

CHAINS OF VALUE ADDED

– a more accurate measure of foreign trade?



almeGa

Foreword

Production around the world is becoming increasingly fragmented, which is reflected in the emergence of global value chains. The increased specialisation has contributed to more efficient production and a higher value added for Sweden and many other OECD countries. This development has also meant that the traditional way of measuring foreign trade can produce a misleading picture of where in the production chain the greatest value added is created.

The global value chains have a considerable impact on both growth and employment in various countries. The specialisation of production in different countries is also affecting developments on the labour market.

For Sweden's part, the global value chains have created jobs primarily for highly qualified labour, above all within the service sector.

One section of Almega's most recent business trend report highlights the effects that the global value chains have had on Sweden's economy. This is done on the basis of a new database that became available in 2012, which has been developed with the aid of the EU, the WTO and the OECD. The database, entitled the "World Input Output Database" (WIOD), charts the flows of value added between countries and provides us with a unique opportunity to acquire a more accurate picture of foreign trade.

In line with the emergence of global value chains, the traditional way of measuring exports is misleading. Using a new method, Almega shows that the exports actually have a significantly greater service content than is evident from the traditional way of measuring foreign trade.

The purpose of this study is to increase knowledge about the effects that global value chains have on the Swedish economy. Understanding the nature of these flows is an important precondition for being able to make the right decisions within Sweden's economic policy. This will be particularly important in order to attain continued positive effects from the increased specialisation and the raising of the value added in Sweden and other countries.

Linnea Kvist, Business analyst
tel.: +46 (0)8-762 66 21
e-mail: linnea.kvist@almega.se

Lena Hagman, Chief Economist
tel.: +46 (0)8-762 69 61
e-mail: lena.hagman@almega.se

Chains of value added – a more accurate measure of foreign trade?

A new, more accurate way of measuring trade shows that services' share of Swedish exports is significantly greater than had previously been believed, a massive 55 per cent. With access to new international data regarding global value chains, our hope is that the following section will help to create a clearer picture of the change in the content of Sweden's exports and imports. This applies in particular to the increased service content on the market, and how this is affecting the growth of production and employment in Sweden.

Production of both goods and services has become increasingly fragmented and geographically dispersed, which can be explained by the growth of global value chains. This development has contributed to more efficient production and a higher value added for Sweden and many other OECD countries. The development has also meant that the traditional way of measuring foreign trade can produce a misleading picture of where in the production chain the greatest value added is created. The traditional way of measuring foreign trade consequently does not capture the increasingly fragmented production taking place via global value chains. By measuring exports and imports of value added, another picture of trade between countries is emerging. This is particularly interesting when we look at trade in services, as these prove, using the value added measure, to be much more important for the exports of OECD countries, including Sweden, than indicated on the basis of traditional trade data. It is therefore important to follow the development of the global value chains and their significance for growth and employment in different countries. Increased knowledge about this development is providing a better basis for economic decisions within business sector, labour market and trade policy.

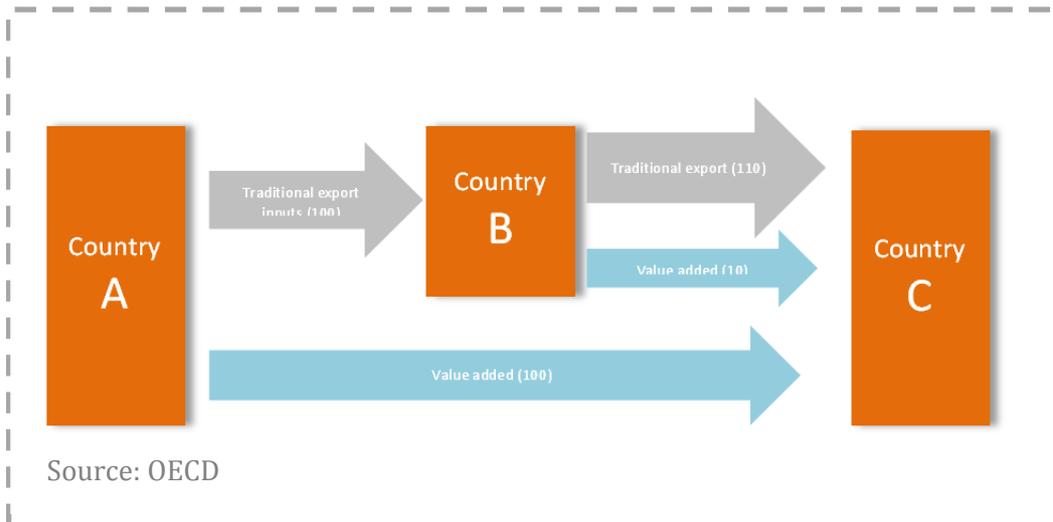
New way of measuring exports

Production by companies comprises to a growing extent "global value chains", with various stages of production processes being situated in different countries. Goods and services are now often a result of a number of well co-ordinated production stages carried out in many different countries and by workforces possessing different types of knowledge.

A country's foreign trade is normally assessed by measuring the total value of its imports and exports of products. As this is done for both components and end products, we obtain an incorrect picture of the trade. This is because exports increasingly comprise an import content, as the export products have been produced in part using imported inputs. At a global level, this means that the trade in components is counted a number of times. At a national level, this means that the country that exports the end

product is incorrectly allocated its entire value, even if only final assembly has taken place there, for instance. By studying global values chains, we get a fairer picture of the true nature of the trade between countries.¹

Figure 1 What does trade with value added entail?



The above example illustrates the difference between the traditional way of measuring exports compared with exports of value added. Country A exports a product at a value of SEK 100 (which has been produced in country A) to country B, which refines the product before exporting it on to country C for final consumption. B adds a value of SEK 10 to the product and consequently exports a product with a value of SEK 110 to country C. The majority of the value added in this case has been generated in country A. If we look at the exports of value added, we achieve a greater insight into the driving forces behind the exports. For example, demand in country C is controlling the output from country A, and country B's exports are to a large extent dependent on the imports of inputs from country A. Without an insight into this dependence on imports, political decisions that result in protectionism in country B would harm the country's own exporters and the country's competitiveness.

Last year, 2012, the WTO along with the OECD presented the "World Input Output Database" (WIOD), which has been financed by the EU. This charts the flow of global value chains, making it possible to achieve a more accurate picture of the foreign trade in products and what share of a product's value added is actually generated in different countries along the value chain.

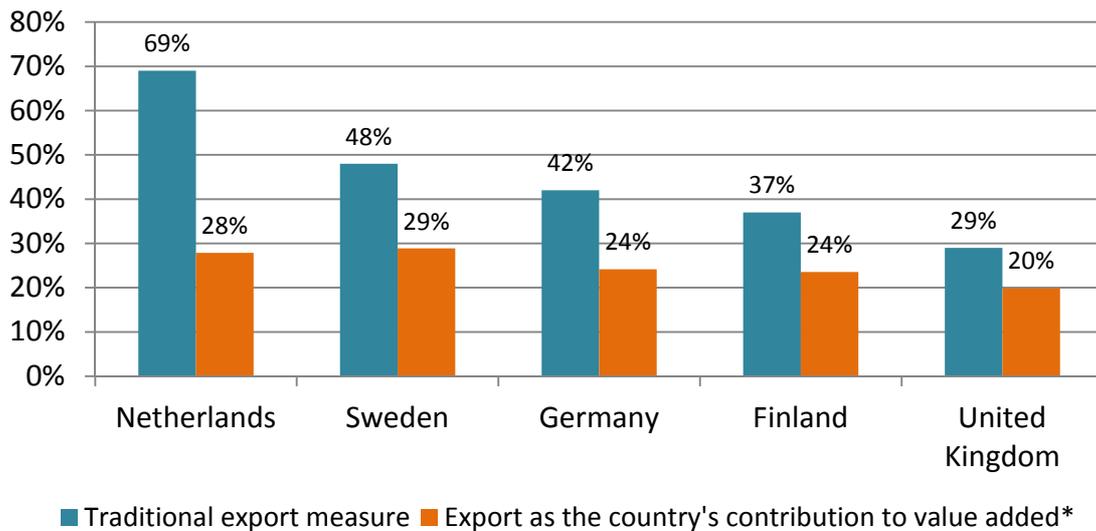
A considerable proportion of many countries' exports comprises inputs and services that have been imported. This means that the national value added, i.e. the value that production in the country adds to the economy in the form of salaries and profits to

¹WIOD *Trading in Value and Europe's economic future*, Karel De Gucht, 16 April 2012.

employees and investors, is significantly less than the figure shown using more traditional export statistics. This becomes evident when we analyse the information in the new WIOD database.

The importance of a country's exports is often measured as the total value of the exports as a share of GDP. For Sweden, this stands at around 50 per cent, whereas the export of value added as a share of GDP only amounts to around 30 per cent². The differences are also considerable for other countries. For Germany, the difference is more or less the same as for Sweden, 42 per cent compared to 24 per cent. The difference is even larger in the Netherlands. There, exports as a share of GDP stand at almost 70 percent, whereas value added exports' share of GDP is approximately 30 per cent. The difference for Finland is not as large, at 37 per cent compared to 24 per cent. The difference is even smaller in the UK, although exports are still significantly lower when we look at value added (see diagram 1).

Diagram 1: Different ways of measuring exports, total export value and export of value added, share of GDP, 2009



Source: OECD, World Bank

*Import-adjusted exports, i.e. only the country's own contribution to export value is counted.

However, this should not be interpreted as the global value chains resulting in lower growth of value added. Specialisation has normally made production more efficient and thereby raised the value added and the country's overall GDP level. This is true for the majority of OECD countries, including Sweden. For Sweden's part, the increased earnings from the global value chains benefit knowledge-intensive service production in

² OECD, Domestic value added embodied in foreign final demand, i.e. the 'export of value added', (total of all sectors in the economy).

Sweden to a greater degree compared to production that uses unskilled labour.³ As a result, this benefits the growth in jobs within knowledge-intensive service sectors in Sweden. The EU's research⁴ in this area has shown that the global fragmentation of production has benefited the demand for highly educated labour in a number of countries, including in Sweden. Highly educated labour is playing an increasingly important role in production, both for product development and production processes in increasingly high-tech and knowledge-intensive production. This is particularly true in the export industry, which has an increased knowledge-intensive service content in production processes and end products.⁵

Importance of services for exports underestimated

When we study exports by following global value chains, it becomes apparent that the services' share of exports is greater compared to their share calculated on the basis of traditional foreign trade data. This is because manufacturing companies generally have a higher share of import content in their exports than is the case with service companies. The service sector generally does not require as large a proportion of inputs. The majority of services companies' costs are made up of wage costs. When exports are measured in the traditional way, service exports in Sweden make up around 30 per cent of total exports, whereas they make up around 40 per cent of value added exports⁶ (import-adjusted). If we also add the value of imported services used in the production of Sweden's exports, services make up a total of 55 per cent of Sweden's total exports.⁷ This means that Sweden is more dependent on the export of services than is shown by the traditional way of measuring exports.⁸ Services make up as much as around 60 per cent of Europe's exports according to this new way of measuring the service content in exports.⁹

The highest percentage increase in import dependency in Sweden during the period 1995-2005 can be found within the service sector, however, which indicates that this sector too is moving towards an ever greater import content.¹⁰

For the UK, Finland and Sweden, services' share of total exports is around 20 percentage points higher when including value added from service production that has been used to produce the export products, compared with the traditional export measure. This includes service production from both foreign and domestic producers. For

³ According to results from the EU project, WIOD.

⁴ Within the EU project, WIOD.

⁵ WIOD as well as Almega Economic Forecast, October 2012, "*Global value chains and service content driving Swedish growth and competitiveness*".

⁶ When the import of services has been deducted as a share of value added.

⁷ See OECD, Service value added embodied in gross export by source country as % of gross exports

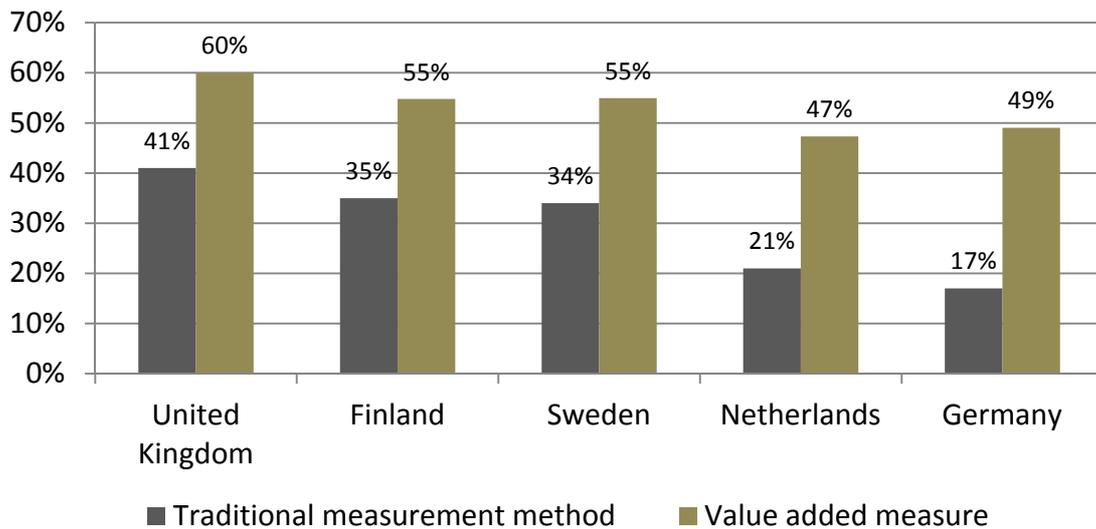
⁸ WTO "Made in the world", Henrik Isaksson, 2011.

⁹ WIOD Trading in Value and Europe's economic future, Karel De Gucht, 2012, www.oecd.org

¹⁰ WTO "Made in the world", Henrik Isaksson, 2011.

Germany, the share is around 15 percentage points higher, and for the Netherlands it is a massive 30 percentage points higher (see diagram 2).

Diagram 2: Service exports' share of total exports, 2009¹¹



Source: OECD, WTO, Macrobond

Services are consequently of decisive importance for the global value chains. This is in part by acting as "facilitating" services by supporting the creation of value chains for both goods and services. This can involve services in the form of communication, insurance, finance and other corporate services. These are extremely important for the competitiveness of the value chains. However, services are also traded separately, completely independent of goods production. Examples of these include various types of IT services, design, marketing, technical services as well as research and development. Trade in these creates pure "service value chains". Various IT services allow the separation of the service from the actual point of consumption, making it possible to import and export services within more areas. There is no sharply defined boundary between these two types of services, facilitating and independent, rather the same type of service can belong to both categories, such as in the cases of design and technical services.¹²

The fact that production within export companies in Sweden is increasingly based on "global value chains" of inputs and services, is increasing the value added in the Swedish production units. As mentioned previously, this development is creating jobs

¹¹ OECD, Service value added embodied in gross export by source country as per cent of gross exports.

¹² Global Value Chains and Services, Swedish National Board of Trade, 2013.

primarily within knowledge-intensive service sectors in Sweden, which are supplying highly advanced services as inputs in the export companies' production processes.¹³

The fact that the service content within Swedish exports has become increasingly important can be seen when following the trend for service exports' market share (calculated on the basis of traditional ways of measuring export market shares¹⁴). This has experienced a more positive development than the corresponding figure for goods alone, which means that the more favourable development for service exports is pulling up the overall development of market share for Sweden's exports. In other words, this indicates that an increased service content within exports is becoming an increasingly important competitive factor, which is even clearer when measuring the importance of the service content for Sweden's exports with the aid of the global value chains. Knowledge-intensive services and service offers, both linked to the sale of goods and in the form of pure service production and the sale of pure services to export markets, are consequently becoming increasingly important.

It is possible that service exports' market share is developing even more favourably if we calculate market share on the basis of exports of value added. In order to draw conclusions regarding this, more in-depth studies and analyses of these flows are required. Almega hopes that the EU's, the WTO's and the OECD's continued work and analyses based on WIOD will demonstrate this.

Imported inputs increasing

Another trend that clearly emerges when studying the statistics in the WIOD database is that the proportion of imported inputs as a share of the total use of inputs in production is increasing over time¹⁵. This is true for all the countries we have elected to study, with the exception of Finland. 2009 was a crisis year, however, and the import share of the inputs generally declined during that year. It generally stood at a higher level in 2008, which was also the case in Finland.

Of the countries we have chosen to study, Sweden has the highest proportion of imported inputs, at 27 per cent of total input consumption in 2009. These inputs come primarily from Germany, although Norway and the USA are also extremely important regarding these imports to Sweden.¹⁶

¹³ WIOD

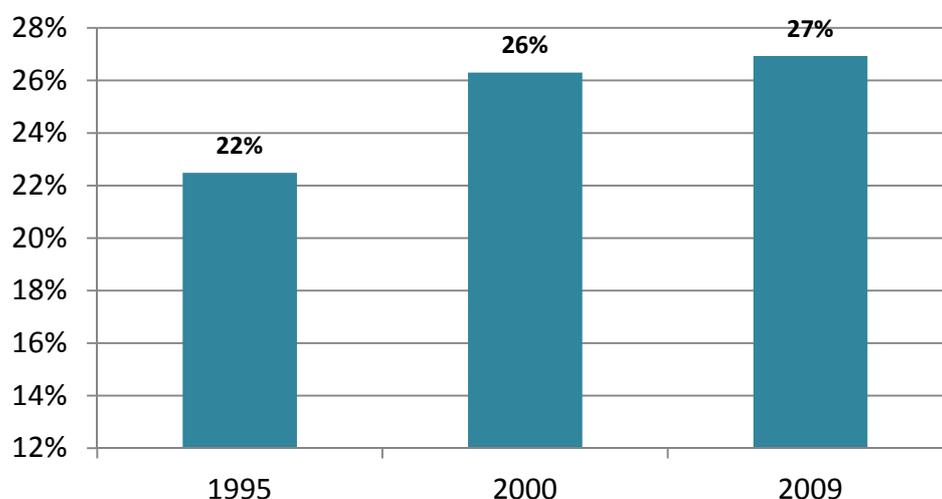
¹⁴ The exports' share of total exports to a selected export market is normally calculated, or alternatively as the share of a group of countries' exports to this market. Another way of performing traditional calculations within the aid of foreign trade data is to calculate a country's share of imports to a country or region. The development of a country's export market share can consequently be monitored, as its exports are set in relation to the exports of other countries to the selected export market.

¹⁵ The WIOD database extends from 1995 to 2009.

¹⁶ <http://stats.oecd.org>

The trend is moving towards more companies using a growing share of imported inputs in their production. Imports are becoming increasingly important, which is also substantiating the picture of increasingly fragmented production, with various parts of the production chain being located in different countries. Global production, and above all that in the EU, is increasingly moving towards a fragmented and deeply integrated production and value chain out in the world. This also means that an increasing share of exports derive from imports.

Diagram 3: Imported inputs, as a share of total input consumption, Sweden 1995-2009



Source: WIOD

The increasing share of input content in exports is also lessening the importance of the exchange rate for exports. Several previous business trend reports from Almega have shown that factors other than the value of the krona in relation to our competitor currencies appear to have become increasingly important for the development of exports in recent years.¹⁷ A larger import share is one such factor, and the sectors that have relatively large import shares are affected to a lesser degree by changes in the exchange rate than those with smaller input shares. The Swedish raw materials and staple industries are still hit relatively hard by the strengthening of the krona, as they have a smaller share of imported inputs.

If we look specifically at industry's¹⁸ imports of inputs for the countries we have chosen to investigate in greater detail, we can see a clear increase in the import share there as well. It is interesting to note that Swedish industry has a higher share of imports of inputs than other comparison countries, at around 37 per cent, as opposed to the other

¹⁷ Almega's economic forecasts *Global value chains and service content driving Swedish growth and competitiveness*, 30 October 2012, *Recovery at half speed*, 19 April 2010, *From the iron grip of the financial crisis*, 6 April 2009.

¹⁸ SNI 15-37 (according to SNI 2002).

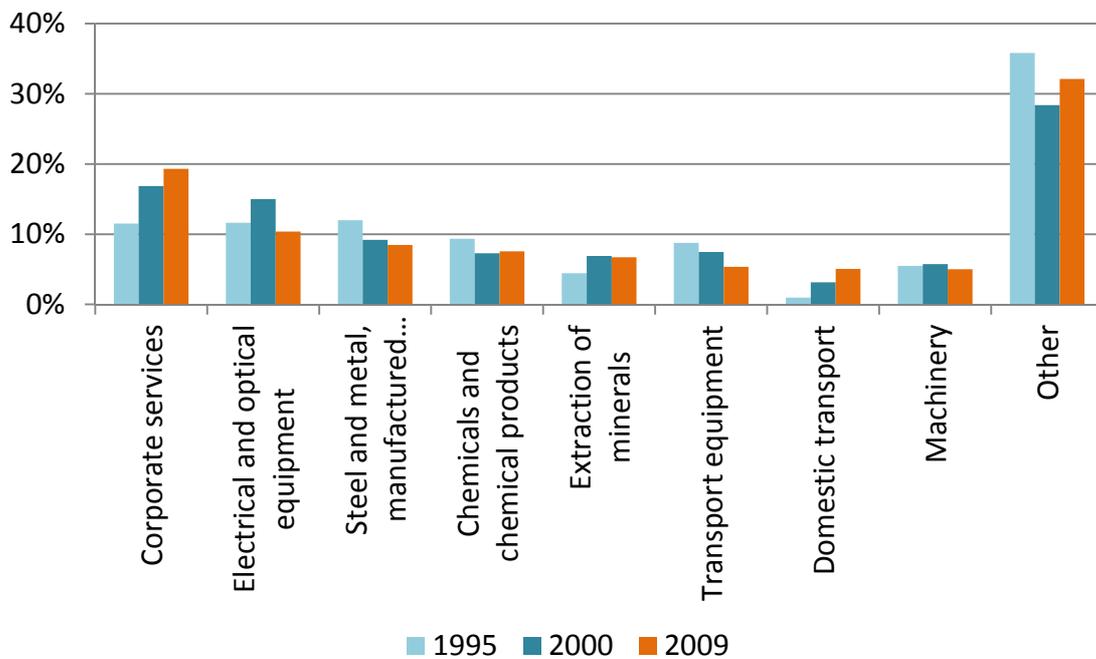
countries we have chosen to compare with that have an import share of around 30 per cent.

Above all, Sweden has a relatively large proportion of imports of inputs within the manufacture of coal products, refined petroleum products and nuclear fuel, where the share stands at a massive 86 per cent. Sweden also has a significantly higher share of imported inputs than the other comparison countries within the manufacture of rubber and plastic goods, as well as electrical and optical products. This increases Sweden's total share of imports of inputs.

Within the business services sector in Sweden, too, the import share for inputs has increased, from a share of 17 per cent in 1995 to 21 per cent in 2009.

If we look more closely at the types of inputs that are being imported, it can be seen that corporate services are the largest single input in all the sectors. These services make up around 20 per cent of Sweden's total import of inputs. 10 per cent comprises electronic and optical equipment, and 8 per cent comprise steel and metal, see diagram 4. Imports of corporate services have also increased most as a share of total imports of inputs between 1995 and 2009, with an increase of 7 percentage points. The largest reduction is among imports of steel and metal, as well as manufactured metal products, with a decrease of 4 percentage points over the same period. However, the import share for these products stood at a slightly higher level before the crisis year of 2009.

Diagram 4: Different types of imported inputs for production, share of Sweden's total imports of inputs, 1995-2009

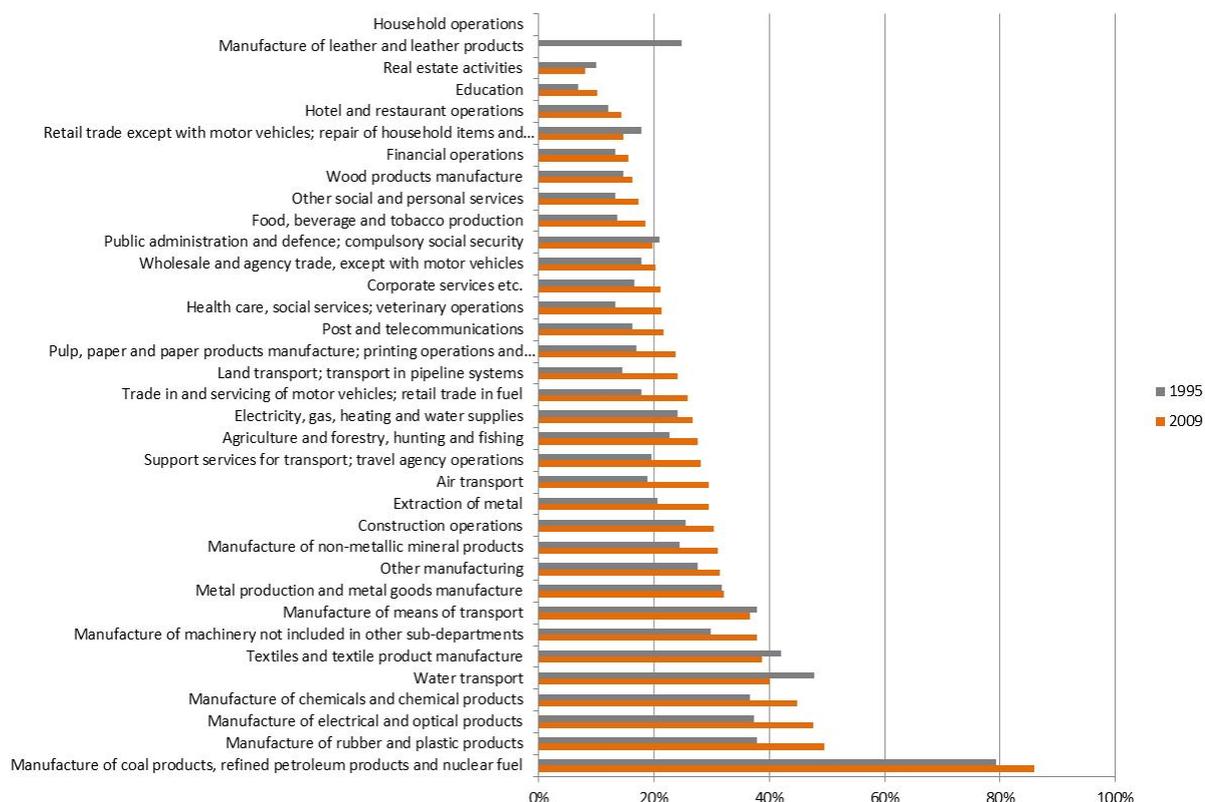


Source: WIOD

In general, Sweden's manufacturing industry has a high share of imports of inputs in its production, see diagram 5. The service sectors, as previously mentioned, generally have a slightly lower share of imported inputs. However, this share has increased in most sectors between 1995 and 2009. For the service sector as a whole (including retail),¹⁹ the share of imports has increased from 16 per cent in 1995 to 19 per cent in 2009. This reinforces the picture of the service sectors' production also becoming increasingly fragmented and of global value chains playing an important role for them as well.

The lowest import shares are in the property management and education sectors, with shares of 8 and 10 per cent respectively. The largest increase in the import share has been within the manufacture of rubber and plastic goods, where the share increased by 12 percentage points between 1995 and 2009. The import share decreased most within water transport during the same period, with a decline of 8 percentage points. The trend for all the sectors, however, with only a few exceptions, is that the import share has increased since 2005.

Diagram 5: Import share per sector, share of each sector's total input consumption



Source: WIOD

¹⁹ Defined on the basis of the Swedish Standard for Industrial Classification, SNI 2002 G-P.

Protectionism a threat to global value chains

Minimising various trade barriers will be important in order for the global value chains to function. Protectionism is therefore a significant threat to these and the companies involved, as well as to the countries' economies. Around a third of the jobs that we now know to be linked to European exports are a part of a global value chain. This further emphasises the importance of reducing trade barriers.²⁰

In other words, trade barriers will influence the geographic location of the global value chains, which will have a significant impact on those countries that are now participating to a great extent in these and that are entirely dependent on their existence, including Sweden.²¹ This underlines the considerable importance of continuing to monitor the development of the global value chains, as well as to gain increased knowledge about the impact that changes to these will have on production, output growth and employment in Sweden and other countries.

As we pointed out in the introduction to this section, this new way of measuring the content of exports, as well as the importance of the increased service content for the growth of production and employment, constitutes an important foundation for economic policy both in Sweden and in other countries.

²⁰ Trading in Value and Europe's Economic Future, Karel De Gucht, 2012.

²¹ World Economic Forum, The shifting geography of global value chains: Implications for developing countries and trade policy.

Almega is Sweden's leading organisation for the service sector. We are made up of seven employers' associations and represent some 60 different sectors. More than 10,000 member companies view Almega as their primary source of knowledge and information within the service sector. Almega is the largest group of associations within the Confederation of Swedish Enterprise

Almega's service indicator is presented once a quarter. This is a quarterly economic indicator that highlights the combined development of the private service sector. The service indicator has a high forecast value for the actual development of both production as well as prices and the labour market, and lies approximately one quarter ahead of the publication of the actual results from Statistics Sweden's National Accounts. It is a quick and reliable signal of economic changes in sectors that jointly have a significant impact on Sweden's overall production.

In addition to this, Almega also presents an economic forecast twice a year. Almega's economic forecast summarises the economic situation and the prospects for the next two years in the Swedish economy. The report includes a forecast for Sweden's production (GDP) and labour market, with particular focus on the service sector's impact on the economy. The report also contains in-depth sections that highlight various subjects that are of particular importance for Sweden's economy and the development of the service sector.

THE AUTHORS OF THE REPORT:



Lena Hagman
*Chief Economist
at Almega
since 2008*



Linnea Kvist
*Business Analyst
at Almega
since 2010*