# TRANSNATIONAL COMPANIES AND A CHANGING STRUCTURE OF INTERNATIONAL TRADE

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***Abstract***
*Transnational companies had become the most important players in global business having significant impact on international trade. In the paper we will show the main changes and rising importance of TNCs` foreign affiliates in world trade, referred to as the process of the transnationalization. Even if the history of TNCs is a century and a half long, their importance is particularly significant in the last few decades. One of the important tendencies is rising intra-company trade, the trade between parent companies and their foreign affiliates, but also the process of phasing out the production and moving of some of the production phases abroad even outside the TNC, known as off shoring.*
*Even if the TNCs are important sources of private capital true foreign direct investments we have to notice rising importance of the state-owned TNCs, mostly from developing and transnational economies. TNCs are very important global actors but are particularly important for some national economies where their affiliates have significant influence on national turnover.*
*In the final segment of the paper we will analyse using quantitative methods the interdependence of share of TNC in national economy and imports content of exports. For this purpose statistical methods of Correlation and Linear Regression were used. Our analysis is based on the data for 9 OECD countries and we can expect a high level of positive association between these two variables, especially in the economies where the activity of TNCs is strong.*
***Key words:*** *transnational corporations, foreign affiliates, intra-firm exports, intermediate goods trade, import content of exports.*

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## 1. Introduction

International trade is the most significant activity in the world economy and the most important link between different national economies. In the 20th century international trade have recorded unprecedented volumes in human history with a significant changes in its structure. The important actors in international trade are transnational companies which had a leading role in the processes of globalisation of world economy.

Activities of these large global companies lead also to the internalization of international trade in the systems of these companies in the form of intra-firm trade. The business philosophy of transnational companies to use the resources where there are found in abundance and to process them at the location have made that most significant flows in contemporary international trade is trade in intermediary products and services.

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We can suppose that economies that record greater influence of transnational companies on local business activities are also more involved in global trade in intermediary products. These countries tend to have a large import content in their export. We have use quantitative analysis to explore this relationship.

## 2. Transnationalization of World Trade and Global Companies

Transnational companies have a very long history, but contemporary concept includes all companies investing not only in trade, but also in the process of production and all of that in host country and in other countries. The importance and significance of TNCs in international trade is asserted mostly by the practice of international trade and recognized in articles, pointing out that TNCs are dominant in international trade, while "new trade theory" is concentrated on simpler level, leaded with national firms and the phenomenon of the growing competition between them, with a condition that their countries are similar (Markusen, 1998, pp. 183-203).

One of the most used definitions of this phenomenon is the UNCTAD`s: "Transnational corporations (TNCs) are incorporated or unincorporated enterprises comprising parent enterprises and their foreign affiliates" (UNCTAD, 2005: 297). Same authors tend to use the term multinational companies, reffering to "multi-plant firm". One example are Nielsen and Pavlik, who evaluate the organizational structure of Multinational enterprises — MNEs. (Nielsen et al. 2008, pp. 341-371). The greatest authority in this area, Dunning, uses both terms "multinational or transnational enterprise" and defines this companies as "an enterprise that engages in foreign direct investment (FDI) and owns or, in some way, controls value-added activities in more than one country" (Dunning et.al., 2008, p. 3).

In our article, we choose to use a term "transnational" since it is generic for this type of global companies, who do their business accross national boundaries[4]. Transnational companies consist of one parent enterprise in home country and lots of affiliates abroad. The term multinational company is a specific type of TNCs that have their headquarters in not one, but few countries and usually are created by international mergers. So multinational firms are nearly not numerous as TNC and this term is widely used in managerial and industrial organisation domen (Drucker, 1997, p. 167).

The first modern TNC Singer company, specialised for the sewing machines mounting, opened its first affiliate in 1867 in Glasgow, Scotland (Kozomara et al, 2011, p. 87). After that period, the development of TNCs was insured, until the period of two Great Wars. After the Second World War, we can notice dynamic development of TNCs concerning the number of them and changes in production structure as well as regional structure of sources and host companies.

Transnational companies are important pillars of the Foreign Direct Investment (FDI). That process is obvious especially in the period after the Second World War. The number of TNCs has been changed a lot, but also the number of foreign affiliates and location of TNCs. First of all, their locations sixty years ago were developed countries, but at the beginning of the new century the direction has been changed toward developing countries. At the beginning of the 1990s the number of TNCs was about 37 000, they had about 170 000 foreign affiliates, but mostly, parent corporations were situated in developed countries, about 33 500 of them. Only one decade after, in 2004 the number of TNCs was almost doubled to the number of 70 000 TNCs, but the number of foreign affiliates increased more dynamically. The number was about 690 000 foreign affiliates and the half of them were created in developing countries. Top 50 TNCs from developing economies in 2003 realized foreign assets of 249 billion USD. (UNCTAD, 2005, pp. 14-17) At the beginning of the new century, in 2008, there were 82 053 TNCs registered in the world, with 807 363 foreign affiliates. (UNCTAD, 2009, pp. 222-223)

Previous data shows us the crucial changes in direction of creating new affiliates in developing countries at the end of the twentieth century and this trend has been continuing in the first

[4] Trans in latin means accross.

decade of the new century. The assets and employment of the 100 TNCs from developing and transition economies are increasing although data from the next table shows results of the economic crisis in 2008. Despite this fact, assets and employment registered increased. Sales would probably have the same direction in any other year, except in the post-crisis year.

Table 1: Internalization statistics of the 100 largest non-financial TNCs worldwide and from developing and transition economies (Billions of dollars, thousands of employees and per cent)

| | 100 largest TNCs worldwide | | | 100 largest TNCs from developing and transition economies | | |
|---|---|---|---|---|---|---|
| **Total** | **2008** | **2009** | 2008-09 % change | **2008** | **2009** | % change |
| Assets | 10,790 | 11,543 | 7 | 2,673 | 3,152 | 17.9 |
| Sales | 8,406 | 6,979 | -17 | 2,234 | 1,914 | -14.3 |
| Employment | 15,729 | 15,144 | -0.7 | 39 | 41 | 2 |

Source: UNCTAD, 2011: 27.

Although this direction is obvious, TNCs from developed countries are still dominant by their number, because they represent nearly 80% of TNCs and they are the source of about 70% of global FDI outflows. (UNCTAD, 2011, p. 25)

After the crisis, the increase of the investing in developing countries is obvious. Comparing two periods, first 2007-2008 and 2009-2010, investment activity changed its direction and the number of projects by the largest 100 TNCs, targeting developing and transition economies, increased by 23 per cent, which is extremely different compared with the increase of the number of projects towards developed countries, which was only 4 per cent. Investing in the region of the South, East and South-East Asia and Oceania has been very attractive for many years, but the growing number of the new greenfield investments in Latin America and Africa shows us a new direction of internalization (UNCTAD, 2011, p. 28).

The fact that in 1993, on the list of the first 100 TNCs there was not at least one TNC from a developing country shows us that this dimension is very much changed. In 2007 on the same list there were seven TNCs mostly from East and South-East Asia: Korea, China, Hong Kong, Malaysia (Wyrzykowska, 2010, p. 3). Specifically important are emerging countries, a group which consists of: Brazil, Russia, India and China. Their advantage for the development is in the first place, low labour costs, but also the fact that these countries were the sources of great profits and the investment on their territory.

In last thirty years, we can notice a few directions of changes. As the structure of TNCs activities is financial and non-financial, the first is change concerning the division of TNCs as financial and non-financial TNCs and increase of the number and value-added in the category of non-financial TNCs. Also, the great importance could be given to the foreign affiliates as sources of the world exports increase. The other is rising importance of the State-owned TNCs.

After the great crisis, in 2008, the non-financial and financial TNCs did not meet the same destiny. Financial TNCs, or some of them faced with the government receivership and after the stabilization, they focused more on domestic markets, than on the international dimension.

At the beginning of the new century, all important indicators of the TNCs development are increasing: foreign sales, employment and assets. Value-added of TNCs in 2010 was approximately 16 trillion USD, representing about one quarter of global GDP. Only foreign affiliates of TNCs in the same year were the source of the one third part of the world export. These foreign affiliates have been the creators of more than 10 per cent of the global GDP. Their role in creation of the GDP is higher than the role of the Public sector. These data concerning the 10 per cent means that the value-added only of the foreign affiliates of TNCs contributed to the value-added of the whole category of TNCs with about 40 per cent. (UNCTAD, 2011, x)

All selected indicators of the international production show that the year 2008 was the year when the sales, value-added, assets, exports and employment in foreign affiliates have been at the highest levels. As the same year the great economic crisis happened, the annual rate of change the following year was negative. But the annual rate of change in 2010 showed an important level of recovery, although they did not find themselves at the pre-crisis level. The most injured is the annual growth rate of the employment by foreign affiliates.

Table 2: Selected indicators of international production, 1990-2010

| | *Value at current prices (billions of dollars)* | | | | *Annual growth rate or change on return (per cent)* | | | |
|---|---|---|---|---|---|---|---|---|
| | **1990** | **2005-2007** *average* | **2008** | **2010** | **1991-1995** | **1996-2000** | **2001-2005** | **2010** |
| Sales of foreign affiliates | 5,105 | 21,293 | 33,300 | 32,960 | 8.2 | 7.1 | 14.9 | 9.1 |
| Value-added (pro-duct) of for. affil. | 1,019 | 3,570 | 6,216 | 6,636 | 3.6 | 7.9 | 10.9 | 8.3 |
| Total assets of foreign affiliates | 4,602 | 43,324 | 64,423 | 56,998 | 13.1 | 19.6 | 15.5 | 6.3 |
| Export of foreign affiliates | 1,498 | 5,003 | 6,599 | 6,239 | 8.6 | 3.6 | 14.7 | 18.6 |
| Employment by for. affil. (thousands) | 21,470 | 55,001 | 64,484 | 68,218 | 2.9 | 11.8 | 4.1 | 2.3 |

Source: UNCTAD, 2011, p. 24.

The data shows us that the most transnationalized economies in 2002 were Belgium and Luxembourg in the group of developed countries and Hong Kong in the group of developing countries (UNCTAD, 2005, p. 14). After the crisis in 2008, the new trend of internalization happened because it was necessary for many firms to relocate their resources and to become more effective. The main sources of transnationalization process are the first 100 TNCs because they always played an important role in achieving high numbers in foreign assets, sales and employment. Ten years ago, they accounted for 12% in foreign assets, for 18% in sales and 14% in employment (UNCTAD, 2005, p. 15).

One phenomenon is also typical for the first decade of the new century. That is the increased importance of the State-owned TNCs. The new role of the State-owned enterprises —SOEs from the developing and economies in transition is a phenomenon which has been intensified in the last two decades with their intensive internalization. The main difference that this group of enterprises makes so specific is the fact that the government has a controlling interest which is expressed through the stake of 10 per cent or more of the voting power. Sometimes, extreme version is that the state is the largest single shareholder. In 2010, there existed about 650 state-owned TNCs, with more than 8 500 foreign affiliates and 19 of them are on the list of top 100 TNCs. Developing and transition economies are hosts for the 56 per cent of the state-owned TNCs and mostly these are: South Africa, China, Malaysia, United Arab Emirates and India. Among developed economies, the majority of the state-owned TNCs are situated in Europe. This specific group of TNCs is a source of FDI and participates with 11 per cent in global FDI (UNCTAD, 2011, pp. 28-32).

Transnational companies are also the main subjects in the process of the internationalization of the production. It is the off shoring which appears as the TNCs decision to move some of their activities from their domestic countries to some other geographic locations. This is how the

production process could be split into few steps which take place in different countries. This is disintegration of the production process (Harms et al., 2009, p. 1). It could also be explained as the process of the relocating activities abroad. The part of the labour-intensive inputs and components could be produced in the countries where the labour costs are lower and capital-intensive inputs and components in countries with better conditions. This phenomenon appeared on the basis of the exploitation of the cost differences, but not on the national level. This process included these differences at the international level. But, although these individual steps in production, considered separately, are more favourable then production at one place, they cause a new group of costs due to moving the unfinished goods across borders, mostly transport costs and costs of delayed delivery. When these costs of moving the unfinished goods overcome the advantages, then the off-shoring should become complete and almost all production should be moved, or off-shored. This kind of situation could be called full off-shoring. Apart from this, there exists partial off-shoring which means that some production steps could be realised more cheaply abroad and this reason becomes the main reason for off-shoring. If the off shoring costs take a downward trend, then the production abroad becomes more effective compared with the production in domestic country. These processes in last twenty years much contributed to the internalization of the production.

As the international trade does not consist of the finished goods trading only, but also of raw materials and semi-finished goods, we can notice that TNCs are the main pillars of international trade, especially of its part concerning raw materials and semi-finished goods trading. These materials and goods are tradable between parent companies and their affiliates and that is called Intra-company trade, which accounts for about one third of global trade. (UNCTAD, 2004, p. 3) This last group, semi-finished goods trading is very important for intra-company trade. There is also intra-firm trading with final products. Intra-company trade could be also called intra-firm trade and it includes flows of goods and services with an international aspect, between parent company and its affiliates, or the same flow, but between affiliates of the same TNC. The main motivation for the moving of goods and services across borders is making the production process more effective concerning the costs of the production factors. The intra-company trade could increase its level only with the process of investing in foreign countries.

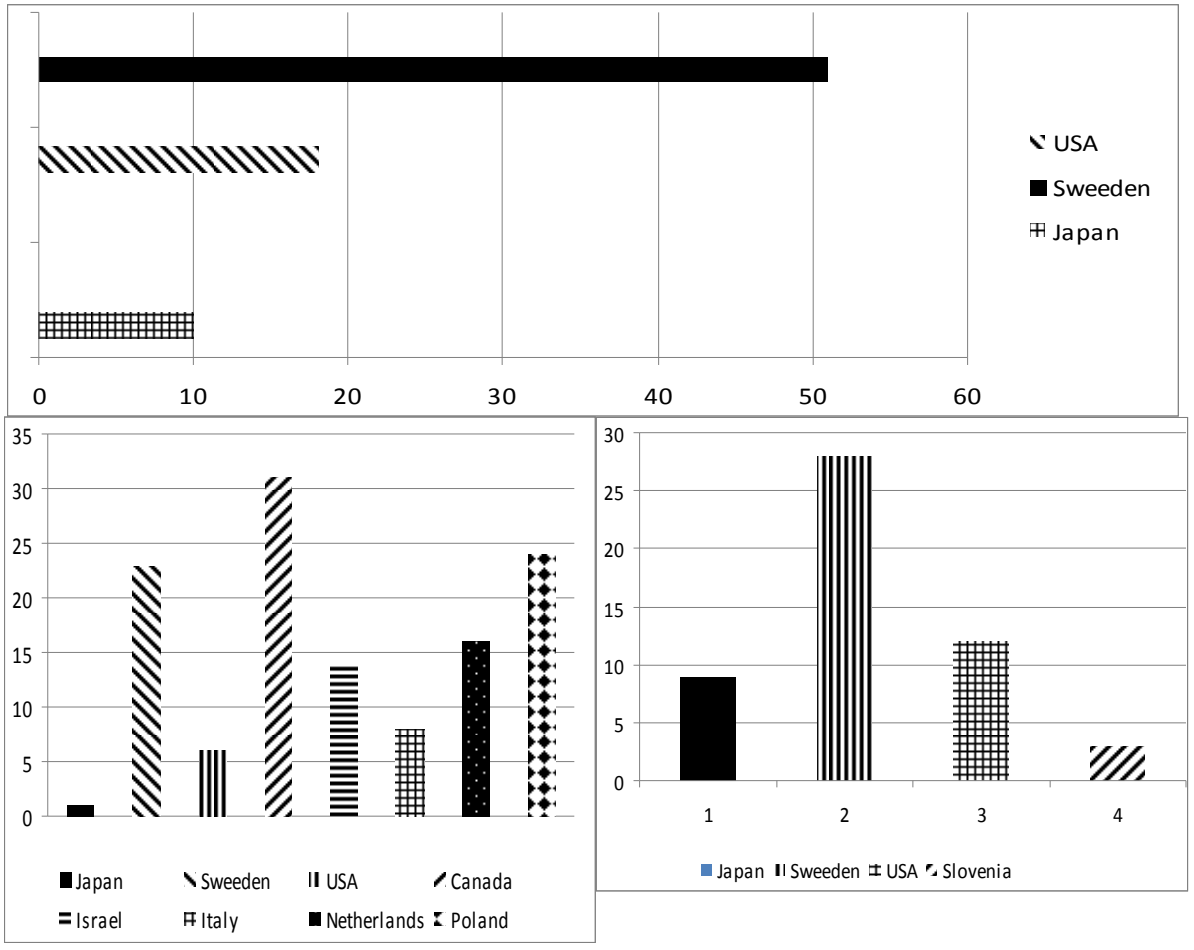
The main difference between the off-shoring process and intra-company trade is the fact that off-shoring as a "relocation of activities abroad" encompasses the intra-company trade and the trade with independent suppliers, which gives the off-shoring much broader framework (Lanz et al., 2011, p. 5) A few decades ago, off shoring was mainly motivated by low level of labour forces in developing countries, and some other differences in costs and resources from abroad, but at the beginning of the new century, this is not the main reason for relocating company's activities. The main reason became new activities very much connected with the knowledge, which had high value at international market and which could become the main source of developing countries in the future and a great opportunity for them to overpass the position of countries only with cheap workers as a resource.

The phenomenon of the intra-firm trade is important for the question of the customs valuation and transfer prices utilization in the trade between parent companies and their foreign affiliates and between foreign affiliates themselves. Some data prove the importance of intra-company trade for some of OECD countries. In the case of the USA, it was noticed that intra-firm trade had a share of 48% in the USA goods import and about 30% in the USA goods export, according to 2009 trade data. That trade statistics was based on observing a firms of ownership threshold of minimum 6% ownership in imports, and minimum 10% ownership in exports. Data in the next figure are based on at least 50% ownership trash old (majority owned affiliates), which is the reason why the share of intra-firm exports in manufacturing exports in the USA is not as high as the previous data showed. Data for the export of some OECD countries show similar results, because the intra-firms exports of their foreign affiliates represent 16% of their total export and with the export of parent companies to their affiliates, the total intra-firm trade of nine OECD countries is similar to the data for the USA of about 30%. Between them, there are some

differences concerning the part of intra-firm trade in total manufacturing exports, which is between 10% in Japan and 51% in Sweden. Some specific sectors are also main pillars of intra-firm trade. These are: automobile industry, pharmaceuticals and transport equipment production (Lanz et al., 2011, p. 5).

Figure 1: Share of intra-firm exports in manufacturing exports of OECD countries

Share of intra-firm exports in total manufacturing exports (ownership threshold 50%) - Affiliates to parents plus Parents to affiliates[5]




Affiliates to parents (outward AMNE)

Parents to affiliates (inward AMNE)

*Source*: OECD AFA and AMNE Database, OECD STAN Bilateral Trade Database (BTD) acording to Lanz et. al, 2011, p. 13.

[5] Data are for the year 2007 for Israel, Italy, Japan, Poland, Slovenia and the United States, 2002 for the Netherlands, 1999 for Sweden and 1994 for Canada. To calculate the intra-firm trade shares at the country level, intra-firm trade data from the OECD AFA database have been combined with manufacturing exports and imports from the OECD STAN BTD. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law (Lanz et al., 2011: 13).

Looking at the data based on a low ownership, or the data based on a 50% ownership criterion, the share of intra-firm exports in manufacturing exports of all OECD countries in this pattern demonstrates high, even dominant proportion in some countries, like Sweden. Intra-firm trade is a modern way of trading and by its structure of the "vertically integrated production networks" in the period of the great economic crisis in 2008, it was proved that this way was more flexible compared with the classic way of trading (Lanz et al., 2011, p. 2).

### 3. International Trade in Intermediary Products

At the beginning of the 21st century, we have some new changes in the structure of international trade due to the rising role of transnational corporations in world trade, which we had elaborated previously. These companies are changing their business policy and they observe global market as a single market. Similarly, like in 1960s when industrial goods became dominant products in international trade and surpassed primary products, the structure of trade in goods changed but in the structure of finalisation. Instead of trade in final products that serve for final consumption, the majority of global trade flows today consist of trade in intermediary products.

According to new statistical classification created by the United Nations and used in foreign trade statistics, Broad Economic Categories (BEC) classification, we can distinguish between Capital, Intermediate and Consumption Goods. Intermediate Goods are goods that are not completely finalized and serve as inputs in some other production. In this classification Intermediate goods include following groups and subgroups of goods (numbers of BEC groups and subgroups in brackets):

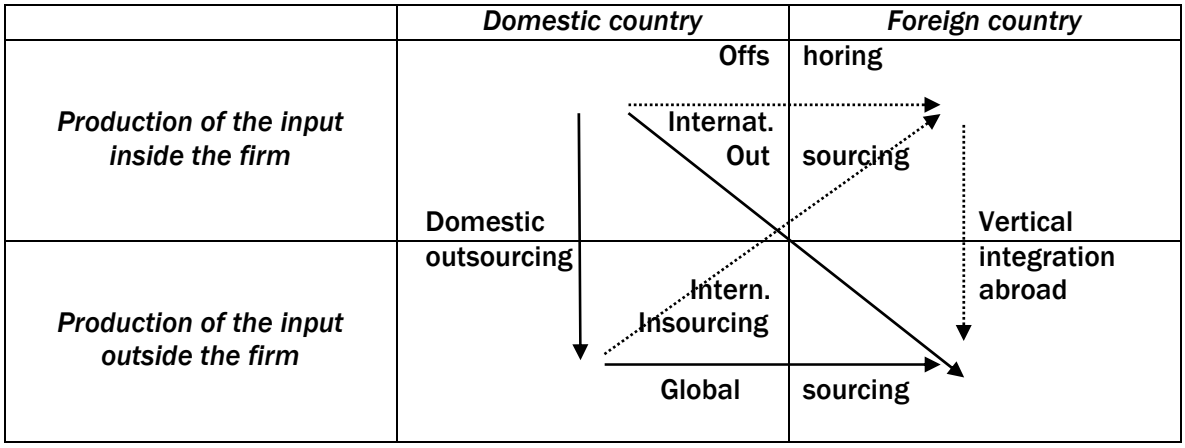
- Food and beverages, primary, mainly for industry (111);
- Food and beverages, processed, mainly for industry (121);
- Industrial supplies not elsewhere specified, primary (21);
- Industrial supplies not elsewhere specified, processed (22);
- Fuels and lubricants, primary (31);
- Fuels and lubricants, processed, other than motor spirit (322);
- Parts and accessories of capital goods, except transport equipment (42);
- Parts and accessories of transport equipment (53). (UN, 2012)

Intermediary goods are defined as "input to the production process that has itself been produced and, unlike capital, is used up in production" (Deardorff, 2006). It is not a basic or primary input since Intermediate goods have passed significant processing and a certain value had been added to these goods. The intermediate goods are a base of a future product in whose production it is used as input and is part of a final product, while capital goods that are used in the production do not get incorporated into the final product. The better term would be intermediary products since these inputs are not restricted to material goods and they can also consist of services. It is not always easy to distinguish between intermediary goods and goods for final consumption since some goods can have alternative uses. The best methodology for making this distinction is input-output (I-O) table. This methodology can show all the connections between inputs and final products of different industries as well as links between different sectors in economy.

The trend in the 19th century was that countries import raw materials and transform them into final products for consumption at their local markets so international trade was dominated by trade flows of commodities. With the industrial revolution, but more due to the liberalization of trade in industrial products, which came with General Agreement on Tariff and Trade (GATT) in the second half of 20th century, the trade in these finalized (industrial) goods became a dominant flow in international trade at that time. But when business philosophy of transnational companies changed and they adopted geocentric business strategy observing global market as one market, they started to optimize their production on this market. They produced commodities (intermediary goods) where raw materials were the cheapest and finalized products near big and rich markets. This means that products from one affiliate abroad are shipped to another affiliate abroad where they serve as inputs for further enrichment.

A firm that chooses to keep the production of an intermediate input within the company can produce it at home or in a foreign country. When it keeps it at its home country, it engages in standard vertical integration. When it makes it abroad, it engages in foreign direct investment (FDI) and intrafirm trade (Antràs et al., 2004, p. 552). If inputs are sent to the affiliate in the system of the same transnational company, this is off-shoring while if it is another company, this flow represents international outsourcing. More strategies concerning global production strategies can be found in figure 2. In this way the production of a product is phased out and different phases organized in several production locations abroad. This is known as global production chains. "*Disintegration of production itself leads to more trade, as intermediate inputs cross borders several times during the manufacturing process*" (Feenstra, 1998: 34). But services can be also outsourced and acquired from abroad, and this is referred to as trade in tasks (Lanz et al., 2011, p. 8).

Figure 2: Companies' sourcing strategies




Source: Miroudot et.al., 2009: 9.

With the fragmentation of production and the increasing importance of outsourcing, trade in intermediate inputs has been steadily augmenting its share in international trade. According to the latest data available, presented in table 3, intermediate inputs represent 56.2% of goods trade and 73.2% of services trade in trade of OECD countries (Miroudot, 2009, p. 17). Trade flows are thus dominated by products that are not consumed but further used in the production of other goods and services. In many developed countries (OECD members) but as well as in some emerging economies intermediate goods have dominant shares in their foreign trade. From OECD member economies, the largest share of intermediaries in goods trade is recorded in Republic of Korea, around 75%, while some emerging economies have the same share or even above this level, like China and India, two global production centers. Concerning trade in services, the largest share value of intermediary services is recorded in Germany, above 90%, while large shares, above 80% of services trade, are recorded in Austria, Italy, Mexico and China.

Today all countries significantly import inputs for their local products, the only difference being whether this final product is for domestic or international market. Even if classical theories teach us that countries export product that significantly contains factors of production found in abundance in this country due to significant technological changes, some countries import inputs and export products significantly made from these imported inputs. The valuable indicator is the Import content of exports that shows how much of one country's exports is dependent on the imports of inputs. Import content represents the share of imported inputs in total exports of an economy in one year. This indicator can be calculated only using input-output tables' methodology. The data shown in figure 3 are obtained from OECD sources since they produce input-output table for their member economies and selected non-member economies.

Table 3: Trade in intermediate goods and services
(2006 for goods and 2005 or last available year for services)

| *Economy* | *Trade in intermediate goods* | | *Trade in intermediate services* | |
|---|---|---|---|---|
| | *Value, mil. USD* | *Share in total trade, %* | *Value, mil. USD* | *Share in total trade, %* |
| Austria | 71,575 | 43.4 | 38,623 | 85.29 |
| Switzerland | 63,895 | 48.7 | 16,623 | 78.29 |
| Germany | 491,658 | 58.7 | 191,416 | 90.92 |
| France | 275,142 | 55.0 | 83,685 | 79.20 |
| United Kingdom | 238,336 | 47.1 | 128,484 | 78.02 |
| Italy | 224,762 | 57.6 | 75,072 | 83.37 |
| Japan | 361,728 | 66.0 | 89,791 | 66.87 |
| Korea, Rep. | 216,677 | 75.1 | 29,472 | 72.99 |
| Mexico | 154,757 | 64.6 | 17,801 | 83.03 |
| Turkey | 77,430 | 66.6 | 7,016 | 61.67 |
| Slovenia | 12,133 | 59.5 | 1,996 | 69.64 |
| **OECD** | **4,329,419** | **56.2** | **1,292,242** | **73.19** |
| Russia | 45,157 | 35.2 | 22,703 | 83.71 |
| Brazil | 62,632 | 72.7 | 10,324 | 67.14 |
| China | 567,235 | 75.3 | 72,897 | 86.99 |
| India | 136,032 | 79.5 | 10,068 | 47.85 |
| South Africa | 32,671 | 54.6 | 3,987 | 49.56 |

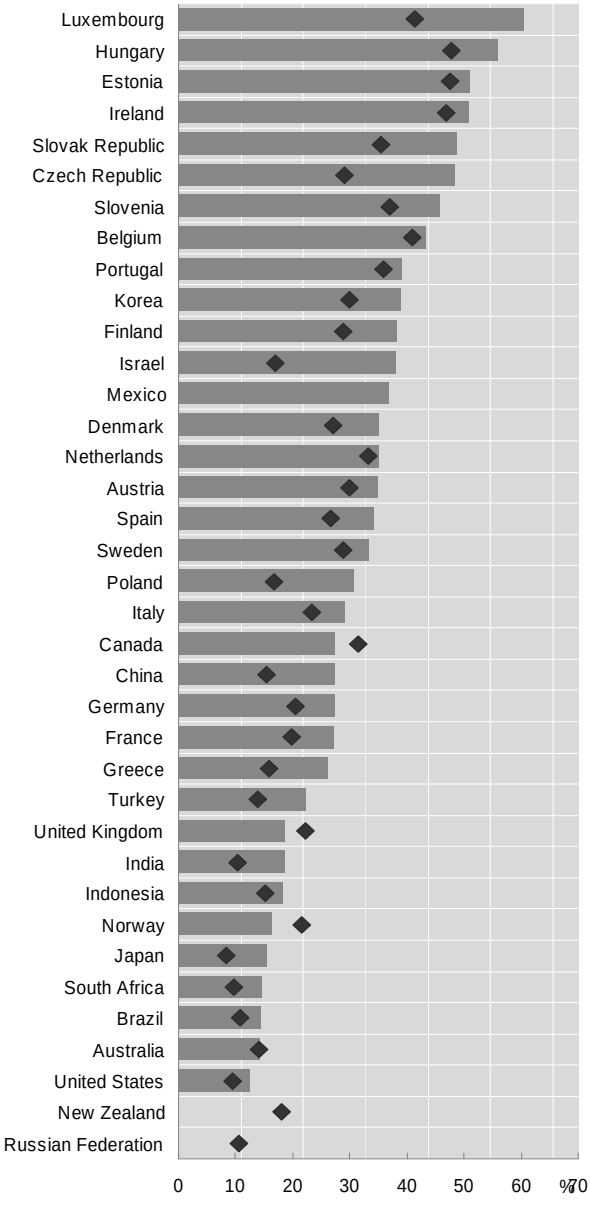
Source: Miroudot et.al., 2009: 48.

Some countries record huge import content in its exports, in 2005, like Luxemburg with more than 60% content, because it is a small and very open economy. Some other economies, OECD members, have large import content in their exports, more than 50% of total export in 2005, like Hungary, Estonia and Ireland. All these economies are highly dependent on the inflow of FDI and transnational companies play a significant role in their exports.

But some very developed economies have a substantial share of import content in their exports, above 30% of total exports in 2005, like Korea, Israel, Denmark and Austria, which shows their dependence on resource imports. Most important global trade powers have moderate import content in their export, around 27%, like China and Germany.

Many countries import inputs and export them processed, but what is very different is how countries transform the inputs they import. Some of them add more value to these inputs during processing than others. And this is what is very important - to export more value added through these products because this value added represents the usage of domestic factor in production that includes technology. But foreign trade statistics show trade flows of countries in gross terms, recorded export contain value of imported inputs and value added to them in processing. Differences between value added and gross trade flows reveal substantial information on production sharing relations. Traditional trade statistics suffer from a well-known "double-counting" problem and they are not completely informative and tend to overstate the implicit value or factor content exchanged among partners. (Johnson et al., 2009: 2) That is why OECD have started to develop trade statistics by value added and this database will be available on-line in July 2012. But what we wanted to research in more detail in this paper is whether the link between the share of TNC in national economy and export content of exports exists.

Figure 3: Import content of exports (as a percentage of total exports), 2005 and 1995 (♦)




Source: OECD, STAN Input-Output Database, May 2011, Internet, http://dx.doi.org/10.1787/888932487875

### 4. Analysis of interdependence of share of TNC in national economy and import content of exports

Many studies analysed different effect of TNC operations, like impact on exports, government finances, employment, environment and indirect impacts (Jefferis, 2009, p. 72). Our aim is to analyse the connection between import content of export and TNC operations in a country. In order to investigate whether there is a connection between the Share of TNC in national economies and Imports content of Exports we would first need to obtain time series data. The best source for these data has proven to be the OECD Database, but not without flaws. Out of 44 countries in the Database, 33 OECD (without Iceland) and 11 non-OECD Members, only 6 of them provided all the data necessary for this analysis. Furthermore, published data had to be statisti-

cally adjusted in order to be mutually comparable. Data for Share of TNC in national economies were on annual basis while for Imports content of Exports on period basis. For this analysis three-year averages were calculated for Share of TNC in national economies. Since there were no data for Agriculture at all, the analysis will focus on the sector of Food products, beverages and tobacco. The data for Services were calculated based on the data for the sectors of Trade, repair, hotels and restaurants and Finance, insurance, real estate and business activities.

In order to make the results of this analysis more reliable, United Kingdom, Norway and Germany have also been included, even though they did not provide the data for Share of TNC in services sector for the period mid-1990s. Out of all provided data (Number of researchers, Number of employees, Production, Turnover, Value added, Compensation of employees, R&D expenditures, Number of researchers, Gross fixed capital formation, Total exports, Total imports, Gross operating surplus, Technological payments, Technological receipts) the Share of TNC in the national turnover has been chosen as the most representative for measuring the Share of TNC in national economies. One of the reasons is that turnover is a good measure of business and economic activity in general. It is also worth saying that these data were the most complete ones in comparison to others.

The data for the Share of TNC in the national turnover have been collected from the table Inward activity of multinationals - Share in national total. This table contains figures on the shares of industrial sectors that are "controlled" by affiliates under foreign control in each country (inward investment as a percentage of national totals). For the Imports content of Exports the OECD Input-Output database has been used. As mentioned before, the import content of export indicator represents the degree of vertical specialization, the contribution that imports make in the production of exports of goods and services. Input-Output tables describe the sale and purchase relationships between producers and consumers within an economy. They can be produced by illustrating flows between the sales and purchases (final and intermediate) of industry outputs or by illustrating the sales and purchases (final and intermediate) of product outputs. The OECD Input-Output database is presented on the former basis, reflecting in part the collection mechanisms for many other data sources such as Research and Development expenditure data, employment statistics, pollution data, energy consumption, which are in the main collected by enterprise or by establishment, and thus according to industry classifications (OECD Stat Extracts, 2012).

Regarding Share of TNC in the national turnover in the observed period, the lowest average share has been recorded in Portugal for Services (13.6%) and the highest in Czech Republic for manufacturing (41,3%). In the sector of Food products, beverages and tobacco the lowest average share has been recorded in Portugal (16.1%) and the highest in Sweden (35.7%). In the sector of Manufacturing the lowest average share has been recorded in Finland (15.6%) and the highest in Czech Republic (as mentioned). In the sector of Services the lowest average share has been recorded in Portugal (as mentioned) and the highest in Czech Republic (32.3%). For the entire economy (Total Business Enterprise) the lowest average share has been recorded in Portugal (16.3%) and the highest in Czech Republic (30.6%).

Regarding Imports content of Exports in the observed period, the lowest average share has been recorded in Germany for Services (10.1%) and the highest in Czech Republic for manufacturing (47.6%). In the sector of Food products, beverages and tobacco the lowest average share has been recorded in Poland (19.3%) and the highest in the Netherlands (38.5%). In the sector of Manufacturing the lowest average share has been recorded in Germany (27.6%) and the highest in Czech Republic (as mentioned). In the sector of Services the lowest average share has been recorded in Germany (as mentioned) and the highest in Norway (25.4%). For the entire economy (Total Business Enterprise), the lowest average share has been recorded in Norway (18.2%) and the highest in Czech Republic (41%).

Table 4: The Share of TNC in national turnover and Imports content of Exports (in %)

| *Country* | *Share of TNC in the national turnover* | | | | | *Imports content of Exports* | | | |
|---|---|---|---|---|---|---|---|---|---|
| United Kingdom | Sector | mid-1990s | early 2000s | mid-2000s | Average | mid-1990s | early 2000s | mid-2000s | Average |
| | Food pro-ducts, beve-rages and tobacco | 23.7 | 29.7 | 37.2 | 30.2 | 21.8 | 18.6 | 20.8 | 20.4 |
| | Manufacturing | 33.6 | 40.1 | 43.9 | 39.2 | 27.5 | 28.8 | 29 | 28.4 |
| | Services | / | 24.9 | 27.6 | 26.2 | 11.3 | 10.1 | 9.5 | 10.3 |
| | Total Business Enterprise | 28.6 | 27.2 | 30.2 | 28.7 | 22.2 | 20.3 | 18.6 | 20.4 |
| Sweden | Food products, bevera-ges and tobacco | 26.4 | 39.8 | 41 | 35.7 | 24.7 | 26.7 | 29.3 | 26.9 |
| | Manufacturing | 40.1 | 40.2 | 19.6 | 33.3 | 32.7 | 36.8 | 39.3 | 36.3 |
| | Services | 20 | 26.2 | 29.7 | 25.3 | 14.6 | 16.6 | 17.8 | 16.3 |
| | Total Business Enterprise | 17.8 | 31.1 | 32.7 | 27.2 | 28.9 | 32.3 | 33.2 | 31.5 |
| Portugal | Food products, bevera-ges and tobacco | 10.5 | 16.1 | 21.9 | 16.1 | 27.3 | 26.8 | 30 | 28 |
| | Manufacturing | 15.4 | 21.6 | 26.2 | 21 | 39.9 | 38.3 | 45.9 | 41.4 |
| | Services | 8.8 | 14.2 | 18 | 13.6 | 12.2 | 13 | 15.7 | 13.7 |
| | Total Business Enterprise | 11.6 | 16.6 | 21 | 16.3 | 35.8 | 30.8 | 38.9 | 35.2 |
| Poland | Food products, bevera-ges and tobacco | 19.8 | 39.8 | 43.6 | 34.4 | 15.9 | 19.6 | 22.3 | 19.3 |
| | Manufacturing | 19.4 | 41.9 | 45.5 | 35.6 | 19.4 | 31.5 | 38.6 | 29.8 |
| | Services | 6.5 | 27.8 | 29.7 | 21.3 | 13.8 | 14.1 | 15 | 14.3 |
| | Total Business Enterprise | 8.7 | 30.3 | 33.8 | 24.2 | 16.8 | 24.7 | 30.6 | 24 |
| Norway | Food products, bevera-ges and tobacco | 11.5 | 21 | 20.4 | 17.6 | 24.4 | 25.1 | 24.1 | 24.5 |
| | Manufacturing | 18.9 | 26.6 | 28.1 | 24.5 | 33.5 | 32.2 | 31.8 | 32.5 |
| | Services | / | 24.3 | 24.8 | 24.5 | 24.9 | 25.1 | 26.1 | 25.4 |
| | Total Business Enterprise | 15.2 | 24.3 | 24.8 | 21.4 | 21.6 | 16.9 | 16.2 | 18.2 |
| Nether-lands | Food products, bevera-ges and tobacco | 30.1 | 38.2 | 38.6 | 35.6 | 38.3 | 39.4 | 37.7 | 38.5 |
| | Manufacturing | 30.4 | 41.2 | 43 | 38.2 | 42.6 | 48.1 | 47.8 | 46.2 |
| | Services | 15.1 | 18.8 | 20.1 | 18 | 17.7 | 19.3 | 19.8 | 18.9 |
| | Total Business Enterprise | 18.8 | 28.4 | 31 | 26.1 | 33.3 | 36.9 | 34.9 | 35 |
| Germany | Food products, bevera-ges and tobacco | 13.3 | 22.4 | 25.9 | 20.5 | 18.8 | 21.7 | 22.9 | 21.1 |
| | Manufacturing | 13.1 | 26.5 | 29 | 22.9 | 22.9 | 29 | 30.9 | 27.6 |
| | Services | / | 19.9 | 27.3 | 23.6 | 8.1 | 10.9 | 11.4 | 10.1 |
| | Total Business Enterprise | 13.2 | 22.9 | 27.4 | 21.1 | 20.4 | 25.8 | 27.2 | 24.5 |
| Finland | Food products, bevera-ges and tobacco | 7.7 | 20 | 22.9 | 16.9 | 22.5 | 25.8 | 25.9 | 24.7 |
| | Manufacturing | 13.7 | 15.9 | 17.3 | 15.6 | 31.3 | 35.2 | 40.9 | 35.8 |
| | Services | 13.7 | 19.3 | 22.5 | 18.5 | 12 | 14.7 | 17.2 | 14.6 |
| | Total Business Enterprise | 13.7 | 18.1 | 19.8 | 17.2 | 28.8 | 33.4 | 38 | 33.4 |
| Czech Republic | Food products, bevera-ges and tobacco | 11.4 | 32.6 | 35.8 | 26.6 | 26.1 | 34.4 | 31.8 | 30.8 |
| | Manufacturing | 17.8 | 48.7 | 57.6 | 41.3 | 34.8 | 54.1 | 53.8 | 47.6 |
| | Services | 17 | 38.7 | 41.1 | 32. 3 | 18.1 | 20.8 | 19.8 | 19.6 |
| | Total Business Enterprise | 13.4 | 35.5 | 42.8 | 30.6 | 29.1 | 45.6 | 48.3 | 41 |

Source: OECD Stat Extracts, March 2012, Internet: http://stats.oecd.org/Index.aspx? DataSetCode=STAN_IO_M_X

Looking at the data in Table 1, we can say that there is a connection between these two parameters. In order to draw such a scientific conclusion we need to do Correlation and Linear Regression analysis. A correlation coefficient gives a numerical summary of the degree of association between two variables. It is calculated with the following formula:

$$r = \pm \frac{\sum_{i=1}^{n} \left(xi - \overline{X}\right)\left(yi - \overline{Y}\right)}{\sqrt{\sum_{i=1}^{n} \left(xi - \overline{X}\right)^2 \cdot \sum_{i=1}^{n} \left(yi - \overline{Y}\right)^2}}$$

Where "x" and "y" are values and "$\overline{X}$" and "$\overline{Y}$" are average values of the variables (Buxton, 2008).

The Linear Regression summarizes the relationship between two variables, but only in the specific setting: one of the variables helps explain or predict the other. That is, linear regression describes a relationship between an explanatory variable "x" and a response variable "y". A straight line relating "y" to "x" has an equation of the form

$$y = a + bx$$

The coefficient of determination $R^2$ is a statistical measure of how well the regression equation approximates the real data points (Moore, 2007, pp. 115-149).

Looking at the Correlation coefficient column in the Table 2 we can see that there is practically no association between changes of the Share of TNC in national turnover and Imports content of Exports in only four sectors. These sectors are Food products, beverages and tobacco in United Kingdom, Norway and Netherlands and Total Business Enterprise in Portugal. Since that is the case, there is no need for performing Linear Regression analysis in these sectors. On the other hand, there is a high negative association between variables in five sectors, namely Services and Total Business Enterprise in the United Kingdom, Manufacturing in Sweden and Manufacturing and Total Business Enterprise in Norway. In the case of Services sector in the United Kingdom, Correlation coefficient is -1, which indicates a perfect negative correlation.

For a vast majority of sectors and countries we can see that there is a high positive association between changes of the Share of TNC in national turnover and Imports content of Exports. Only in six sectors the value of Correlation coefficient is below 0.9: Food products, beverages and tobacco in Sweden, Food products, beverages and tobacco and Manufacturing in Portugal, Services in Poland, Total Business Enterprise in Netherlands, and Services in Czech Republic with the first having the value of 0.86 and the last 0.89. For 19 sectors, namely Food products, beverages and tobacco in Poland, Germany, Finland, Czech Republic; Manufacturing in the United Kingdom, Poland, Netherlands, Germany, Finland, Czech Republic; Services in Sweden, Portugal, Netherlands, Finland; and Total Business Enterprise in Sweden, Poland, Germany, Finland, Czech Republic the value of Correlation coefficient is higher than 0.9, which indicates high positive association between variables. In two sectors, Services in Norway and Germany, Correlation coefficient is 1 indicating perfect positive correlation.

In order to explain the results of the Linear Regression analysis we need to start from the assumption that there is no possibility that the Share of TNC in the national turnover could be equal to 0, so there is no need to explain the intercept ("a"). As mentioned before, in the four sectors where Correlation coefficient is close to 0, Food products, beverages and tobacco in the United Kingdom, Norway and the Netherlands and Total Business Enterprise in Portugal, there is no need for doing Linear Regression analysis. Finally, there is no need for explaining Linear Regression equation in the cases where $R^2$ is lower than 0.5 since in that case less than 50% of the association between changes of the Share of TNC in national turnover and Imports content of Exports is explained by it. That is the situation in three sectors: Manufacturing in Portugal and Total Business Enterprise in the United Kingdom and the Netherlands.

Table 5: Correlation and Linear Regression analysis of the Share of TNC in national turnover and Imports content of Exports

| Country | Sector | Correlation coefficient | Linear Regression | |
|---|---|---|---|---|
| | | | Equation | $R^2$ |
| United Kingdom | Food products, beverages and tobacco | -0.247967142 | / | / |
| | Manufacturing | 0.968322981 | y = 0.115x + 22.51 | 0.9376 |
| | Services | -1 | y = -0.9x + 12.1 | 0.9643 |
| | Total Business Enterprise | -0.502418894 | y = -0.6069x + 37.791 | 0.2524 |
| Sweden | Food products, beverages and tobacco | 0.86460269 | y = 0.2463x + 18.1 | 0.7475 |
| | Manufacturing | -0.787320908 | y = -0.2211x + 43.63 | 0.6199 |
| | Services | 0.999905104 | y = 0.3282x + 8.0275 | 0.9998 |
| | Total Business Enterprise | 0.994823874 | y = 0.2758x + 23.964 | 0.9897 |
| Portugal | Food products, beverages and tobacco | 0.789556798 | y = 0.2391x + 24.171 | 0.6234 |
| | Manufacturing | 0.690524145 | y = 0.512x + 30.591 | 0.4768 |
| | Services | 0.920182486 | y = 0.3663x + 8.6349 | 0.8467 |
| | Total Business Enterprise | 0.344994147 | / | / |
| Poland | Food products, beverages and tobacco | 0.960104833 | y = 0.2411x + 10.972 | 0.9218 |
| | Manufacturing | 0.969708436 | y = 0.6655x + 6.14 | 0.9403 |
| | Services | 0.744564334 | y = 0.036x + 13.53 | 0.5544 |
| | Total Business Enterprise | 0.952378329 | y = 0.4853x + 12.261 | 0.907 |
| Norway | Food products, beverages and tobacco | 0.27681549 | / | / |
| | Manufacturing | -0.996766789 | y = -0.1797x + 36.907 | 0.9935 |
| | Services | 1 | y = 0.6x + 24.167 | 0.871 |
| | Total Business Enterprise | -0.997515971 | y = -0.5411x + 29.837 | 0.995 |
| Nether-lands | Food products, beverages and tobacco | 0.122974963 | / | / |
| | Manufacturing | 0.984087818 | y = 0.4461x + 29.12 | 0.9684 |
| | Services | 0.999513099 | y = 0.4194x + 11.378 | 0.999 |
| | Total Business Enterprise | 0.700487401 | y = 0.196x + 29.92 | 0.4907 |
| Germany | Food products, beverages and tobacco | 0.999907081 | y = 0.3243x + 14.478 | 0.9998 |
| | Manufacturing | 0.996873297 | y = 0.4871x + 16.462 | 0.9938 |
| | Services | 1 | y = 1.65x + 6.8333 | 0.8606 |
| | Total Business Enterprise | 0.992923081 | y = 0.4913x + 14.068 | 0.9859 |
| Finland | Food products, beverages and tobacco | 0.98761697 | y = 0.2362x + 20.745 | 0.9745 |
| | Manufacturing | 0.97241268 | y = 2.587x - 4.6441 | 0.9456 |
| | Services | 0.991023103 | y = 0.5839x + 3.827 | 0.9821 |
| | Total Business Enterprise | 0.96886443 | y = 1.4157x + 9.0492 | 0.9387 |
| Czech Republic | Food products, beverages and tobacco | 0.907622332 | y = 0.2904x + 23.04 | 0.8238 |
| | Manufacturing | 0.974084889 | y = 0.516x + 26.23 | 0.9488 |
| | Services | 0.892250115 | y = 0.0917x + 16.608 | 0.7961 |
| | Total Business Enterprise | 0.993930949 | y = 0.6741x + 20.381 | 0.9879 |

Source: Authors calculations based on data from the Table 4.

In the case of the United Kingdom 93.76% of the association between changes of the Share of TNC in national turnover and Imports content of Exports are explained with the Linear Regression equation in the sector of Manufacturing and 96.43% in the Services sector. In the sector of Manufacturing, if the Share of TNC in national turnover would increase by 1% we could expect that the Imports content of Exports would increase by 0.115%, while in the Services sector,

we could expect that the increase of the Share of TNC in national turnover by 1% would result in the decrease of Imports content of Exports by 0.9%.

Looking at the coefficient of determination for all four sectors for Sweden, we could conclude that the Linear Regression equations are very reliable. Therefore, we could expect that if the Share of TNC in national turnover increases by 1%, the Imports content of Exports would increase by 0.2463%, 0.3282% and 0.2758% in the sectors of Food products, beverages and tobacco, Services and Total Business Enterprise respectively and decrease by 0.2211% in the sector of Manufacturing.

For Portugal, 62.34% of the association between variables in the sector of Food products, beverages and tobacco and 84.67% in the sector of Services is explained with the equations. In the sector of Food products, beverages and tobacco, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.2391%. In the sector of Services, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.3663%.

In the case of Poland, 92.18% of the association between changes of the Share of TNC in national turnover and Imports content of Exports is explained with the Linear Regression equation in the sector of Food products, beverages and tobacco, 94.03% in Manufacturing, 55.44% in Services and 90.07% in Total Business Enterprise. In the sector of Food products, beverages and tobacco, if the Share of TNC in national turnover would increase by 1% we could expect that the Imports content of Exports would increase by 0.2411%, in Manufacturing by 0.6655%, in Services by 0.036% and in Total Business Enterprise by 0.4853%.

Looking at the coefficient of determination for Manufacturing, Services and Total Business Enterprise for Norway, we could conclude that the Linear Regression equations are very reliable. Therefore, we could expect that if the Share of TNC in national turnover increases by 1%, the Imports content of Exports would increase by 0.6% in the sector of Services and decrease by 0.1797% and 0.5411% in Manufacturing and Total Business Enterprise respectively.

For the Netherlands, 96.84% of the association between variables in the sector of Manufacturing and 99.9% in the sector of Services is explained with the equations. In the sector of Manufacturing, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.4461%. In the sector of Services, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.4194%.

In the case of Germany 99.98% of the association between changes of the Share of TNC in national turnover and Imports content of Exports is explained with the Linear Regression equation in the sector of Food products, beverages and tobacco, 99.38% in Manufacturing, 86.06% in Services and 98.59% in Total Business Enterprise. In the sector of Food products, beverages and tobacco, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.3243%, in Manufacturing by 0.4871%, in Services by 1.65% and in Total Business Enterprise by 0.4913%.

Looking at the coefficient of determination for all four sectors for Finland, we could conclude that the Linear Regression equations are very reliable. Therefore, we could expect that if the Share of TNC in national turnover increases by 1%, the Imports content of Exports would increase by 0.2362%, 2.587%, 0.5839% and 1.4157% in the sectors of Food products, beverages and tobacco, Manufacturing, Services and Total Business Enterprise respectively.

For Czech Republic, 82.38% of the association between variables in the sector of Food products, beverages and tobacco, 94.88% in Manufacturing, 79.61% in Services and 98.79%% in Total Business Enterprise is explained with the equations. In the sector of Food products, beverages and tobacco, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.2904%. In the sector of Manufacturing, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.516%. In Services, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.0917%. In Total

Business Enterprise, if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase by 0.6741%.

To conclude, out of 36 sectors (four sectors multiplied with nine countries) in only four of them which are 11.1% of the total, there is no association between changes of the Share of TNC in national turnover and Imports content of Exports. In five sectors which represent 13.9% there is a negative association and in the 27 of them which is 75% of the total number of sectors, there is a positive association between these two variables. On this account, we can conclude that in the vast majority of the cases there is a positive association between changes of the Share of TNC in national turnover and Imports content of Exports.

Additionally, Linear Regression analysis of those 27 sectors shows that if the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase between 0.036% and 2.587%. That is the evidence of the important causality between these two variables. What we can see is that the link between significance of TNC in national economy and the imports content of exports is very different and vary between different economies.

## 5. Conclusions

We have demonstrated that TNCs have an important role in contemporary international trade. They are regarded as most important business players in global trade today. The fact that foreign affiliates were the source of the one third of the world export and creators of more than ten percent of the global GDP, shows us their rising importance in the world economy. The phenomenon of the offshoring appeared as a result of the TNCs activities moving abroad and beside the intra-company trade, it requires the trade with independent suppliers. But changing business philosophy of TNC had lead to the disintegration of the production processes and moving some of the production phases abroad creating trade in intermediary products. In this paper we demonstrated that these products are dominant in contemporary international trade. Important indicator, apart from volume, is the import content of exports. Regarding Imports content of Exports in the observed period, in the sector of Food products, beverages and tobacco it was between 19.3% and 38.5%, in the sector of Manufacturing between 27.6% and 47.6%, in the sector of Services between 10.1 and 25.4% and for the entire economy between 8.2% and 41%.

With dynamic changes in the number of the TNCs and their foreign affiliates, some other changes also became typical in the last few decades. These include changes in regional structure, concerning their location, mostly in developed countries, but with the rising importance of the developing countries. The rising importance of the state-owned TNCs, mostly occurring in developing economies as well as economies in transition, has an impact on changes of the TNCs` regional structure. They are mostly situated in developing Asian and African countries.

But for some economies activities are more important than for others and we can follow this with TNC share in national economies turnover. In 9 OECD countries the Share of TNC in the national turnover in the observed period, has ranged in the sector of Food products, beverages and tobacco from 16.1% to 35.7%, in the sector of Manufacturing from 15.6% to 41.3%, in the sector of Services from 13.6% to 32.3% and for the entire economy from 16.3% to 30.6%.

Based on the results of the Correlation analysis we can conclude that for a vast majority of sectors and countries there is a high positive association between changes of the Share of TNC in national turnover and Imports content of Exports. As a result of values of Correlation coefficient which are very close to 1 the Linear Regression analysis has been done. If we exclude minority of sectors with the negative association between changes of the variables, we could reach some interesting results. If the Share of TNC in national turnover increases by 1% we could expect that the Imports content of Exports would increase between 0.2362% and 0.3243% in the sector of Food products, beverages and tobacco, between 0,115% and 2.587% in the sector of Manufacturing, between 0.0917% and 1.65% in the sector of Services and between 0.196% and 1.4157% for the entire economy.

**Literature**

Antràs, P. and Helpman, E. (2004), "Global Sourcing", *Journal of Political Economy* 112(3), pp. 552-580.

Bjelić, P. (2011), *Međunarodna trgovina*, Centar za izdavačku delatnost Ekonomskog fakulteta, Beograd, treće izmenjeno i dopunjeno izdanje.

Buxton, R., (2008), *Correlation*, Loughborough University, Leicestershire.

Deardorff, A. V. (2006), *Terms of Trade: Glossary of International Economics*, World Scientific Publishing, Singapore.

Drucker, P. F. (1997), *The Global Economy and the Nation State,* Council on Foreign Relations, New York.

Dunning, J. H. and Lundan, S. M. (2008), *Multinational Enterprises and the Global Economy*, Edward Elgar Publishing Ltd.

Feenstra, R. C. (1998), "Integration of Trade and Disintegration of Production in the Global Economy", *Journal of Economic Perspectives* 12(4), pp. 31-50.

Harms, P., Lorz, O., Urban, D., (2009), "Off shoring Along the Production Chain", *CESifo Working Paper Series No. 2564,* Center for Economic Studies and Ifo Institute for Economic Research, Munich, pp. 1-27.

Jefferis, K. (2009), The role of TNCs in the extractive industry of Botswana" *Transnational Corporations*, Vol. 18, No. 1.

Johnson, R. C. and Noguera, G. (2009), "Accounting for Intermediates: Production Sharing and Trade in Value Added", F.R.E.I.T. Working Paper No. 63, June.

Kozomara, J., Stojadinović Jovanović, S. (2011), „Međunarodno poslovno finansiranje", Centar za izdavačku delatnost Ekonomskog fakulteta, Beograd.

Miroudot, S., Lanz, R. and Ragoussis, A. (2009), "Trade in Intermediate Goods and Services", *OECD Trade Policy Working Papers*, No. 93, OECD Publishing, http://dx.doi.org/ 10.1787/5kmlcxtdlk8r-en.

Lanz, R. and Miroudot, S. (2011), "Intra-Firm Trade: Patterns, Determinants and Policy Implications", *OECD, Trade Policy Working Papers*, No. 114, OECD Publishing. (http://dx.doi.org/10.1787/5kg9p39lrwnn-en).

Lanz, R., Miroudot, S., Nordås, H. K. (2011), "Trade in Tasks", *OECD Trade Policy Working Papers*, No. 117, OECD, Paris.

Markusen, J.R. and Venables, A.J. 1998. Multinational Firms and The New Trade Theory, *Journal of International Economics*, 46, pp. 183-203.

Monika Wyrzykowska, (2010), Torun School of Banking, *Role of transnational corporations in the international trade*, available at: http://www.etsg.org/ETSG2010/papers/ Wyrzykowska.pdf (accessed 08.05.2012.).

Moore, D., (2007), *The Basic Practice of Statistics*, Fourth Edition, Purdue University, West Lafayette, pp. 115-149.

Nielsen, J. U. and Pawlik, K. (2008), "Intra-Industry Affiliate Trade of Foreign-Owned Companies in Transition Economies: The Importance of Organization of Production", *The International Trade Journal*, 22(3), pp. 341-371.

OECD, Stat Extracts: available at: http://stats.oecd.org/Index.aspx?DataSetCode= STAN_IO_M_X (accessed 15/03/2012).

UNCTAD (2004), Trade and Transport Facilitation: Building a Secure and Efficient Environment for Trade, Document TD/393, 6 April 2004, Geneva.

UNCTAD (2005), *World Investment Report 2005 — Transnational Corporations and the Internalization of R&D*, New York and Geneva.

UNCTAD (2009), *World Investment Report 2009 — Transnational Corporations, Agricultural Production and Development*, New York and Geneva.

UNCTAD (2011), *World Investment Report 2011— Non-equity Modes of International Production and Development*, New York and Geneva.