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Policy Brief

Positioning Austria in the Global Economy: Value Added Trade, International Production Sharing and Global Linkages

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Abstract

This study investigates Austria's positions in international production sharing and global value chains exploiting the recently available Global Input-Output Database (WIOD). Researchers and policy-makers become increasingly aware of the fact that production processes are more and more organised internationally, which implies that indicators based e.g. on gross export values become less meaningful as part of this value is made of imported intermediates. As such, statistics and indicators based on a value added rather than gross trade basis and emphasis on the actual (domestic) value added creation due to exports are needed for policy-makers and researchers to draw a more accurate picture of the link between trade and value added creation and the implications thereof. Making use of indicators for measuring different aspects of complex production relations established in the literature such as the degree of vertical specialisation, value added trade and global value chain income, we find that Austria has intensified its participation in international production sharing since 1995 as evidenced, e.g., by the substantial increase in its vertical specialisation index. Tight supplier-customer relationships, above all in medium-high- and high-technology-intensive manufacturing industries, with Germany and increasingly with the neighbouring CEEC economies have contributed strongly to this development. However, international production sharing is also inextricably linked to 'employment sharing', meaning that in the presence of vertical specialisation not all jobs related to Austrian exports are also located in Austria. In fact, if based on the individual countries' labour productivities, Austrian exports embody more foreign than domestic jobs due to significantly lower productivity levels in some of the partner countries. Nevertheless, the development of Austrian exports has been very dynamic over the past decade as manifested for example in a trade surplus since the early 2000s. A counterfactual exercise that compares the actual amount of domestic jobs embodied in Austrian exports with the hypothetical amount of jobs that would be needed to produce Austria's imports domestically suggests that foreign trade has a positive employment impact in Austria amounting to some 90,000 jobs in 2009 – a result that is closely linked to Austria's trade balance surplus. The strong export performance of Austria is also revealed by the rising share in total EU value added exports which exceeded 3% in 2011, though this is sometimes masked by the fact that the share in global value added exports declined slightly between 1995 and 2011 as a result of new important players in the arena of international trade, above all China. Finally, analysing the trade slump of the year 2009 we find that 're-shoring' activities of Austrian firms as well as the so-called 'composition effect' contributed to the crisis-related decline of Austrian exports.

Keywords: production fragmentation, value added trade, internationalisation

JEL-codes: F14, F15, F63, O52

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Policy Brief

Production and employment sharing in Austria – The value added trade profile of a small open economy

based on the study

Positioning Austria in the Global Economy: Value Added Trade, International Production Sharing and Global Linkages

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Production and employment sharing in Austria – The value added trade profile of a small open economy

There is some disagreement on whether vertical specialisation, trade in tasks (Grossman and Rossi-Hansberg, 2008); Baldwin and Robert-Nicoud, 2010) and offshoring (Feenstra and Hanson, 1996; Feenstra, 2010) which characterise international trade relations in the 21st century are really fundamentally new phenomena or whether they are just variants of import and export transactions (e.g. Groshen et al., 2005). After all, the trade relations between the Ottoman Empire, the Safavid Empire and Europe in early 16th century also featured 'vertical interdependence' (Findlay and O'Rourke, 2007). Records show that the Safavids supplied raw silk to the Ottoman town of Bursa where it was further processed and then sent by caravans to Europe. Nevertheless, there can be no doubt that the intensity of vertical specialisation and the extent of international production sharing have increased tremendously over the past decades as has the trade in intermediates, which is particularly true for some high-tech industries such as transport equipment and electronic products. An immediate consequence of this development is that conventional trade statistics recording gross trade flows are less and less suitable to analyse complex production and trading patterns because gross flows can mask the actual value added transfers between countries that are implied by exports and imports. Information on 'value added trade' and the value added content of trade flows can be obtained by using global input-output data such as the World Input-Output Database (WIOD). A recent study focusing on Austria's value added trade and the country's position in global production chains illustrates four general points regarding the organisation of production of a small open economy in a globalised economy: *(i)* production linkages between countries have intensified; *(ii)* trading partners may be important as export markets and in production sharing; *(iii)* export structures no longer reflect domestic value creation; and *(iv)* production sharing also necessitates employment sharing (see Stehrer and Stöllinger, 2013).

(i) Production inter-linkages have intensified

The ever more granular international division of labour and the corresponding geographical fragmentation of production along the value chain transformed production and international trade into a complex web of customer-supplier relations. In such a system a product 'Made in Austria' does not only contain Austrian value added but a wide range of foreign-made inputs and factor services. A systematic disaggregation of the value added content akin to Hummels et al. (2001) shows that in 2011 more than a third (35%) of Austrian exports was foreign value added. This degree of vertical integration is similar to that of peer countries such as Finland and somewhat higher than that of Germany (which is explained by the fact that Germany is a larger economy). The intensification of Austria's vertical specialisation and hence its tighter integration into global and regional production networks is evidenced by the increase in the foreign value added content in its exports which amounted to 10 percentage points between 1995 and 2011. More intensive production sharing with Central and Eastern European countries (CEEC) and Germany have strongly contributed to this development, in particular in medium- and high-technology-intensive industries such as the automotive industry.

With respect to the economic crisis in 2009 the increasingly fragmented nature of production implies that, the decline in terms of gross exports was stronger than the decline in value added. This is explained by two factors: firstly, it seems that there has been some 're-shoring' activity taking place, which had a positive effect on Austrian value added exports. Secondly, the fact that the sectors with high foreign content in exports (such as the machinery and automotive industry) have been hit harder by the crisis contributed positively to Austrian value added exports when compared to gross exports during the crisis.

(ii) Trading partners are important for different reasons

Austria's main trading partners in terms of value added trade (see Johnson and Noguera, 2012) overlap strongly with those resulting from a ranking based on gross trade flows (see Table 1). After all, the possibility to single out value added content in exports does not require re-writing Austria's history of foreign trade from scratch. Unsurprisingly, Germany emerges as Austria's most important trading partner, absorbing 16.8% of Austrian value added exports. Yet Germany's share is considerably lower in value added terms than in terms of gross exports, which stood at 26.1% in 2011. This difference stems again from the fact that production sharing between Austria and Germany is particularly intensive because many Austrian small and medium-sized suppliers and contractors are strongly oriented towards Germany's large engineering and automotive industries. Note, however, that there are also some important differences in the rankings in Table 1. A striking difference, for example, is that large extra-EU markets absorb higher shares of Austrian value added than suggested by gross exports and are therefore found higher up in the value added export ranking: China is in third position in terms of value added exports (occupying rank 5 in gross exports) and Russia and Brazil are found among the top ten, which is not the case in the list of gross export destinations. A main reason for the increased importance of extra-EU markets in the value added trade statistics are Austria's 'indirect exports' to emerging markets via Germany, which is a strong exporter to China but also other emerging markets.

Table 1: Austria's most important export destinations – gross exports vs. value added exports, 2011

	Gross exports					Value added exports			
Rank	To	Share in %	Export value in USD million	Annual growth 1995-2011	Rank	to	Share in %	Export value in USD million	Annual growth 1995-2011
1	Germany	26.1	55,484	6.5%	1	Germany	16.8	23,301	4.2%
2	Italy	6.1	13,020	6.2%	2	USA	7.9	10,932	6.8%
3	USA	5.4	11,492	8.4%	3	China	6.9	9,566	19.4%
4	Switzerland*	5.3	11,333		4	Switzerland*	6.1	8,441	
5	China	5.2	10,942	21.2%	5	Italy	5.7	7,849	5.3%
6	France	3.2	6,778	6.9%	6	France	3.8	5,262	5.4%
7	Hungary	3.2	6,759	8.9%	7	United Kingdom	3.6	5,024	2.4%
8	Czech Republic	2.9	6,246	8.3%	8	Russia	2.4	3,289	7.6%
9	United Kingdom	2.8	5,989	2.3%	9	Brazil	2.3	3,198	15.7%
10	Poland	1.9	4,045	11.8%	10	Spain	2.1	2,845	4.8%
	Total		212,267	7.2%		Total		138,303	6.2%

Note: *Switzerland is not included as a separate country in the WIOD. Switzerland's share in Austrian exports was approximated based on its share in the non-WIOD countries (i.e. the rest of the world) which we obtained for both goods trade and services trade from conventional databases.

Source: WIOD, authors' own calculations.

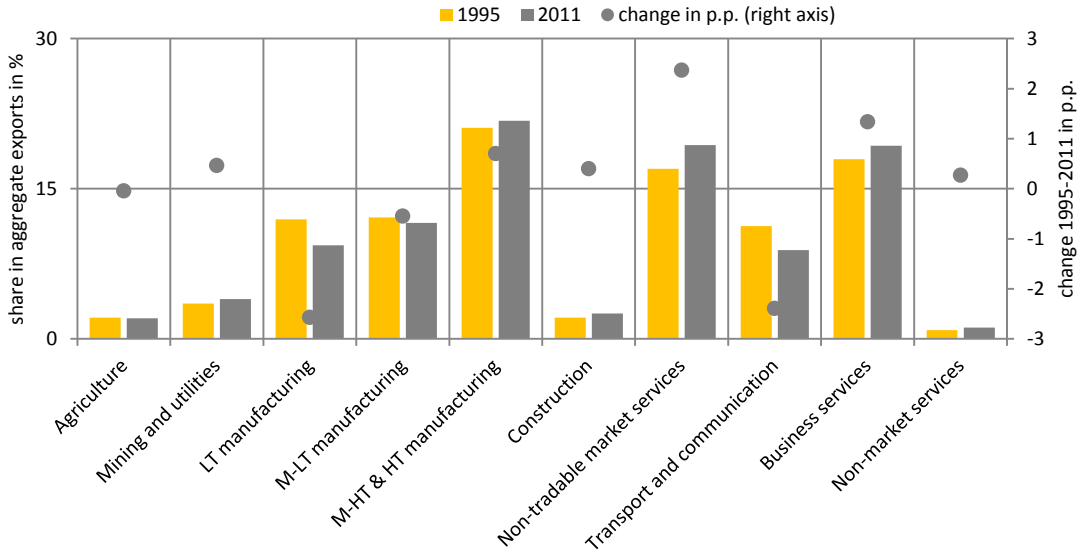
In contrast, the CEE countries Hungary, the Czech Republic and Poland are not in the top ten according to the value added export concept. The reason is that these countries are important as partners for Austrian firms in international production networks, including as locations for foreign direct investment, but their relevance as a source of external demand for Austrian value added is overstated in traditional export statistics.

As such, Austria's main trading partners play a significant role for the Austrian economy for different reasons. CEE countries are important mainly for production sharing, while large extra-EU markets have actually become quite important sources of demand for Austrian firms. To some extent, however, the success of Austrian firms in China and other remote markets depends on Germany. This need not necessarily be a bad strategy but policy-makers should be aware of that dependency.

(iii) Export structures no longer reflect value creation

The most important difference between value added trade and gross trade flows emerges at the industry level. How can we explain that 80% of Austria's exports are manufactures when its GDP consists to more than two-thirds of services? One obvious reason is that services are still less tradable than manufactures. Motorcycles are heavily exported, legal services and health care less so. The most striking feature when looking at the Austrian export structure in value added terms, i.e. the actual value added exported – directly or indirectly – by industry is the much greater importance of services industries, in particular non-tradable services and business services, compared to gross exports (see Figure 1). The opposite is true for manufacturing industries. These differences signal two things: Firstly, trade in intermediates is more developed in manufacturing than in services, which shifts the relative shares towards the latter when switching from gross exports to value added exports. The best example are the medium- and medium-high-technology-intensive industries (which comprise among others machinery, the electric and the transport equipment industries) whose 22% share in value added exports is some 15 percentage points lower than in gross terms. Secondly, and more importantly in quantitative terms, manufactures contain an increasing number of services. These are treated differently in gross exports and value added exports. Take an Austrian steel company that buys marketing services from an advertising agency and exports its steel to Germany. In gross exports the value added created by the marketing services is attributed to the metals industry because that is where the actual export takes place. From a value added perspective, however, an indirect export from the business services sector is recorded and the value added associated with the marketing services is therefore attributed to the business services sector.

Figure 1: Change in Austrian export structure by industry, value added exports, 1995-2011



Note: Industry groups based on NACE Rev. 1. LT manufacturing = low-tech manufacturing industries; M-LT = low-to-medium-tech industries; M-HT & HT = medium-to-high- and high-tech industries.

Source: WIOD, authors' own calculations.

This reveals an interesting aspect concerning the inter-linkages between manufactures and services. While services are more important in trade than suggested in gross trade statistics, manufactures are essential for the Austrian economy because they provide a 'carrier function' for services which tend to be, on average, less tradable. Take for example the group of 'non-tradable services', which includes also maintenance and repair services. Since by themselves they are largely non-tradable, the share of these services in gross exports is less than 6%, but is about 20% in terms of value added exports. This is facilitated by manufactures, which make it possible to 'indirectly export' activities which by themselves are not tradable.

While the relative share of manufactures is much lower in value added exports, they are required to develop competitive advantages in many services, including also business services (see Stöllinger et al., forthcoming, and Nordås and Kim, 2013)[1]. One policy implication of this is that countries should remain concerned about their manufacturing base. If the manufacturing base becomes too thin or uncompetitive, many services may also suffer. Hence, attention must be paid to the growing inter-linkages between manufactures and services in any policy action that has the potential to affect the domestic industry structure.

Currently, Austria is in the fortunate position to be part of the few 'old' EU Member States with relatively strong specialisation in the production of manufactures and in particular medium-high- and high-tech manufactures – also in terms of value added exports. In contrast, Austria is less specialised in business services than the average EU-15 country and also lost market shares in these services between 1995 and 2011.

[1] An alternative for exporting services indirectly is of course the foreign direct investment channel (Mode 3 of services trade in WTO terminology). However, indirect exports have the advantage that they lead to a direct improvement in the current account.

(iv) Production sharing is inextricably linked to employment sharing

The formation of international production networks and therefore growing vertical specialisation may lead to considerable efficiency gains. At the same time international production sharing also means that some of the jobs that are linked to Austrian exports will no longer be located in Austria but in Germany, Slovakia, China or any other country. In fact, more foreign jobs are embodied in Austrian exports than jobs in Austria. The most important locations of these foreign jobs are China, Germany, the CEEC-5 (which include the Czech Republic, Hungary, Poland, Slovakia and Slovenia) and India, in that order. It should be mentioned, however, that this comparison of foreign jobs and Austrian jobs is to some extent 'distorted' by the fact that labour productivities are very different in Austria on the one hand and, for example, in China and India on the other hand. Hence, the foreign jobs embodied in Austrian exports would not be created one-to-one in Austria in case of a 're-shoring' of previously offshored activities. Policy-makers who are appealed by slogans such as 'Bring manufacturing back home' should be aware of this fact.

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