*. To this end, a vector was introduced with the company register numbers of the units examined and the periods analyzed.

⁴ Explanations of the naming of variables in the dataset: *Total CRln* = logarithmized exports of business services in the broadest sense; *Aktivdum* = outward FDI as a dummy variable; *NACEdum* = industry/economic sector based on the national version of NACE 2008 as a dummy variable; *Beln* = logarithmized average number of employees; *UMSln* = logarithmized annual sales.

Linear panel regression model of services exports¹

Dependent variable: export of business services in the broadest sense						
SummeCRln						
OLS			Panel			
			linear			
	(1)	(2)	(3)	(4)	(5)	(6)
Aktivdum	7.436*** (0.078)	6.989*** (0.261)	7.057*** (0.258)	2.948*** (0.241)	1.389*** (0.190)	1.363*** (0.189)
NACEdum				10.519*** (0.075)	7.168*** (0.107)	4.348*** (0.170)
Beln					1.373*** (0.031)	0.305*** (0.053)
UMSln						0.375*** (0.017)
Constant	6.036*** (0.025)					
Observations	80,955	80,955	80,955	80,055	80,955	80,955
R ²	0.057	0.03	0.031	0.560	0.639	0.657
Adjusted R ²	0.057	-0.091	-0.09	0.505	0.594	0.614
Residual Std. Error	6.891 (df = 8.0953) 4,890.407***	2,241.891***	2,287.746***	45,863.120***	42,436.960***	34,442.200***
F-Statistic	(df = 1; 8.0953)	(df = 1; 7.1959)	(df = 1; 7.1951)	(df = 2; 7.1950)	(df = 3; 7.1949)	(df = 4; 7.1948)
Note				*p<0.1	**p<0.05	***p<0.01

Source: Author's calculations using the R package *stargazer* (version 5.2.3). See Hlavak and Marek. 2022. *Stargazer: Well-Formatted Regression and Summary Statistics Tables. R package version 5.2.3.* <https://CRAN.R-project.org/package=stargazer>.

¹ Explanatory notes on the variables in the dataset: *SummeCRln* = logarithmized exports of business-related services in the broadest sense; *Aktivdum* = outward FDI as dummy variable; *NACEdum* = NACE 2008 industry as dummy variable; *Beln* = logarithmized average number of employees; *UMSln* = logarithmized annual sales.

coefficient estimator of direct investment is positive and probably overestimated. The model quality R^2 is low (0.01). Expanding the model to include unit- and time-fixed effects reduces the estimator slightly, and R^2 adjusted turns negative. When we interpret the result for R^2 adjusted as equivalent to zero, the model extension does not enhance the explanatory quality any further and the estimation results remain too high.

Expanding the model to include additional covariates significantly increases the model quality (R^2 adjusted) as is evident from the results in columns 4 to 6. Including the covariates also reduces the estimated impact of outward FDI on exports of services. Adding the principal economic activity (services sector Yes/No) as an additional variable increases R^2 adjusted to 0.51 and reduces the coefficient for outward FDI to 3.00. This means that a 10% increase in outward FDI leads to a 30% increase in exports of business services in the broadest sense. Including the “enterprise size” covariate based on the number of employees improves the model quality even further (R^2 adjusted = 0.60). The estimator of outward FDI drops to 1.40. Finally, including total sales revenues as well produces a further marginal improvement of the model's quality (R^2 adjusted = 0.61), while the estimated coefficient for outward FDI remains broadly unchanged.

In summary, a modeling exercise covering the link between exports of services as a dependent variable and the other stated firm characteristics as independent explanatory variables did not confirm a significant influence of merchandise

exports and foreign control over services exports. By contrast, significant positive effects on the level of exports of business services in the broadest sense were established for being a service provider and an outward direct investor. The size of an enterprise (number of employees, total sales) has a positive impact on exports as well. Furthermore, it can improve, above all, modeling quality and the key messages thus derived. In other words, we conclude that *an enterprise's principal activity and outward direct investment are important determinants for the export of business services in the broadest sense but that these effects are not independent from company size.*

5 Conclusion and outlook

This publication focuses on Austrian exports of *business services in the broadest sense*. The definition of such services follows that of the IMF, which governs the collection of statistical data on external trade for compiling the national balance of payments statistics. Hence, we focus on three *modes of supply*, namely business-to-business services (1) traded across borders (mode 1), (2) consumed abroad (mode 2) or (3) delivered by natural persons abroad (mode 4). We do not consider the provision of services abroad through establishment of a commercial presence (mode 3). Travel and government services are also excluded as they do not qualify as business services. By contrast, we take into account personal services that can also be provided business to business, such as educational services.

We look at exports of business services in the broadest sense, examining a period between two turning points in the economy: the recovery from the global trade collapse in the wake of the financial and economic crisis of 2008 and the outbreak of the COVID-19 pandemic – specifically the years from 2011 to 2019. During that period, exports of business services grew more strongly than exports of goods according to the balance of payments for Austria as a whole; however, *this acceleration failed to sustainably narrow the gap between services exports and goods exports, i.e. between nontradables and tradables*, measured in terms of export earnings relative to GDP. Likewise, within the EU, the gap between the two trade flows barely narrowed during the observation period. In relation to its GDP, Austria's exports of business services in the broadest sense ranked 14th among the EU member states in 2019, comparable mostly with Finland and Sweden.

In regional terms, more than half of Austria's exports of business services in the broadest sense were focused on the export markets of its immediate neighbors in the observation period. *Around 37% of export revenues came from Germany in 2019, compared with 70% for the EU-27 as a whole*. Trade with countries outside Europe – the traditional overseas countries and emerging economies – stagnated. This means that trade in services was characterized by a higher degree of regional concentration or a lower regional reach than exports of goods. This differs from the pattern established for Sweden, Finland and Germany, where exports of business services were even more diversified across the EU-27 and non-EU countries than exports of goods.

A net view, also taking into account imports of business services in the broadest sense, points to a loss of competitiveness over time. By 2019, Austria was recording a pronounced trade deficit, having slumped to the bottom of the EU league table, alongside Finland and Italy. The detailed breakdown of traffic flows into individual service clusters shows that *Austria, as an advanced industrialized country, is a net exporter of technological know-how and a net importer of less technology-intensive services*. However, the technology sector has been gradually catching up on imports also. In the reference countries Finland and Sweden, technology also accounted for the highest contribution to net export revenues in 2019. At the same time, the EU-27 as a whole is a net importer of technological know-how from the rest of the world.

Going beyond the balance of payments perspective for Austria as a whole, i.e. for all economic sectors, we can establish a more granular picture at the enterprise level by linking firm-level export data feeding into the balance of payments to selected company characteristics. This “*microdata linking*” approach is meant to enhance understanding of the observable developments in exports of business

services from Austria in light of existing and changing corporate structures. The data show that around *half of the exports of business services in the broadest sense from Austria are attributable to large enterprises* (which are also among the main players in Finland and Sweden). In Austria, medium-sized enterprises gained importance during the observation period. Small businesses are only relevant in services that focus on personal contact (business consulting, personal services), but they have been losing in importance over time.

When we break down Austrian exports of business services in the broadest sense by control relationships, we see that domestic enterprises in Austria have lost their dominance to foreign-controlled enterprises during the observation period, while in Finland and Sweden, domestic enterprises remained the main drivers of exports. Especially in the technology-intensive services sectors, Austrian enterprises under cross-border control have come to account for the largest share of exports. An even closer look at the internationalization of enterprises, i.e. taking into account both foreign control and outward FDI, shows that *the importance of exports of business services in the broadest sense for the value added by enterprises with a foreign dimension, especially as part of multinational groups or with outward FDI, is much higher than for enterprises without foreign ties*. Typically, these enterprises – measured in terms of the average number of employees – are also larger than domestic firms.

Looking at Austrian exports of business services in the broadest sense by principal activity, we see that *the importance of transport declined in the observation period, particularly in favor of the manufacturing sector*, which is in fact the top exporting sector in Finland and Sweden. In Austria, chemicals and pharmaceuticals (followed by electrical engineering and electronics as well as the manufacture of machinery and equipment n.e.c.) accounted for the largest share of services provided by manufacturers and exhibited the strongest growth rates. The most recent data however were characterized by the growing importance of information technology in services exports at the expense of the manufacturing industry.

Within the manufacturing sector, electrical engineering, electronics and optics have the highest share of revenues from exports of business services in the broadest sense in total sales, and the highest share of services relative to merchandise exports. However, the ratio of services exports to merchandise exports in Austria's leading industrial export sectors, machinery and in particular vehicle construction, is still low despite comparatively dynamic growth observed.

A breakdown of all companies in the structural business statistics for 2019 according to merchandise and/or services exports shows that exporting is a rare activity for Austrian enterprises. This can be explained to a large extent by the nature of their principal economic activity. However, *the share of companies that do not do any exports also includes firms that actually provide economic and business services but are typically rather small*. Compared to the number of businesses, those who export both merchandise and services account for the highest share in total sales according to structural business statistics for Austria, i.e. more than half. Finally, the share of exporters of merchandise *and* services in total merchandise trade increased significantly over the observation period.

The composition of exports of business services shows that businesses *exporting merchandise and services lean heavily toward the technology sector*, while exporters of services alone continue to be strongly focused on transport. In terms of the regional

reach of exports, *enterprises that export only services tend to serve markets within the EU-27*, while businesses exporting services *and* merchandise also target overseas markets as well as emerging market economies in particular to a larger degree.

To round off the analysis, we ran a linear regression to test enterprise characteristics for their impact on the export of business services in the broadest sense. To this end, we compiled *panel data for the period from 2011 to 2019*, which – besides the variables time period, company register number and exports of services – cover (1) the principal activity of exporting enterprises (according to Austria's version of the NACE 2008 classification of economic sectors), (2) company size, in terms of the average number of employees per year and (3) total annual sales, (4) cross-border control relationships (domestic vs. foreign control, determined by a capital share of at least 50%), (5) cross-border direct investment relationships (outward FDI) and (6) participation in merchandise trade.

The data single out services-only enterprises and highlight a *significant positive influence of outward FDI on the level of exports of business services in the broadest sense*. However, the data also show that the impact is size-dependent as well: as company size is also positively correlated with exports, the integration of company size data enhances the quality of the tested relationships in particular. By contrast, the data do not point to a significant impact of merchandise exports and foreign control on the export of business services in the broadest sense. In short, we have found *the typical service exporter in Austria to be a large enterprise in the services sector, with outward foreign direct investments*.

Under a European Commission regulation, *selected data on Services Trade by Enterprise Characteristics (STEC) must be published from the 2022 reporting year, starting in 2024*. Based on the findings of this study, we will publish trade in services data for Austria not only with reference to cross-border control relationships but also with reference to outward FDI relationships. At the same time, we intend to extend the present analysis beyond 2019 to cover the period from 2020 to 2022 and thus the negative impact of global frictions, the COVID-19 pandemic and the war in Ukraine. This perspective will allow us to analyze whether and what shifts in the underlying corporate structure of exports of business services in the broadest sense have occurred in Austria and what impact this has had on export drivers.

References

- Benz, S., A. Jaax and Y. Yotov. 2022.** Shedding light on the drivers of services tradability over two decades. OECD Trade Policy Paper 264. October. OECD Publishing. Paris.
- Bernard, A. B., J. B. Jensen, St. J. Redding and P. K. Schott. 2007.** Firms in international trade. In: Journal of Economic Perspectives 21. 105–13.
- Breinlich, H. and Ch. Criscuolo. 2011.** International trade in services: A portrait of importers and exporters. In: Journal of International Economic 84 (2011). 188–206.
- Eurostat. 2022.** Services trade by enterprise characteristics – STEC. Statistics Explained. June.
- Hanck, Ch., M. Arnold, A. Gerber and M. Schmelzer. 2021.** Introduction to Econometrics with R. Universität Duisburg-Essen. October 6.
- IMF – International Monetary Fund. 2009.** Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6).
- IMF – International Monetary Fund. 2020.** Special purpose entities. Draft. Guidelines for a Data Template. On Collection of Separately Identified Cross-Border Positions and Flows Related to SPEs. June 2020.

- Kelle, M. and J. Kleinert. 2010.** German firms in services trade. Economics Working Paper 2010–03. Kiel University. Department of Economics.
- Rouzet, D., S. Benz and F. Spinelli. 2017.** Trading firms and trading costs in services: Firm-level analysis. OECD Trade Policy Papers 210. OECD Publishing.
- Statistics Austria. 2019.** Standard-Dokumentation. Metainformation (Definitionen, Erläuterungen, Methoden, Qualität) zu den Außenhandelsstatistiken. Version dated January 31, 2021.
- Statistics Austria. 2021.** Standard-Dokumentation. Metainformationen (Definitionen, Erläuterungen, Methoden, Qualität) zur Leistungs- und Strukturstatistik. Version dated November 16, 2021.
- Stehrer, R. and B. Dachs. 2022.** A snapshot of characteristics and dynamics of Austrian exporting firms. FIW-Research Reports 2 July.
- UN, IMF, OECD, Eurostat, UNCTAD, UNWTO and WTO. 2011.** Manual on Statistics of International Trade in Services 2010 (MSITS 2010).
- Wolfmayr, Y., E. Christen and M. Paffermayr. 2013.** Pattern, Determinants and Dynamics of Austrian Service Exports – A Firm-Level Analysis. FIW Research Reports 13 June.
- WTO – World Trade Organization. 2019.** World Trade Report 2019. The future of services trade.