Linking micro data on external trade

and business statistics

Grant agreement number

20721.2013.002 – 2013.158

Final detailed report

December 2013

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International sourcing and international trade in services

# Summary

The present report was prepared by Statistics Denmark under the MEETS action *Linking trade and business statistics*, grant agreement 20721.2013.002-2013.158.

The main objective of this part of the action – which also involved the compilation of TEC and STEC datasets – was to carry out an exploratory study focusing on the linkages between international sourcing and international trade in services. More specifically, the aim was, firstly, to test the potential for linking micro data from the *International organisation and sourcing of business functions* survey (GVCIS) with the survey data from the *International trade in services* *statistics* (ITSS). Secondly, the aim was to analyse the impact of international sourcing on the international trade in services, testing more specifically the connections between:

* the type of business function sourced internationally and the types of services imported, and
* the destinations for the international sourcing of business functions and the geographical origin of services imported.

The main findings from the analysis may be summarised as follows:

* Among the enterprises with international sourcing a higher share experienced a growth in the import of services, and moreover the median change in these enterprises’ import of services was significantly higher than that of the non-sourcing enterprises.
* For both large, small and medium-sized enterprises there is a tendency toward increasing imports for both sourcing and non-sourcing enterprises. In particular among the large enterprises with international sourcing, a high share of enterprises experience a growth in services import, and the median change rate in these imports is significantly higher than for the non-sourcing large enterprises as well as the small and medium-sized ones.
* The analysis suggests no difference between manufacturing and other enterprises in terms of how international sourcing impacts the import of services. The analysis, however, is based on a very aggregate breakdown, and the recommendation is to pursue this question in further analyses in the future.
* The results suggest a relation between the international sourcing of certain business functions and the imports of certain services. Specifically, a higher share of the enterprises with international sourcing of marketing, distribution and logistics as well as administrative support functions have experienced growth in the imports of the specified services than is the case for those enterprises that did not source these functions – and the median change in the import values of the sourcing enterprises is markedly higher than for the non-sourcing ones. For ICT and telecommunication support functions there is seemingly little difference in the import trends of the sourcing and non-sourcing enterprises, while for R&D and engineering support functions the enterprises not sourcing these functions tend to be increasing their imports more than the non-sourcing ones.
* In conclusion, while the number of enterprises sourcing to each area is quite low, there is an overall tendency for internationally sourcing enterprises to experience growing import of services – but for the particular destinations of USA/Canada, India and China a higher share of the enterprises not sourcing to the area tend to have growing import of services, compared to those sourcing to the area, which tend to a lesser extent to experience such growth. The median changes in import values support this picture.

# Introduction

The use of ITSS data in STEC, or in analyses of enterprise globalisation more broadly, is challenging for a number of reasons. As mentioned above, the main objective of this part of the action was to carry out an exploratory study focusing on the linkages between international sourcing and international trade in services.

More specifically, the aim was, firstly, to test the potentials for linking micro data from the *International organisation and sourcing of business functions* survey (GVCIS) with the survey data from the *International trade in services* *statistics* (ITSS). The two populations and the matching exercise are described in the following section.

Secondly, based on the matched populations, the aim was to analyse the impacts of international sourcing on the international trade in services, testing more specifically the connections between:

* the type of business function sourced internationally and the types of services imported, and
* the destinations for the international sourcing of business functions and the geographical origin of services imported.

In operationalizing this, the analysis looked at the following questions concerning functions and types of services:

* Does the international sourcing of a given business function result in a change in the imports of specific services?
* Does a higher share of enterprises that source given functions internationally also import specific services compared to enterprises that have not sourced the same function internationally?

The GVCIS data contains information on the international sourcing of the following functions:

* Core business function
* Support business functions:
  + Distribution and logistics
  + Marketing, sales and after sales services, incl. help desks and call centres
  + ICT and telecommunications
  + Administrative and management functions
  + R&D, engineering and related technical functions
  + Other support functions

The analysis focused on the support business functions and each of these was coupled with specific services in the ITSS.

The couplings are shown in the table below:

Table 1. Linking support business functions and B.o.p. items

|  |  |
| --- | --- |
| **Business function** | **B.o.p. item** |
|  |  |
| Distribution, logistics | 207 Passenger transport on sea |
|  | 208 Freight transport on sea |
|  | 209 Supporting, auxiliary and other sea transport services |
|  | 211 Passenger transport by air |
|  | 212 Freight transport by air |
|  | 213 Supporting, auxiliary and other air transport services |
|  | 218 Space transport |
|  | 219 Rail transport |
|  | 224 Passenger on road |
|  | 225 Freight on road |
|  | 226 Supporting, auxiliary and other road transport services |
|  | 231 Pipeline transport |
|  | 232 Other supporting and auxiliary transport services |
|  | 246 Postal and courier services |
| Marketing, sales, etc. | 271 Other trade-related services |
|  | 278 Advertising, market research and public opinion polling |
| ICT and telecom. | 247 Telecommunication services |
|  | 263 Computer services |
|  | 264 Information services |
| Adm., management | 275 Legal services |
|  | 276 Accounting, auditing, book-keeping and tax consulting services |
|  | 277 Business and management consultancy, public relations services  285 Services between affiliated enterprises, n.i.e. |
| R&D, engineering | 266 Royalties and license fees  279 Research and development services  280 Architectural, engineering and other technical consultancy  282 Waste treatment and depolution  283 Other agricultural, mining and on-site processing |
| Other support functions | 284 Other miscellaneous business, professional and technical services  288 Audio-visual and related services  289 Other personal, cultural and recreational services |
|  |  |

The coupling of business functions to particular services is not straightforward, among other things because especially the business functions but also the services categories are defined at a fairly aggregate level. In the present analysis, it was decided not to include a number of services items, as the linkage was considered too farfetched and ambiguous. More specifically, this involves B.o.p. items (236) Travel, (249) Construction services, (253) Insurance services, (260) Financial services, (266) Royalties and license fees, (270) Merchanting, and (272) Operational leasing services.

In addition to this, the analysis looked at the following questions concerning sourcing destinations and origin of imported services:

* Does the international sourcing to a given destination result in a change in the imports of services from this geographical area?
* Does a higher share of enterprises that source to a given destination also import services from this geographical area compared to enterprises that have not sourced to the same destination?

Information in the ITSS is available at the level of individual country of origin, whereas in the GVCIS survey data is available at a more aggregate level covering the following geographical areas:

* EU-15 (Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, and the United Kingdom).
* EU-12 (the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovak Republic, Bulgaria, and Romania.
* Russia.
* Other European countries (Switzerland, Norway, Turkey, Belo Russia, Ukraine, and the Balkan states).
* China.
* India.
* Oceania and other Asian countries (including Japan, Korea, Near-, Middle- and Far-East, and Oceania, including Australia and New Zealand).
* USA and Canada.
* Brazil.
* Rest of World (including Mexico, South and Central America (except for Brazil), and Africa).

The present analysis focuses on the four BRIC countries (Brazil, Russia, India, and China) as well as the USA/Canada. The other areas are considered too broad for the present purposes, as international sourcing to one or more destinations in these broader geographical areas cannot not be linked directly to the country of origin for the imports. The link thus established between international sourcing to, e.g., EU-15 and the development in imports from these countries of origin would be highly ambiguous.

# Matching the ITSS and GVCIS survey populations

The most important source of the Danish ITSS is a combination of monthly reports from approximately 320 firms and annual (prior to 2009 quarterly) reports from approximately 1,200 firms. The ITSS is thus basically compiled by grossing up sample information, entailing by nature some inaccuracy. Furthermore, an important element of inaccuracy is attached to the frame from which the sample is drawn.

The GVCIS survey was carried out by Statistics Denmark in 2012, as part of the Eurostat survey in which several other Member States also participated. The survey was mandatory and covered all enterprises with 50 or more employees in the non-financial business economy. In addition, the Danish survey also included NACE Rev.2 section K. Moreover, in Manufacturing (NACE Rev.2, section C), in Information and Communication (NACE Rev.2, divisions 61-63) and in Professional, Scientific and Technical Activities (NACE Rev.2, section M) the survey covered all enterprises with 20 or more employees. The response rate was very high (98 per cent), and the quality of the data is seen to be very good.

The two populations described above involved 4,461 enterprises in the GVCIS survey and from the ITSS 1,259 enterprises that were active and present in this in both 2009 and 2012. The two populations were matched using the Statistical Business Register and the annual SBS enterprise statistics.

The no-match results from the initial matching are shown in the table below.

Table 2. No-match results by NACE Rev.2 sections

|  |  |  |
| --- | --- | --- |
|  | Number of enterprises | Import of services  (Mn. DKK) |
|  |  |  |
| **All sections** | **617** | **30.225** |
| A Agriculture, forestry and fishing | 3 | 28 |
| B Mining and quarrying | 7 | 1.072 |
| C Manufacturing | 4 | 332 |
| D Electricity, gas, steam and air conditioning supply | 5 | 411 |
| E Water supply; sewerage, waste management and remediation activities | 3 | 8 |
| F Construction | 3 | 15 |
| G Wholesale and retail trade; repair of motor vehicles and motorcycles | 105 | 2.471 |
| H Transportation and storage | 207 | 16.252 |
| I Accommodation and food service activities | 3 | 239 |
| J Information and communication | 75 | 1.673 |
| K Financial and insurance activities | 56 | 1.880 |
| L Real estate activities | 1 | 1 |
| M Professional, scientific and technical activities | 33 | 437 |
| N Administrative and support service activities | 51 | 2.248 |
| O Public administration and defence compulsory social security | 17 | 2.275 |
| P Education | 11 | 228 |
| Q Human health and social work activities | 3 | 12 |
| R Arts, entertainment and recreation | 19 | 518 |
| S Other service activities | 8 | 80 |
| Unknown | 3 | 45 |

The matching results have been analysed to see whether some of the non-matching entities should have been matched, e.g. due to reporting by the same enterprise on two different enterprise identification numbers in the two surveys. A breakdown of the initial no-match population by reasons for the unit being out of scope in the GVCIS survey is shown in the table 3.

Table 3. No-match results by reasons for out of scope

|  |  |  |
| --- | --- | --- |
|  | Number of enterprises | Import of services  (Mn. DKK) |
|  |  |  |
| **All no-match enterprises** | **617** | **30.225** |
| Sector/legal form | 67 | 3.801 |
| NACE section | 32 | 1.666 |
| Enterprise size | 510 | 24.388 |
| Other | 8 | 370 |
|  |  |  |

67 enterprises with import of services of 3.8 mn. DKK in 2009 were out of scope due to the sector or legal form of the enterprise. The bulk of these, both in terms of the number of enterprises as well as the share of services imports, are public sector entities that should have no alternative matching unit in the GVCIS survey.

32 enterprises with import of services of 1.7 mn. DKK in 2009 were out of scope due to the activity of the enterprise. A handful of these account for a large share of the import of services in this group, but a manual checking of the units did not result in a matching to alternative units in the GVCIS survey population.

The largest group of non-matching enterprises are in the enterprise size category, i.e. the enterprises are in scope in terms of sector, legal form and activity, but their employment was lower than the thresholds set in the GVCIS sampling. After a manual checking, and based on supporting register data, a decision was made to match a total of 7 units to reporting units in the GVCIS survey data. The import of services of these 7 enterprises was 2,100 mn. DKK – or roughly 9 per cent of the total value for the enterprises in this no-match category. For the remainder of the non-matching units in this group, it can be said that these are predominantly in the transportation and storage sector.

Finally, 8 enterprises were not matched due to other reasons. This mainly was due to the fact that the enterprises had ceased operations at some point in 2012 and had therefore not reported to the GVCIS survey.

In conclusion, the non-matching enterprises have been checked manually to the extent deemed reasonable within the framework of the current project, and it is the clear impression that matching rates cannot be raised significantly through more thorough checking and matching exercises.

# Size, activity, international sourcing and trade in services

Of the 646 enterprises that are included in both the GVCIS survey and the ITS survey, 203 enterprises carried out international sourcing in the period 2009 to 2011. The share of enterprises with international sourcing is considerably higher than for the GVCIS population as a whole, presumably reflecting that enterprises that import services from abroad are to a higher degree internationally oriented than enterprises that do not.

Of the 203 enterprises with international sourcing in the period, half have had an increase in the import of services, compared to 42 pct. for the enterprises without international sourcing. This can be seen in the table below, where the relation between sourcing and the development of trade is depicted for large enterprises as well as small and medium-sized ones. Large enterprises are defined as having 250 or more employees (full time equivalents).

When broken down by size class, there is overall a tendency toward increasing imports for both sourcing and non-sourcing enterprises in both size classes. The tendency is more pronounced for the larger ones, while a higher share of the smaller and medium-sized enterprises – both in the sourcing and non-sourcing categories – experience a decline in the import of services.

Table 4. Import trends for sourcing and non-sourcing enterprises. By size class

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Size of enterprise | International Sourcing | Number of enterprises | Growing import | Little or no  development in import | Declining import |
|  |  |  | Percentage of Enterprises | | |
| All Enterprises | Yes | 203 | 50 | 20 | 30 |
| No | 443 | 42 | 25 | 33 |
|  |  |  |  |  |  |
| Large Enterprises | Yes | 89 | 57 | 21 | 21 |
| No | 155 | 49 | 24 | 27 |
| Small and medium Enterprises | Yes | 114 | 44 | 19 | 37 |
| No | 288 | 39 | 25 | 36 |

In the table below, the value of the imports for the enterprises that had trade in the period 2009 to 2012 is shown, including a column showing the relative change. Furthermore, the median change is included in the right-hand column. Two enterprises are excluded from the table because their import dominated the trade figures.

There is a tendency for the large enterprises with international sourcing to have a higher median growth than average growth, which implies that the majority of these enterprises have experienced a substantial increase in imports. This is not the case for the small and medium-sized enterprises. Here, the median change in services import is well-below the overall figures for both sourcing and non-sourcing enterprises.

Table 5. Import change rates for sourcing and non-sourcing enterprises. By size class

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Size of enterprise | International Sourcing | Number of  enterprises | Total import of services in 2009 | Total import of services in 2012 | Change in import of services from 2009 to 2012 | Median change in import of services |
|  |  |  | Mn. DKK | | Per cent | |
| All Enterprises | Yes | 202 | 58 752 | 68 159 | 16 | 19 |
| No | 442 | 74 320 | 89 583 | 21 | 12 |
|  |  |  |  |  |  |  |
| Large Enterprises | Yes | 88 | 48 300 | 56 121 | 16 | 29 |
| No | 154 | 42 076 | 48 758 | 16 | 18 |
| Small and medium Enterprises | Yes | 114 | 10 452 | 12 038 | 15 | 13 |
| No | 288 | 32 244 | 40 825 | 27 | 6 |

Note: Two enterprises are excluded in this table.

In addition to size class, the relation between international sourcing and trade in services may be approached in terms of the activity of the enterprises. Due to the relatively low number of enterprises in the matched population, the applied breakdown here is by manufacturing and other sectors. The table below, however, suggests that, at this level of detail, there is very little difference between the manufacturing sector and the other sectors.

Table 6. Import trends for sourcing and non-sourcing enterprises. By enterprise activity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity | International sourcing | Number of  enterprises | Growing import | Little or no  development in import | Declining import |
|  |  |  | Per cent of enterprises | | |
| All Enterprises | Yes | 203 | 50 | 20 | 30 |
| No | 443 | 42 | 25 | 33 |
|  |  |  |  |  |  |
| Manufacturing sectors | Yes | 62 | 50 | 18 | 32 |
| No | 77 | 45 | 25 | 30 |
| Other sectors | Yes | 141 | 50 | 21 | 29 |
| No | 366 | 42 | 25 | 34 |

The same stands out from the table below, where instead of looking at distributions of enterprises by growth intervals the results show the overall and median change rates in services imports. There is little difference between the median change in services imports of sourcing enterprises in the manufacturing sector and in other sectors, and in both cases the rate is higher than for the non-sourcing enterprises in the same activity category. Interestingly, the table shows that the enterprises with international sourcing account for a much higher share of imports in manufacturing than is the case in the group with other sectors, where non-sourcing enterprises account for the highest share.

Table 7. Import change rates for sourcing and non-sourcing enterprises. By enterprise activity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Activity | International sourcing | Number of  enterprises | Total import of services in 2009 | Total import of services in 2012 | Change in import of services from 2009 to 2012 | Median change in import of services |
|  |  |  | Mn. DKK | | Per cent | |
| All Enterprises | Yes | 202 | 58 752 | 68 159 | 16 | 19 |
| No | 442 | 74 320 | 89 583 | 21 | 12 |
|  |  |  |  |  |  |  |
| Manufacturing sectors | Yes | 62 | 15 042 | 18 887 | 26 | 20 |
| No | 77 | 6 433 | 8 813 | 37 | 15 |
| Other sectors | Yes | 140 | 43 711 | 49 272 | 13 | 20 |
| No | 365 | 67 887 | 80 770 | 19 | 12 |

In conclusion, these first results on the matched population show that among the enterprises with international sourcing a higher share experienced a growth in the import of services, and moreover the median change in these enterprises’ import of services was significantly higher than that of the non-sourcing enterprises. The latter, however, still accounted for more than half of the services import of the matched population.

Further, the breakdown by size class shows a tendency toward increasing imports for both sourcing and non-sourcing enterprises. In particular among the large enterprises with international sourcing, a high share of enterprises experience a growth in services import, and the median change rate in these imports is significantly higher than for the non-sourcing large enterprises as well as the small and medium-sized ones.

Finally, the breakdown by enterprises activity suggests no difference between manufacturing and other enterprises in terms of how international sourcing impacts the import of services. This, however, is a very aggregate breakdown, and the recommendation is to pursue this question in further analysis in the future.

# Sourcing support functions and import of related services

The following sections present the analytical outputs for the matched ITSS-GVCIS surveys as far as functions, types of services as well as sourcing destinations and import origins are concerned, cf. the description above.

Table 8 below shows the overall characteristics of this population, which contains 646 enterprises. In total 203 of the 646 enterprises sourced internationally in the period 2009 to 2012, corresponding to 31 per cent. The share of enterprises with international sourcing is considerably higher than for the GVCIS population as a whole, presumably reflecting that enterprises that import services from abroad are to a higher degree internationally oriented than enterprises that do not. Naturally, when the focus is on the individual support business function, the number of enterprises that have sourced this or that particular function is lower than the overall figures, ranging from 29 to 81 enterprises for the different functions.

In the table below, the import of services for the enterprises is also included. Here, the column “Enterprises importing specific services” indicates the number of enterprises – in both the non-sourcing and international sourcing categories – that import the specific services that have been tied to the specific business function, cf. above. For example, the business function ICT and communication is linked to the Ebops2002 service item “263, Computer services” among other relevant service items. If the enterprise had no import in the relevant service item in 2009 or in 2012, they are counted as enterprises with no import and thus not considered in the table below. This means that, for example, of the 81 enterprises sourcing ICT and communication internationally, only 49 were importing the particular service items specified. The enterprises importing the specific service items are then distributed in the last three columns to the right by their import development from 2009 to 2012 for the relevant service item. Enterprises with little or no development are defined as having a below a 16 growth or less than a 16 decline.

Looking at the individual support business functions and imports may provide some insights into the connection between sourced functions and the associated service items.

For “Marketing, after sales service and related services”, 30 enterprises in the matched populations have sourced this function internationally. Half of these had import of the relevant service item – and 60 per cent of these experienced an increase in the import of the relevant service items, compared to 45 per cent of the enterprises that did not source this particular support business function internationally.

For the function “ICT and telecommunication”, the import development for the sourcing and non-sourcing enterprises is very similar. The only difference is that a larger share of the enterprises that are sourcing this function internationally also are importing the specific service items – this applies to all the support business functions, however.

For the function “R&D, engineering, and other technical services”, 46 per cent of the enterprises sourcing this function internationally experienced growing import of the specific service items – somewhat lower than the 52 per cent of the enterprises that did not source this function internationally.

For the function “Distribution and logistics”, 67 per cent of the enterprises sourcing this function internationally experienced growing import of series – compared to 47 per cent of the enterprises not sourcing this function. This is the business function/service item imports where there is the largest difference in the import development of sourcing and non-sourcing enterprises, but it is also the function with the smallest number of enterprises sourcing internationally (29), so the percentages should be taken with caution.

Finally, “Administrative and management functions” were sourced internationally by 81 enterprises – the same as “ICT and telecommunications”. However, there is a tendency for enterprises sourcing administrative and management functions internationally to experience an increase in the relevant service items, and for the non-sourcing enterprises to experience a decline – whereas for ICT and telecommunication the import development of the two groups was practically identical.

Table 8. Functions and services. Enterprises by import trends

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Function being outsourced** | International sourcing | All enterprises | Enterprises importing services specified above | | Growing import | Little or no development in import | Declining import |
|  |  | Number of enterprises | | | Percentage of enterprises with trade | | |
| Any support function | Yes | 203 | 203 | | 50 | 20 | 30 |
| No | 443 | 443 | | 42 | 25 | 33 |
|  |  |  |  |  |  |  |  |
| Marketing, after sales service, and related services | Yes | 30 | 15 | | 60 | 0 | 40 |
| No | 616 | 253 | | 45 | 6 | 49 |
| ICT and telecommunications | Yes | 81 | 49 | | 53 | 6 | 41 |
| No | 565 | 254 | | 53 | 5 | 42 |
| R&D, engineering, and other technical services | Yes | 49 | 39 | | 46 | 3 | 51 |
| No | 597 | 251 | | 52 | 7 | 41 |
| Distribution and logistics | Yes | 29 | 21 | | 67 | 0 | 33 |
| No | 617 | 272 | | 47 | 7 | 46 |
| Administrative and management functions | Yes | 81 | 55 | | 53 | 7 | 40 |
| No | 565 | 279 | | 43 | 6 | 50 |
|  |  |  | |  |  |  |

In the table below, the value of the imports for the enterprises that had trade in the period 2009 to 2012 is shown, including a column showing the relative change. Furthermore, the median change is included in the right-hand column. Two enterprises are excluded from the table because their import dominated the trade figures.

The table shows that the enterprises with international sourcing on average have a higher import of services (in terms of value) than the non-sourcing ones. However, this was declining from 2009 to 2012, as the import by internationally sourcing enterprises increased less than the import of services of those that did not source internationally (16 to 21 per cent). However, if one considers the median growth rates, this was significantly higher for the internationally sourcing enterprises, implying that the lower growth in the sourcing enterprises might be due to one or a few large players with negative or low growth in imports.

Furthermore, looking at table 9 one can see that especially the function “ICT and telecommunications” has a large growth in the import of services for the enterprises that sourced this function, both in relative and absolute measures. Also the median change for the enterprises supports the fact that the majority of the sourcing enterprises have a larger growth in import of services in the period.

Another interesting observation relates to the function “Administrative and management functions”, where there on average is no change in the import for the 279 enterprises that are not sourcing, whereas the sourcing enterprises have an increase of almost 50 per cent.

For “R&D, Engineering and other technical services” there is a marked difference in the change in import values for the sourcing vs. non-sourcing enterprises, and moreover the median change for the sourcing enterprises actually shows that majority experienced a decline in the import of services.

Table 9. Functions and services. Import values and median change

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Business function** | International sourcing | Enterprises importing services specified above | Total import of specific services in 2009 | Total import of specific services in 2012 | Change in import of specific services from 2009 to 2012 | Median change in import of specific services |
|  |  |  | Mn. DKK | | Percentage | |
| Any support function | Yes | 202 | 58 752 | 68 159 | 16 | 19 |
| No | 442 | 74 319 | 89 583 | 21 | 12 |
|  |  |  |  |  |  |  |
| Marketing, after sales service, and related services | Yes | 15 | 267 | 625 | 134 | 35 |
| No | 253 | 2 891 | 4 254 | 47 | 3 |
| ICT and telecommunications | Yes | 48 | 2 032 | 3 769 | 86 | 40 |
| No | 254 | 5 549 | 6 334 | 14 | 29 |
| R&D, engineering, and other technical services | Yes | 39 | 3 767 | 4 321 | 15 | -5 |
| No | 250 | 6 608 | 10 430 | 58 | 21 |
| Distribution and logistics | Yes | 21 | 804 | 1 080 | 34 | 50 |
| No | 270 | 22 292 | 26 010 | 17 | 10 |
| Administrative and management functions | Yes | 55 | 2 016 | 2 958 | 47 | 29 |
| No | 279 | 4 758 | 4 817 | 1 | -1 |
|  |  |  |  |  |  |

Note: Two enterprises are excluded in this table.

In conclusion, the analysis above has looked at the development in the imports of those services that were specifically linked to the respective business function above. While it may be difficult to draw clear-cut conclusions from this first analysis, the results do suggest that there may be a relation between the international sourcing of certain functions and the imports of related services. Certainly, a higher share of the enterprises with international sourcing of marketing, distribution and logistics as well as administrative support functions have experienced growth in the imports of the specified services than is the case for those enterprises that did not source these functions. The enterprises sourcing these functions internationally also had a markedly higher median change in the value of their import of services than the enterprises which did not source these functions.

For ICT and telecommunication support functions there is seemingly little difference in the import trends of the enterprises sourcing this function and those without sourcing. There is a relatively small difference in the median value change of the sourcing and non-sourcing enterprises here.

For R&D and engineering support functions, in turn, a higher share of the enterprises not sourcing these functions have experienced a growth in imports. The median change in the value of imported services, moreover, was substantially better for the non-sourcing enterprises.

# Sourcing destinations and import of services

The table below provides an overview of the geographical destinations for the international sourcing and the development in the import of services from the same areas. As a general observation, the enterprises that source to the area in question tend to a higher degree to import services from the same area than is the case for those enterprises not sourcing to the area in question.

Overall, 50 per cent of the enterprises with international sourcing experience a growth in the import of services, compared to 42 per cent of the non-sourcing enterprises. The results show that only two enterprises sourced to Russia or Brazil, and the development in imports from these countries is therefore difficult to read anything out of.

Looking at the USA/Canada, India and China, the smallest number of enterprises with international sourcing to the area is for the USA/Canada, with only 19 enterprises. All of these, however, also imported services from the North American area. For these enterprises there is a tendency towards declining import of services from the area, whereas a larger share of the enterprises not sourcing to the area experienced growing imports.

For India, there was also a higher share of the enterprises not sourcing to this location that experienced growing imports, compared to those enterprises that did source to India.

Similarly, a higher share of the enterprises that sourced to China have declining import of services from China, while there is a higher share of enterprises not sourcing to China that experience growing imports from this area.

Table 10. Sourcing destinations and origin of imported services. Enterprises by import trends

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Geographic area** | International sourcing | All enterprises | Enterprises importing  services from area | | Growing import of services from area | Little or no change  in import of services from area | Declining import of services from area |
|  |  | Number of enterprises | | | Percentage of enterprises with trade | | |
| Any area | Yes | 203 | 203 | | 50 | 16 | 34 |
| No | 443 | 443 | | 42 | 17 | 41 |
|  |  |  |  |  |  |  |  |
| USA/Canada | Yes | 19 | 19 | | 42 | 0 | 58 |
| No | 627 | 405 | | 48 | 13 | 39 |
| India | Yes | 61 | 40 | | 48 | 20 | 33 |
| No | 585 | 152 | | 53 | 11 | 37 |
| China | Yes | 35 | 26 | | 46 | 0 | 54 |
| No | 611 | 191 | | 53 | 13 | 34 |
| Russia | Yes | 2 | … | | … | … | … |
| No | 644 | … | | … | … | … |
| Brazil | Yes | 2 | … | | … | … | … |
| No | 644 | … | | … | … | … |
|  |  |  | |  |  |  |

Finally, in the table below the value of the imports from each area for the enterprises that had trade in the period 2009 to 2012 is shown, including with a column showing the relative change. Furthermore, the median change is included in the right-hand column. Two enterprises are excluded from the table because their import dominated the trade figures.

The overall results in the table, as was also described above, show that the enterprises with international sourcing on average have a higher import of services (in terms of value) than the non-sourcing ones. However, this was declining from 2009 to 2012, as the import by internationally sourcing enterprises increased less than the import of services of those that did not source internationally (16 to 21 per cent). However, if one considers the median growth rates, this was significantly higher for the internationally sourcing enterprises, implying that the lower growth in the sourcing enterprises might be due to one or a few large players with negative or low growth in imports.

More specifically, the table also shows that the total import of services from India and China is relatively small compared to the import from the USA/Canada. For the latter, the import of services by sourcing enterprises declined as a whole from 2009 to 2012, and this is also reflected in the negative median change rate. The enterprises not sourcing to the North American area imported services of roughly the same value in 2012 as in 2009, but the median change rate was positive at 26.

The import of services from India increased for both enterprises that sourced to the country and those that did not, the latter experiencing the highest growth and median change. There is a tendency for enterprises that are not sourcing to India to increase their import from the country.

Finally, also for China there is an increase in the import of services for both the enterprises sourcing to China and the ones not sourcing to China. Here, however, the median change rate for the enterprises sourcing to China is negative - implying that there are a few large importers with increasing import of services after having sourced to China. For the enterprises not sourcing to China the growth in services imports is quite substantial, and the median change rate is markedly higher than for the sourcing enterprises (55 compared to -22).

In conclusion, while the number of enterprises sourcing to each area is quite low, there is an overall tendency for internationally sourcing enterprises to experience growing import of services – but for the particular destinations of USA/Canada, India and China a higher share of the enterprises not sourcing to the area tend to have growing import of services, compared to those sourcing to the area, which tend to a lesser extent to experience such growth. The median changes in import values tend to support this picture further.

Table 11. Sourcing destinations and origin of imported services. Import values and median change

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Geographic area** | International sourcing | Enterprises importing  services from area | Import of services from  area in 2009 | Import of services from  area in 2012 | Change in import of services from area 2009-2012 | Median change for the enterprises |
|  |  |  | Mn. DKK | | Percentage | |
| Any area | Yes | 202 | 29 376 | 34 080 | 16 | 20 |
| No | 442 | 37 160 | 44 791 | 21 | 12 |
|  |  |  |  |  |  |  |
| USA/Canada | Yes | 19 | 774 | 612 | -21 | -22 |
| No | 367 | 6 959 | 7 009 | 1 | 26 |
| India | Yes | 34 | 518 | 575 | 11 | 42 |
| No | 137 | 218 | 347 | 59 | 100 |
| China | Yes | 24 | 121 | 176 | 46 | -22 |
| No | 170 | 396 | 721 | 82 | 55 |
| Russia | Yes | 2 | … | … | … | … |
| No | 148 | … | … | … | … |
| Brazil | Yes | 2 | … | … | … | … |
| No | 120 | … | … | … | … |

Note: Two enterprises are excluded in this table.