ROMANIA AND ITS POSITION ON GLOBAL VALUE CHAIN AN INTRODUCTIVE ANALYSIS

ŞERBĂNEL Cristiana Ioana[1], COJANU Valentin[2]

University of Economic Studies, Bucharest, Romania

Abstract:

Global value chains (GVCs) loomed as a paradigm for the international scheme of production process. For a large share of goods and services organization of production is nowadays vertically fragmented across different countries. This article offers a vision of Romania's position on GVCs by answering to the following questions: Where do Romanian exports go? and Which are the countries the mostly generate income for Romania through intermediate use of Romanian exports. The present paper highlights Romania and its place on global value chain.

Keywords: *global value chains; international trade; vertical specialization; Romania;*

JEL classification: *F1, F14, F23*

1. Introduction

What is a value chain? There is not an exact definition of this modern concept. Global value chains represent the total range of activities needed to

[1] *Ph.D. student, Faculty of International Business and Economics, Bucharest University of Economic Studies, Bucharest, Romania, Cristiana.serbanel@gmail.com*

[2] *Ph.D. Professor, student, Faculty of International Business and Economics, Bucharest University of Economic Studies, Bucharest, Romania, cojanu@ase.ro*

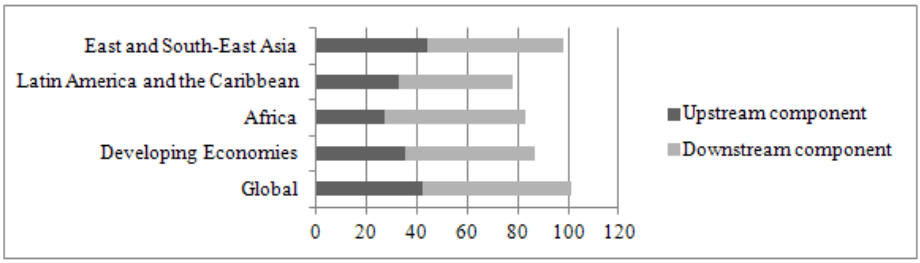
be accomplished to bring a product or a service from its conception to its end use and to its final consumers. This is made up of activities such as: design, production, marketing, distribution and service to the final consumer. This set of activities can be performed within a single firm or divided among different firms. Also it can be contained within a single geographical location or spread over wider areas. Nowadays researches try to understand the composition of value chains divided among several companies and spread across different countries.

The importance of GVCs is undisputable. According to World Trade Organization (WTO, 2013) "global value chains have become a dominant feature of world trade and investment, offering new prospects for growth, development and jobs". In terms of costs of trade and investment protectionism Angel Gurría, OECD Secretary-General, stated that "trade facilitation is about easing access to the global marketplace and doing away with the complicated border crossing procedures and excess red tape that raise costs, which ultimately fall on businesses, consumers and our economies". In present, "more than 70% of global trade is in intermediate goods and services and in capital goods" (OECD et. al, 2014, p. 7) and it amounts to "more than $20 trillion". (UNCTAD, 2013, p. 122)

A rapid and well planned integration into GVC will pay big dividends: developing economies with the fastest growing GVC participation have GDP per capita growth rates 2% above average. (OECD, WTO, UNCTAD, 2013, p. 7) The income created within GVCs has doubled, on average, over the last 15 years; in China, income associated with GVCs has grown six fold. (OECD et. al, 2014, p. 7)

In World Investment Report (2014, p.43) there is an illustration of GVC participation for Africa and other selected regions presented below in *Fig 1*.

Figure 1: GVC Participation for selected regions, 2011 (%)



Source: UNCTAD, World Investment Report 2014. Investing in the SDGs: An action plan, p. 43

GVC participation rate express the share of a country's exports that is a component of a multi-stage trade process. This is made of exports that are incorporated in other products and re-exported (down-stream component) plus the foreign value added in exports (upstream component) divided by total exports. As it can be noticed in *Figure 1*, East and South-East Asia has the larger share in both downstream component and upstream component. At the opposite pole, we can find Latin America and the Caribbean with the lowest values registered in both components.

International fragmentation expands the opportunities of countries to specialize according to comparative advantage and hence to gain from trade. But these gains are not necessarily equally distributed among all workers and owners of capital. Timmer (2014, p.117) believes that trade-offs involved can be better assumed by "conceptualizing the production process as a set of tasks to be performed by combinations of factor inputs".

2. Methodology

The conclusions of the present paper have been drawn using the World Input-Output Database (WIOD). WIOD is the first public database which contains information on production fragmentation and provides the opportunity to analyze the consequences of it. It covers 1995-2011 periods and a sample of 40 countries, including all 27 countries of the European Union (UE) and other 13 major nations: Australia, Brazil, Canada, China, India, Indonesia, Japan, Mexico, Russia, South Korea, Taiwan, Turkey and the

United States. WIOD contains data for 35 industries covering the entire economy, including agriculture, mining, utilities and construction, 14 services industries and 14 manufacturing industries. The data is gathered from national input-output tables and international trade statistics.

This paper aims to illustrate *where do Romanian exports go* and *which are the countries with highest, respectively lowest contribution to national income through intermediate use of Romanian export*. The analysis was performed both by sector and by country. The methodology was established considering Timmer's work, the manual of usage of WIOD.

For a country A, flows of products both for intermediate and for final use are split into domestically produced or imported. The model we have used to interpret the results regarding the Intermediate use by country of exports from Romania by sector is presented in Timmer's paper (2012, p. 4, 63).

We analyze the production fragmentation of both final and intermediate products. A final product is consumed, in contrast to intermediate products which continue on in the production cycle. Consumption includes private and public consumption, as well as investment. The global chain of a final product includes the value added of all activities that are directly and indirectly needed to produce that certain good. The global value chain takes birth in the country where the good starts to be created (including also intangible activities such as design for example) and it ends in the country where the last stage of production takes place, before delivery to the final consumer.

According to OECD (2001) intermediate consumption represent "the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital; the goods or services may be either transformed or used up by the production process".

2.1. Where do Romanian exports go? Analysis by sectors and by country

2.1.1. Sectors with highest, respectively lowest performance at export

To acquire success on the international market represent a challenge. The progress depends both on the aptness to import high-quality inputs and on the aptness to export. In 2013, intermediate inputs flows accounted for over two-thirds of the goods and 70% of the services traded worldwide. (WTO, 2013) Herein, we will present Romania's position on the global value chain.

In *Table 1* we performed calculations for each country and sector regarding the intermediate use of exports from Romania. We came to the conclusions presented in the table below by summing the intermediate use of exports from Romania for each country for the listed industries. The best Romanian performing sectors for intermediate use are as follows:

Table 1: Intermediate use by country and by industry of exports from Romania for 2011 (millions of US$) – Best performing sector

Sector (Code)	Total Output by sector in Romania (millions of US$)	Percentage of total Romanian exports (%)
Basic Metals and Fabricated Metal (27t28)	1559	20.76
Electrical and Optical Equipment (30t33)	1543	20.54
Transport Equipment (34t35)	1170	15.58
Machinery, Nec (29)	422	5.62
Textiles and Textile Products (17t18)	412	5.49
Chemicals and Chemical Products (24)	406	5.41
Post and Telecommunications (64)	255	3.40
Renting of M&Eq and Other Business Activities (71t74)	248	3.30
Inland Transport (60)	243	3.24
Agriculture, Hunting, Forestry and Fishing (AtB)	183	2.44
Wood and Products of Wood and Cork (20)	177	2.36
Rubber and Plastics (25)	144	1.92
Food, Beverages and Tobacco (15t16)	100	1.33

Manufacturing, Nec; Recycling (36t37)	93	1.24
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies (63)	88	1.17
Total	*7043*	*93.77%*

Source: Authors calculation based on *The World Input-Output Database* (WIOD, 2011)

The value of total output be sector (all 35 sectors included in WIOD) in Romania for 2011 is 7511 millions of US$. The values illustrated in the table above consists 93.77% of the total value of Romanian exports.

As it can be noticed above, there are 3 main sectors that generate the highest total output in Romania: Basic Metals and Fabricated Metal (1559 mil. US$ - 21%), Electrical and Optical Equipment (1543 mln. US$ - 21%) and Transport Equipment (1170 mil. US$ -16%). Also, the following sectors that have an important contribution in terms of total output generated at national level are: Machinery, Nec (422 mln. US$ - 6%), Textiles and Textile Products (412 mln. US$ - 5%) and Chemicals and Chemical Products (406 mln. US$ - 5%).

At the opposite pole, the Romanian export sectors with insignificant usage as intermediates are presented in *Table 2* as follows:

Table 2: Intermediate use by country and by sector of exports from Romania for 2011 (millions of US$) – Lowest performing sectors

Sector (Code)	Total Output by sector in Romania (millions of US$)	Percentage of total Romanian exports (%)
Other Community, Social and Personal Services (O)	14	0.19
Construction (F)	13	0.17
Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles (51)	2	0.03

Mining and Quarrying (C)	1	0.01
Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel (50)	0	0
Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods (52)	0	0
Water Transport (61)	0	0
Real Estate Activities (70)	0	0
Public Admin and Defence; Compulsory Social Security (L)	0	0
Education (M)	0	0
Health and Social Work (N)	0	0
Private Households with Employed Persons (P)	0	0
Total	*30*	*0.40%*

Source: Authors calculation based on *The World Input-Output Database* (WIOD, 2011)

The sectors with the lowest performance at export presented in the table above represent 0.40% of the total Romanian output (30 mln. US$ out of 7511 mln. of US$).

On the one hand, there are 8 exporting sectors that produce no output for the intermediate use by the countries covered in WIOD (total output value is zero). These sectors are: Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel, Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods, Water Transport, Real Estate Activities, Public Admin and Defence; Compulsory Social Security, Education, Health and Social Work and Private Households with Employed Persons. On the other hand, there are few exporting sectors that have a very low quantity of output for the intermediate use. These sectors are: Construction (13 mln. US$), Wholesale Trade and Commission Trade, Except

of Motor Vehicles and Motorcycles (2 mln.. US$), Mining and Quarrying (1 mln. US$).

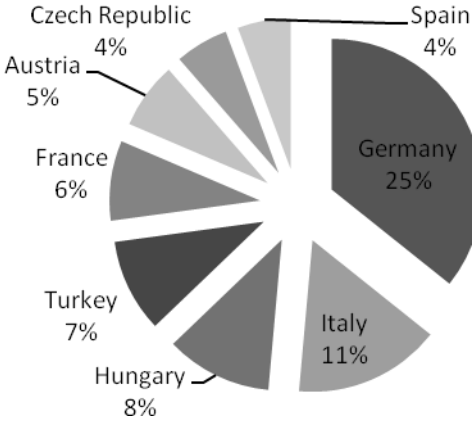
It is clear that all these sectors need more attention and investments in order to improve out national performance in commercial flows. For instance, in present, there are proposed new regulations regarding the sector Health and Social Work and Private Households with Employed Persons. Starting with 1st April 2015, there will be required to use National Health Card to doctors, hospitals and pharmacies. National Health Card is necessary to streamline the system through transparence on how the money is spent within the system. (Ziarul Financiar, 2015)

2.1.2. Countries with highest, respectively lowest contribution to national income through intermediate use of Romanian exports

WIOD include the analysis of 27 EU countries and 13 other major countries in the world.

Further on it will be presented the results concerning on the one hand the top performing partners in terms of total intermediate use by country of exports from Romania and on the other hand, the lowest performing partners in terms of total intermediate use by country of exports from Romania.

Figure 2: Top best performing partners in terms of total intermediate use by country of exports from Romania as percentage of total use of Romanian intermediates of countries included in WIOD (2011)



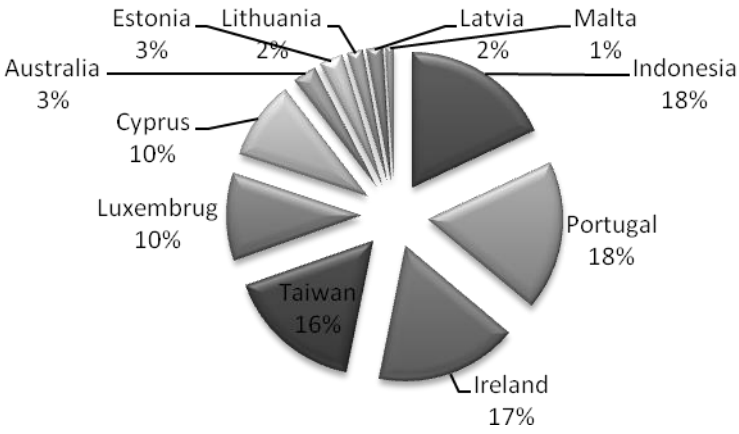
Source: Authors calculation based on The World Input-Output Database (WIOD, 2011)
Note: The results are approximated with 2 decimals

Romania's accession to European Union has changed the flux of intra EU trade of goods. Customs barriers abolishment to trade in EU allowed free movement of goods and services. According to IEconomics Statistics, Romanian exports increased from 1218 mln. Euro (2004) to 1957 mln. Euro (2007) to 3937 mln. Euro (2015).

As it can be noticed in *Figure 2* the most important partners that use as intermediate Romanian exports are European countries. The top of these countries is composed by: Germany (24,8%), Italy (11,1%), Hungary (8,26%), Turkey (7,1%), France (6,27%), Austria (5,03%), Czech Republic (3,9%) and Spain (3,5%).

The sectors that are mostly intensive used as intermediates in the countries mentioned above are as follows: Basic Metals and Fabricated Metal (1105 mln. of US$), Machinery, Nec (294 mln. of US$), Electrical and Optical Equipment (1253 mln. of US$) and Transport Equipment (897 mln. of US$). (Note: the value mentioned in brackets is registered in all countries mentioned above). If we look at *Table 1* at Romanian best performing sectors at exports as intermediates we can notices that these sectors are the same.

Figure 3: Top lowest performing partners in terms of total intermediate use by country of exports from Romania as percentage of total use of Romanian intermediates of countries included in WIOD (2011)



Source: Authors calculation based on The World Input-Output Database (WIOD, 2011)
Note: The results are approximated with 2 decimals

In *Figure 3* are represented the lowest performing partners in terms of total intermediate use by country of exports from Romania. These countries are as follows: Indonesia (0,19%), Portugal (0,19%), Ireland (0,18%), Taiwan (0,17%), Luxemburg (0,11%), Cyprus (0,1%), Australia (0,03%), Estonia (0,03%), Lithuania (0,02%), Latvia (0,02%) and Malta (0,01%).

2.1.3. Final use of domestic output

The collocation "final use of domestic output" refers to the products generated as a result of domestic production which are consumed. This analysis is different from intermediate products that continue on in the production cycle.

If we analyze the final use of domestic output we can notice that the sectors with the highest value are different compared to the ones used as intermediates of Romanian Exports (this refers to the domestic production which is consumed versus the domestic production that continue on in the production cycle). In *Table 3* are presented the sectors with the highest value for final use of domestic output. Agriculture, Hunting, Forestry and Fishing is the sector with the highest share in final use of domestic output (15%), this one being followed by Construction (14,5%). Also, with an important share in the final use of domestic output are the following sectors: Electricity, Gas and Water Supply (11,5%), Food, Beverages and Tobacco (11%), Renting of M&Eq and Other Business Activities (10%).

Table 3: Best performing sectors with respect to final use of domestic output (2011)

Sector (Code)	Final use of domestic output (millions of US$)	Share of final use of domestic output (%)
Agriculture, Hunting, Forestry and Fishing (AtB)	6,753	15.03
Construction (F)	6,494	14.45
Electricity, Gas and Water Supply (E)	5,153	11.46
Food, Beverages and Tobacco (15t16)	4,849	10.79
Renting of M&Eq and Other Business Activities (71t74)	4,474	9.95
Basic Metals and Fabricated Metal (27t28)	2,676	5.95
Real Estate Activities (70)	2,454	5.46
Other Community, Social and Personal Services (O)	1,590	3.53
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies (63)	1,552	3.45
Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods (52)	1,001	2.22
Pulp, Paper, Paper, Printing and	958	2.13

Publishing (21t22)		
Post and Telecommunications (64)	937	2.08
Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles (51)	903	2.01
Financial Intermediation (J)	796	1.77
Other Non-Metallic Mineral (26)	743	1.65
Rubber and Plastics (25)	609	1.35
Total	**41942**	**93,35%**

Source: Authors calculation based on The World Input-Output Database (WIOD, 2011)

At the opposite pole, the sectors with the lowest value of the final use of domestic output are presented in *Table 4*. As it can be noticed below, there are four sectors with no contribution (0 mln. US$) to the final consumption: Leather, Leather and Footwear, Public Admin and Defence; Compulsory Social Security, Health and Social Work and Private Households with Employed Persons. Notwithstanding, if we take into consideration the sectors with a very low contribution, these are: Water Transport (7 mln. US$), Education (20 mln. US$), Machinery, Nec (20 mln. US$), Air Transport (27 mln. US$), Manufacturing, Nec; Recycling (34 mln. US$). All these sectors sum up 0.24% of the total value of the final use of the national production.

Table 4: Lowest performing sectors with respect to final use of domestic output (2011)

Sector (Code)	Final use of domestic output (millions of US$)	Share of final use of domestic output (%)
Manufacturing, Nec; Recycling (36t37)	34	0.08
Air Transport (62)	27	0.06
Machinery, Nec (29)	20	0.04
Education (M)	20	0.04

Water Transport (61)	7	0.02
Leather, Leather and Footwear (19)	0	0
Public Admin and Defence; Compulsory Social Security (L)	0	0
Health and Social Work (N)	0	0
Private Households with Employed Persons (P)	0	0
Total	*108*	*0,24%*

Source: Authors calculation based on The World Input-Output Database (WIOD, 2011)

In 2014, industrial production increased by 6.1% compared to 2013, beeing supported by increases in manufacturing and mining, while production and supply of electricity, gas, steam and air conditioning has melt down. The manufacturing production increased in 2014 by 7.5% and the extractive industry increased by 1%. In the reference period, production and supply of electricity, gas, steam and air conditioning decreased by 4.7%. (Ziarul Financiar, 2015)

3. Conclusions

The development of global value chains has enhanced the interconnectedness of economies and it lead to a continuous specialization in production stages rather than in the entire industry. But, it is clear that „effective participation in GVCs will require significant further investment in technology dissemination, skill building and upgrading" (WTO, 2013)
Romania's position on GVC was evaluated in the present paper by analyzing where do Romanian exports go and which are the countries with highest, respectively lowest contribution to national income through intermediate use of Romanian export.

On the one hand, the three main sectors that generate the highest total output in Romania are Basic Metals and Fabricated Metal (1559 mil. US$ - 21%), Electrical and Optical Equipment (1543 mln. US$ - 21%) and Transport

Equipment (1170 mil. US$ -16%). At the opposite pole are sectors like: Construction (13 mln. US$, 0.17%), Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles (2 mln. US$, 0.03%), Mining and Quarrying (1 mln. US$, 0.01%).

On the other hand, the most important partners that use as intermediate Romanian exports are Germany (24,8%), Italy (11,1%), Hungary (8,26%), Turkey (7,1%), France (6,27%), Austria (5,03%), Czech Republic (3,9%) and Spain (3,5%). At the opposite pole are countries like: Indonesia (0,19%), Portugal (0,19%), Ireland (0,18%), Taiwan (0,17%), Luxemburg (0,11%), Cyprus (0,1%), Australia (0,03%), Estonia (0,03%).

Still, there is a need for equilibrium into GVC integration and participation. „Action is needed now to implement an effective framework for strong, sustainable, balanced and inclusive growth, in which all countries could reap benefits" (WTO, 2013)

4. Acknowledgement

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/159/1.5/S/142115 „Performance and excellence in doctoral and postdoctoral research in Romanian economics science domain".

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