



EMPLOYMENT DYNAMICS IN ROMANIA AFTER THE CRISIS. A GLOBAL VALUE CHAINS PERSPECTIVE

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Abstract:

After the 2008-2009 crisis, the challenge of understanding the mechanisms and structure of the world economy has begun to generate different approaches of economic globalization. This article uses Global Value Chain framework to examine the impact of the crisis on sectorial employment for six selected industries from Romania (Basic Metals and Fabricated Metal, Electrical and Optical Equipment, Transport Equipment, Machinery, Textiles and Textile Products, Chemicals and Chemical Products). With more than 70% of Romanian exports, and almost 14% of the employees these were the main real transmission channels for the crisis, other than financial markets. The study found that dynamic of the employment in these sectors has a different pattern than the national one. Employment in the sectors which are parts of Global Value Chains was very sensitive to global crisis: the average number of employees dropped by 15% in 2009 (comparing to 10% - the percentage for the whole economy) but they didn't follow the national recovery trend (in 2013 the total number of employees increased by more than 11% in Romania but the numbers stayed almost the same in the six selected industries). These findings suggest that Romania need to understand the specificity of these trends and to use the right policy tools in order to achieve economic growth and development through participation in Global Value Chains.

Key words: *Global Value Chain, Employment, Economic Crisis, Globalization, Romania*

1. Introduction

The economic crisis of 2008-2009 has fully revealed the impact of globalization and the interconnections of the world economy. Moreover, traditional theories and tools proved to be insufficient in explaining and answering the big economic questions which have arisen during the crisis. One of the possible tools could be Global Value Chain

(GVC) framework, which has been developed over the past two decades by a global network of researchers from diverse disciplines, to examine different sectors, in order to understand the phenomenon of globalization (Gereffi *et al.* 2013). The structure and dynamic of industries, their organization and the global economy itself could be understood through GVCs.

In the past, to successfully participate in international trade and to sell on the global market you have to have competitive products. Now, countries and companies have to be competitive on **parts** of the product, by inserting themselves and became part of a GVC. This is why GVCs are perceived as an opportunity, not only for multinationals and developed countries, but also for SMEs (small and medium enterprises) and developing country.

The globalization theories typically used national economy and macroeconomic tools to explain and understand the 21st century economic system. GVCs introduce new microeconomic dimensions to these traditional macroeconomic mechanisms, and they have a consistent contribution to our understanding of transmission of both favourable trends and economic shocks in the global economy.

The predominance of business models based on global production and trade networks is a fact (Cattaneo *et al.* 2010). GVCs accounts for a rising share of international trade, global GDP and employment in the global economy. For Romania, the ability to insert itself into GVCs is an important condition for economic growth and development, but, as we will see could be a threat in recession time. This article analyse the impact of the crisis on employment in Romania through the lens of GVCs. We have chosen the most integrated Romanian industries (based on GVCs participation) and we have proved that the employment dynamic in these sectors is different than the average employment dynamic of Romanian economy. The rest of the article is organized as follows: first we discuss GVCs concept and theories and next we present the Romania's employment dynamic for selected industries. The selection includes six sectors (Basic Metals and Fabricated Metal, Electrical and Optical Equipment, Transport Equipment, Machinery, Textiles and Textile Products, Chemicals and Chemical Products) which are the most active participants in GVCs. The last part of the paper presents our findings and conclusions.

2. Global Value Chains – the basics

Over the last decades, the rise of global value chains (GVCs) has induced significant shifts in the organization of production, competition and trade at global level. GVCs now account for an estimated 80% of global trade, and 30% of value added in developing country economies (UNCTAD 2013). These shifts generate many challenges for government and business. Domestic industries in both developed and developing countries have become deeply intertwined through complex business networks created through recurrent waves of foreign direct investment (FDI) and global sourcing (Abdulsamad *et al.* 2015).

The value chain describes the full range of activities that firms and workers perform to bring a product from its creation to consumption. In the context of globalization, the activities that constitute a value chain have been generally been carried out in inter-firm networks on a global scale (Gereffi & Fernandez-Stark 2011).

The GVC framework it's a tool that help us to understand how global industries are organized. The GVC framework has been developed by researchers who have tracked the global spread of industries and studied the implications for both corporations and countries.

There are five dimensions that GVC methodology explores (Gereffi & Fernandez-Stark 2011): (1) an input-output structure; (2) a geographical consideration, (3) a governance structure, which explains how the value chain controlled; (4) an institutional context in which the industry value chain is embedded; (5) upgrading. For developing countries and small and medium enterprises the benefits could increase only if they manage to insert themselves in the GVCs and after that to upgrade – to move to higher value activities in order to increase the benefits from participation in the global production.

The key point in GVC analysis is to identify how value is distributed along the chain. By adding value to production or moving into higher value activities, different actors can increase the benefits from participating in these global industries (Gereffi *et al.* 2013). According to Fernandez-Stark economic upgrading includes six distinct changes in the firm's participation in a production model (Fernandez-Stark *et al.* 2012): *entry into the value chain*, when a new actor begins to participate in the value chain; *product upgrading*, which describes the shift into the production systems, such as the incorporation of more sophisticated technology; *functional upgrading* describes the movement to higher value stages in the chain that require additional skills; *chain upgrading*, which describes the entry into a new value chain by leveraging the knowledge and skills acquired in the current chain; and finally, *end market upgrading*, which describes the incursion into new higher value end market segments, which may involve geographic and industry shifts.

Upgrading is a concept that apply both at the firm and country levels. Country upgrading is related to the existence of a critical number of companies which achieve upgrading. There is no single pattern for successful upgrading.

The focus on GVCs as development strategy at international level resulted in many valuable and comprehensive reports of World Bank (Cattaneo *et al.* 2010), UNCTAD (UNCTAD 2013), G20 summits (OECD & WorldBank 2015). In November 2014, at the Brisbane Summit, G20 leaders concluded *that trade and competition are powerful drivers of growth, increased living standards and job creation*. They also agreed that one important way for countries to connect to the global economy and develop is through global value chains (GVCs). This was a recognition that GVCs provide opportunities *to empower the local economy with sophisticated imported technology, know how, and a richer skill-set*. Following these conclusion, Turkey, who has the presidency during 2015 requested a report on GVCs, as a solution for a more inclusive global development and growth for SMEs and developing countries. The main

conclusions of this report are(OECD & WorldBank 2015): *participation in GVCs is heterogeneous and uneven, across and within countries; and, available data and survey-based evidence suggest that SME participation in GVCs is mostly taking place through indirect contribution to exports, rather than through exporting directly.*

Recent developments in the field show the degree and rates of change of international fragmentation vary considerably across different types of products, industries and participating countries (Los *et al.* 2015). However, we don't know much about to what extent this international fragmentation is mainly regional, taking place within groups of neighbouring countries and regional trade blocs, or mainly global, involving countries outside the region. The debate about regional and global in the world economy is translated into a debate about the level of globalization related to GVCs. For that, we have to measure different aspects related to GVCs, such as geographical distribution of the participants of a specific value chain.

Analysing the GVCs dynamic in the post-crisis environment Cattaneo *et.al* (Cattaneo *et al.* 2010) conclude that the crisis accelerated two long terms trends in the global economy: the consolidation of GVCs and the growing salience of markets in the South. GVCs have become important structural features of the world economy for some reasons: first, the world economies are increasingly integrated, interdependent, and specialized; second, trade openness is a double-edged sword - while it can help to buffer against domestic and regional shocks, it increases exposure to external shocks; third, given that production processes in many industries have been fragmented and moved around on a global scale, *GVCs have become the world economy's backbone and central nervous system.*

3. Romania: GVCs participation, employment and crisis

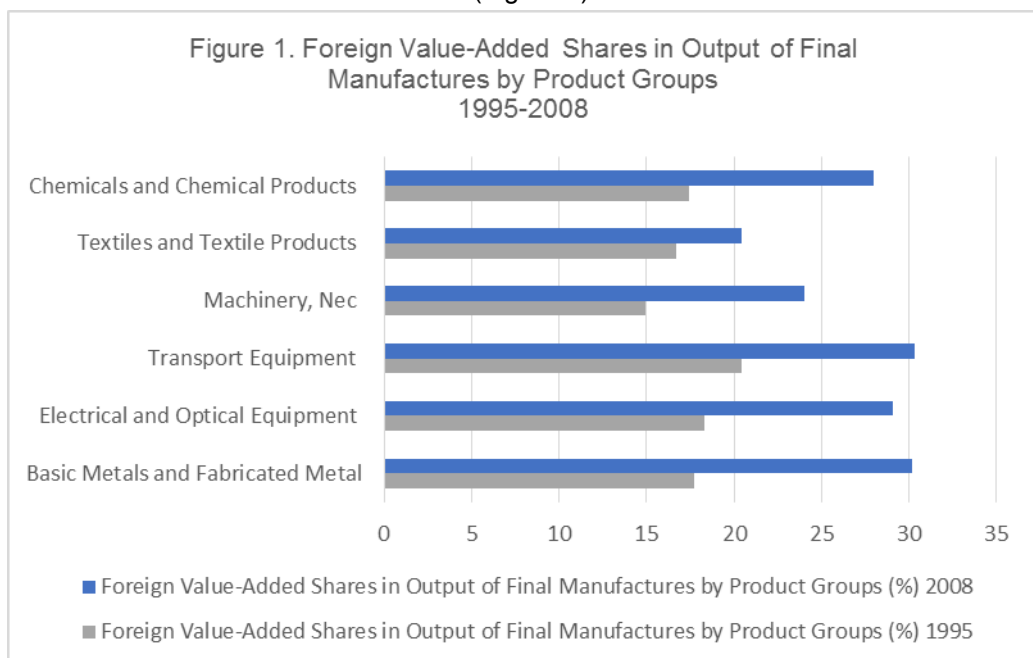
Due to the versatility of the GVC approach and its policy relevance, the value chain methodology could be adopted for different levels of research, both microeconomic and macroeconomic. Analysing the benefits of participation in GVCs for a country, the final conclusion is usually related to foreign direct investments and economic growth. Not always this process is valued and the productivity growth is not very high because of insufficient investments, lack of skills or lack of technology. Labour market could be one of the barriers, because GVCs participation requires skills and educated labour. Even one of the benefits arising from GVCs is employment gains, the need of competitiveness often force countries involved in GVCs to lower costs, and this can make employment in the involved sectors more unstable and working conditions poorer. *People may lose their jobs, may have to take lower salary, this would make living conditions worse* (Orgun 2014).

GVC proved to be a useful tool in evaluating some consequences of last global crisis on Romanian economy. Understanding how GVCs operate is essential for a country such Romania, which relies on export and foreign direct investments in the attempt to reduce the gap to the other EU members. Due to the fact that the process of specialization and geographic fragmentation of production determined the transfer of

the labour intensive parts of the production process to developing countries, we decided to focus on employment the analysis of crisis impact on Romanian economy.

Romania has a 20 million population, and a 9.5 million labour force (15-74 years). According to the National Institute of Statistics, the number of employees in the economy was 4.4342.000 (August 2015) and the number of registered unemployed was 444.356 (2015). National unemployment rate (seasonally adjusted) was 6.8%; yet analysis of the key regions where the selected sectors are located, reveal much lower unemployment rates (below 2%).

In order to determine the impact of the crisis on employment in Romania (using GCV framework) we split the analysis in two parts, trying to answer two questions. First – which are the most important Romanian industries from the participation in GVCs point of view? Second, how resilient were this sectors to the crisis, if we look at the number of employees? To answer the first question we have analysed the foreign-added share in output for different product groups based on the work of Los et.al (Los et al. 2015). Using 1995 and 2008 data, we selected the most important global industries based on value-added share (Figure 1).



Source: Author's calculation based on data from Los et. Al. (2015)

Most relevant sectors for GVCs before the crisis were Petroleum products, Basic Metals and Fabricated Metal, Electrical and Optical Equipment, Chemical Products, Transport Equipment, Machinery. We choose to exclude Petroleum products and to include Textiles because of the relevance for Romanian economy (decision after the second stage of our analysis). In each of these sectors foreign value added share was over 20% in 2008.

The second selection stage used the paper Romania and Its Position on the Global Value Chain. An Introductory Analysis (Serbanel 2015). As many papers in last years, in this article the conclusions have been drawn using the World Input-Output database (WIOD). *WIOD is the first public database that contains information on production fragmentation and provides the opportunity to analyse the consequences of it. It covers 1995-2011 periods and a sample of 40 countries, including all 27 countries of the European Union and other 13 major nations* (Serbanel 2015)

In this case, the criteria was not foreign added value, but share in exports. We have chosen the top six most performing sectors, from the point of view of exports, as a mirror for participation in GVCs. These sectors are: Basic Metals and Fabricated Metal, Electrical and Optical Equipment, Transport Equipment, Machinery, Textiles and Textile Products, Chemicals and Chemical Products. They met two conditions – they were in the global top, based on foreign value-added shares in output of final manufactures for the period 1995 – 2008, and they were best performing sectors from the exports point of view in Romania (data for 2011, last data available in WIOD database). The cited article used WIOD classification method and we needed to have NACE correspondence in order to analyse the employment. In this context, we choose to adapt and determine needed values (Table 1). Overall, the six sectors had 70% of Romanian exports in 2011.

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

Sector	NACE Code	Total Output	Share in total Romanian exports
Basic Metals and Fabricated Metal (27t28)	24 25	1559	20.76
Electrical and Optical Equipment (30t33)	26 27	1543	20.54
Transport Equipment (34t35)	29 30	1170	15.58
Machinery, Nec (29)	28	422	5.62
Textiles and Textile Products (17t18)	13 14	412	5.49
Chemicals and Chemical Products (24)	20	406	5.41

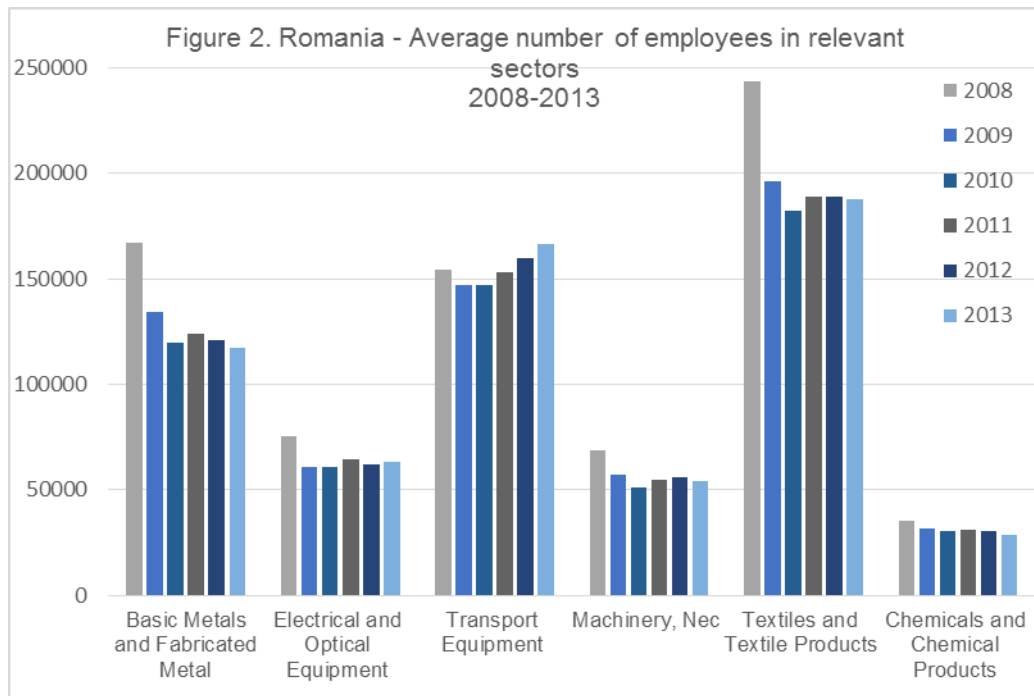
Source: Author's calculations based on (Serbanel 2015) and Romanian Statistical Yearbook (2006-2014)

For these sectors we analysed the evolution of the average number of employees between 2008 and 2013 (last year with available data). The lowest number of employees in these sectors was in 2010, when the number dropped from 744.630 to 591.563 (by 20%). In 2011, 2012 we can observe a slow recovery, but the number of employees is still by 16% lower than in 2008. The trend is similar for the whole

economy, but the decrease was 15% from 2008 to 2010, and the recovery faster (in 2013 the number of employees was 4.289.316, only 3% lower than in 2008). The most integrated sectors in global economy were the most sensitive to the crisis and their recovery proved to be slower than the rest of the economy. Although labour market is characterized by lagging indicators, the average number of employees reacted very quickly to the economic changes. The only sector with a higher number of employees in 2013 comparing to 2008 is Transport (Figure 2)

Table 2. Average number of employees by sector in Romania 2008-2013

	Average number of employees					
	2008	2009	2010	2011	2012	2013
Basic Metals and Fabricated Metal	167031	134359	119912	123823	120753	117182
Electrical and Optical Equipment	75554	60564	60990	64529	62033	63100
Transport Equipment	154184	147256	146734	153006	159703	166257
Machinery, Nec	68993	57085	50902	54809	56149	54125
Textiles and Textile Products	243453	196188	182310	188646	188647	187642
Chemicals and Chemical Products	35415	31625	30715	31179	30602	28631
Total 6	744630	627077	591563	615992	617887	616937
Total - national	4418713	3964212	3725645	3858595	3856402	4289316

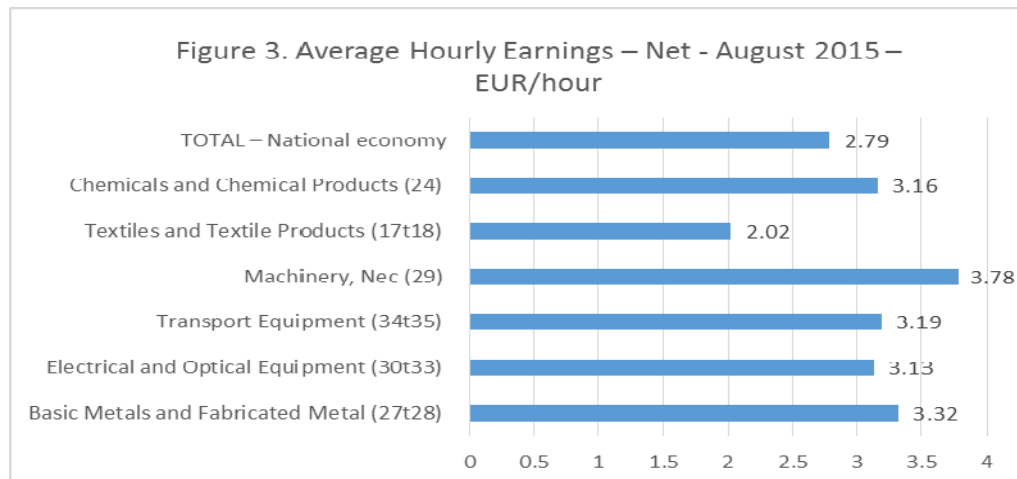


A very important source of differentiation among sectors' employment could be the average wage. The net average hourly earnings in Romania is 2.79 euro/hour (Table 3, Figure 3). Last available data are for August 2015 in national currency (exchange rate 4.45 ROL/EUR). With one exception (Textiles and Textile Products) the net average hourly earnings in GVCs participating sectors are significantly higher. For example, in Machinery sector, the value is 35% higher than the national average. We have to explain that four of the six sectors are aggregated from two different NACE codes and we determined the average earnings based on the number of employees for each sector and the specific average net earnings.

Table 3. Average hourly earnings by sector

Sector	NACE Code	Net Average Hourly Earnings — August 2015 – ROL/hour		Net Average Hourly Earnings — August 2015 – Euro/hour
Basic Metals and Fabricated Metal (27t28)	24	11,98	14,77	3,32
	25	15,94		
Electrical and Optical Equipment (30t33)	26	15,24	13,92	3,13
	27	12,98		
Transport Equipment (34t35)	29	15,43	14,21	3,19
	30	8,72		
Machinery, Nec (29)	28	16,83	16,83	3,78
Textiles and Textile Products (17t18)	13	10,4	9,00	2,02
	14	8,75		
Chemicals and Chemical Products (24)	20	14,08	14,08	3,16
TOTAL – National economy		12,42		2,79

Source: Author's calculation based on Monthly Statistical Bulletin 8/2015



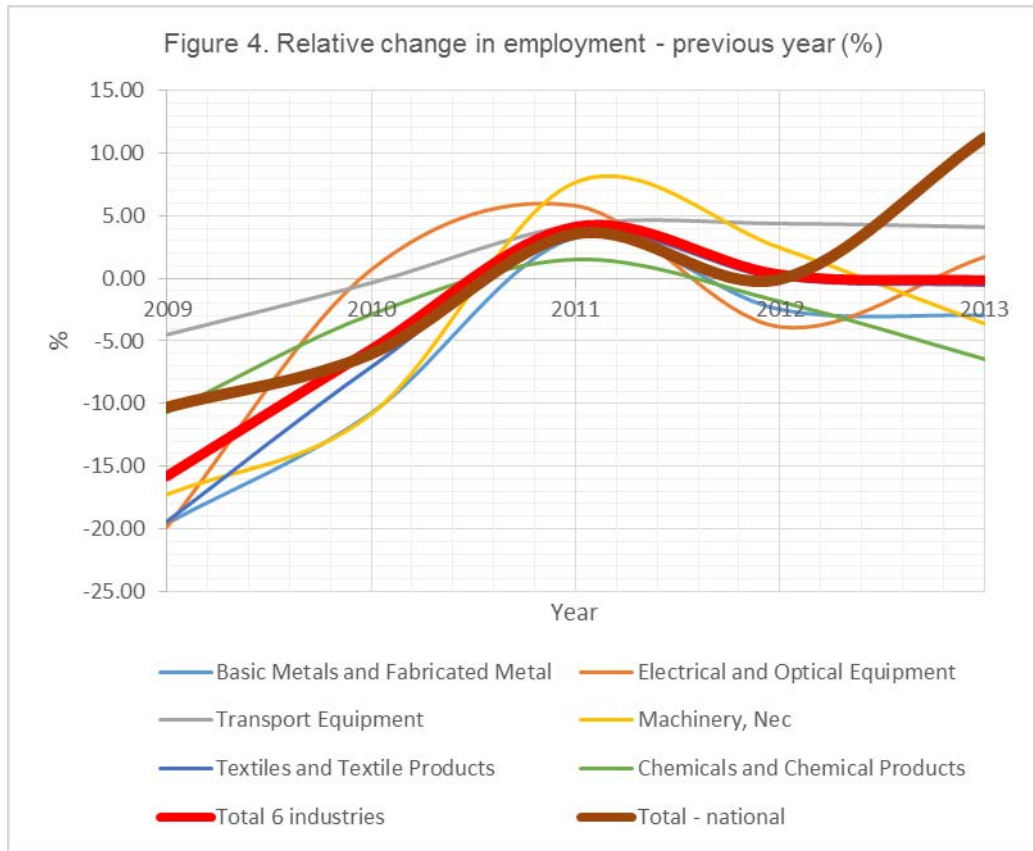
The argument of this paper is that employment in most integrated sectors of Romanian economy react differently than the rest of the economy. Absolute figures shows that top six sectors participating in GVCs counted for 70% of exports and somewhere between 14,38% (2013) and 16,85% (2008) from the total number of employees in Romania. More relevant in this context could be the dynamic registered for each sector 5 years after the crisis (2009-2013). We computed the relative change in employment for these sectors, using previous year as a base (results are presented in Table 4). The crisis hit very hard in 2009, and the trend continued in 2010. The next year, 2011 marked a slow recovery, but the global economy was not strong enough to sustain the trend in 2012. In some sectors, the decline continued in 2013 (Basic Metals and Fabricated Metals, Machinery, Textiles and Chemicals).

Table 4. Relative change in employment (% to previous year)

	2009	2010	2011	2012	2013
Basic Metals and Fabricated Metal	-19,56	-10,75	3,26	-2,48	-2,96
Electrical and Optical Equipment	-19,84	0,70	5,80	-3,87	1,72
Transport Equipment	-4,49	-0,35	4,27	4,38	4,10
Machinery, Nec	-17,26	-10,83	7,68	2,44	-3,60
Textiles and Textile Products	-19,41	-7,07	3,48	0,00	-0,53
Chemicals and Chemical Products	-10,70	-2,88	1,51	-1,85	-6,44
Total 6 industries	-15,79	-5,66	4,13	0,31	-0,15
Total – national	-10,29	-6,02	3,57	-0,06	11,23

Source: Author's calculation based on data aggregated from Romanian Statistical Yearbook (2006-2014)

Figure 4 shows the different pattern of the selected industries relative to the national trend. In 2009 the employment in selected sectors dropped by 15%, more than 10% decrease registered for national level. For 3 sectors (Basic Metals and Fabricated Metal, Electrical and Optical Equipment, Textile and Textile Products), the average number of employees was almost 20% lower than previous year and the trend continued until 2011. With one exception (Transport Equipment) the number of employees in these sectors didn't reach the 2008 level (see Table 2).



4. Conclusions

After 2008 the interest for GVC framework increased in both academic and institutional communities. The key directions are *upgrading* and *inclusive GVCs*, most of the studies addressing challenges such as fair opportunities for developing countries and small and medium enterprises. Our paper has a different focus. We studied the employment dynamic in GVC participating industries from Romania five years after the crisis.

The main findings and conclusions of our study are: we have identified the Romanian industries which are part of GVCs based on their contribution to exports (and using the global list before the crisis as benchmark); the six selected industries have 70% of Romanian exports and 14% of the employees; we found that employment in these industries had a different pattern comparing to national trend; the sensitivity to the global market was high, and many jobs were lost in 2009-2010 (more than 150.000); although the national trend changed, these sectors decoupled from the rest of the economy. For many years, Romania competed in labour intensive activities, for which low wages are the main competitive advantage. We saw that the net earning in these sectors is higher than the national average. Because of that we can ask the

question – will and would want Romania to continue to use low wages as a source of competitive advantage?

These findings could be valued through adequate policies and measures. There are two types of GVCs: regional and global. As an EU member, for most industries, Romania is part of regional GVCs. The competition from outside is increasing because if a country wants to enter in a network and has a location disadvantage, would need to develop a different type of competitive advantage. Romania will have to find the right solutions to achieve economic growth through GVCs participation.

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