International Journal of Business and Industrial Marketing
2015; 1(3): 53-63
Published online July 20, 2015 (http://www.aascit.org/journal/ijbim)

AASCIT American Association for Science and Technology

Keywords
European Union,
Construction Enterprises,
Gross Value Added,
Labour Productivity,
Economic Crisis

Received: June 27, 2015
Revised: July 3, 2015
Accepted: July 4, 2015

Gross Value Added Analyses of Construction Enterprises in New European Union Member States Before and After Economic Crisis

Lembo Tanning[1], Toivo Tanning[2]

[1]Faculty of Transport, TTK University of Applied Sciences, Tallinn, Estonia
[2]Business School, Tallinn School of Economics, Tallinn, Estonia

Email address
lembo.tanning@gmail.com (L. Tanning), toivo.tanning@gmail.com (T. Tanning)

Citation
Lembo Tanning, Toivo Tanning. Gross Value Added Analyses of Construction Enterprises in New European Union Member States Before and After Economic Crisis. *International Journal of Business and Industrial Marketing.* Vol. 1, No. 3, 2015, pp. 53-63.

Abstract
The goal of this article is to analyse the gross value added (GVA) of construction enterprises of new European Union (EU) Member States countries before and after economic crisis. The objective is to analyse gross value added and labour productivity in construction enterprises in Central and Eastern Europe (CEE-8) and the Baltic States and continue with the EU-15 and EFTA countries before and after the European economic crisis. The CEE-8 and Baltic States were a half-century of Soviet-bloc countries. This will help to understand better the economic backwardness of the Western European countries. We will look at how the economic crisis has affected the gross value added of construction enterprises and analyze the changes in the companies by GVA. What are the lessons learned from the economic crisis? The literature review shows in short the crisis theory. It is concerned with explaining the recession, depression and business cycle in economics. Based on this and previous publications, we will offer a number of generalized suggestions.

1. Introduction

Four major sectors of the economy (non-financial companies) with the greatest gross domestic product and the largest number of employees will be observed, these are: industry, construction, trade and transportation. Here we look at construction companies.

We analyze the GVA and productivity of construction enterprises of new European Union Member States countries by apparent labour productivity or by GVA per person employed total, by size class and per employee. The situations before the European economic crisis, during the crisis and after the crisis will be viewed.

Here, we look at the GVA of construction enterprises in total and in CEE (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovenia and Slovakia) and Baltic (Estonia, Latvia and Lithuania) countries. Let us attempt to draw comparisons with EU countries, particularly in the developed economies, the old EU-15 and EFTA countries.

For an introduction, let us look at the background of these countries. The EU was established on 1 November 1993, when the Maastricht Treaty came into force. On 31 December 1994, the EU had 12 members: Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal and the United Kingdom. On 1 January 1995, Sweden, Finland and Austria joined the EU (EU-15), on 1 May 2004 Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia joined EU (EU-25). The most recently joined countries are Bulgaria and Romania who joined the EU on 1 January2007 (EU-27) and at 1 July2013 Croatia joined

the EU, so the EU-28. [1 -2]

2. Literature Review

2.1. Eastern Bloc

Use of the term "Eastern Bloc" generally refers to the "communist states of eastern Europe" or satellite states of the former Soviet Union (FSU) or former communist states in Europe [3 - 6].

The CEE-8 and Baltic States were a half-century of Soviet-bloc countries. This will help to understand better the economic backwardness of the Western European countries. [7 - 8]

2.2. Financial Crisis

The term financial crisis is applied broadly to a variety of situations in which some financial assets suddenly lose a large part of their nominal value. In the 19th and early 20th centuries, many financial crises were associated with banking panics, and many recessions coincided with these panics. Other situations that are often called financial crises include stock market crashes and the bursting of other financial bubbles, currency crises, and sovereign defaults. [9 - 10]

Financial crisis directly result in a loss of paper wealth but do not necessarily result in changes in the real economy. Many economists have offered theories about how financial crisis develop and how they could be prevented. There is no consensus, however, and financial crises continue to occur from time to time. [11 - 12]

2.3. Crisis Theory

Crisis theory has been the subject of much debate within the history of political economy. It is concerned with explaining the recession, depression and business cycle in economics. We will make a short view of the financial crisis. The economic crisis has been a sharp deterioration in the economic situation.

A recession in economics is business cycle contraction, it is a general slowdown in economic activity. [13 - 14]

Recessions generally occur when there is a widespread drop in spending (an adverse demand shock). This may be triggered by various events, such as a financial crisis, an external trade shock, an adverse supply shock or the bursting of an economic bubble. Governments usually respond to recessions by adopting expansionary macroeconomic policies, such as increasing money supply, increasing government spending and decreasing taxation. [13 - 14]

2.4. The Theoretical Bases

The theoretical bases have been brought in more detail in the authors' earlier works [15 - 36] and in the works of other authors [37 - 39].

3. Methodology and Definitions

3.1. Business Statistics of Eurostat

Eurostat collects and disseminates methodological information. A basic summary of the methodology employed for structural business statistics is available at summary methodology for SBS. [40]

More detailed methodological information relating to structural business statistics is stored on the RAMON server at methodological manuals relating to SBS. This server also includes country specific methodological information as well as quality reports relating to the collection of structural business statistics in the Member States and other EEA countries at SBS methodology by country. [41]

The Statistical classification of economic activities in the European Community, abbreviated as NACE, is the nomenclature of economic activities in the EU. NACE is a four-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics and in other statistical domains developed within the European statistical system. The first reference year for NACE Rev. 2 compatible statistics is 2008, after which NACE Rev. 2 will be consistently applied to all relevant statistical domains. [42]

Structural business statistics (SBS) and global business activities cover industry, construction, trade and services. Presented according to the NACE activity classification, they describe the structure, conduct and performance of businesses across the EU and it the Member States. [43]

The Eurostat publication Business economy by sector - NACE Rev. 2 presents an overview of structural business statistics analysed per activity sector of the NACE Rev. 2 classification.

We will first observe the main total quantitative indicators of construction, as well as the changes in the number of construction companies, etc. Eurostat's primary data will be used as the main sources (Services by employment size class – NACE Rev. 2, F, S95).

3.2. Definitions

Gross value added (GVA) at market prices is output at market prices minus intermediate consumption at purchaser prices. [44]

Gross value added (GVA) is a measure in economics of the value of goods and services produced in an area, industry or sector of an economy. In national accounts GVA is output minus intermediate consumption. [45]

GVA is linked as a measurement to GDP, as both are measures of output. The relationship is defined as:

GVA + taxes on products - subsidies on products = GDP

As the total aggregates of taxes on products and subsidies on products are only available at whole economy level, Gross

value added is used for measuring gross regional domestic product and other measures of the output of entities smaller than a whole economy. Restated,

GVA = GDP + subsidies - (direct, sales) taxes.

Over-simplistically, GVA is the grand total of all revenues, from final sales and (net) subsidies, which are incomes into businesses. Those incomes are then used to cover expenses (wages & salaries, dividends), savings (profits, depreciation), and (indirect) taxes. [45]

In economics is *productivity* the rate at which goods or services are produced especially output per unit of labour. [46]

Number of persons employed is defined as the total number of persons who work in the observation unit, as well as persons who work outside the unit who belong to it and are paid by it. It excludes manpower supplied to the unit by other enterprises, persons carrying out repair and maintenance work in the enquiry unit on behalf of other enterprises, as well as those on compulsory military service. [47]

Number of employees is defined as those persons who work for an employer and who have a contract of employment and receive compensation in the form of wages, salaries, fees, gratuities, piecework pay or remuneration in kind. A worker from an employment agency is considered to be an employee of that temporary employment agency and not of the unit in which they work. [47]

The construction is process of creation and construction building infrastructure or facility.

Distribution of construction by section: construction of buildings, civil engineering and specialised construction activities. They all have turn subgroups.

The techniques and labour market survey definitions used by the authors have been specified in Eurostat (Methodological Notes EU-LFS) [48].

4. Analyses of Gross Domestic Product

In background reviewed to the global economic power situation, the EU, United States, and China economic development. The growth of the whole economy is measured by gross domestic product (GDP), it will be seen as a background. The focus of Western civilization is in the competition in Asia, especially China, India and other emerging economies of developing countries, so that today's developed countries of Western civilization are not left in the future subordinate, economically, and politically, is highly dependent on China, India and other developing countries of today. It is also important economic competition of the United States and the European Union.

As follows we look at the world's economic power of GDP.

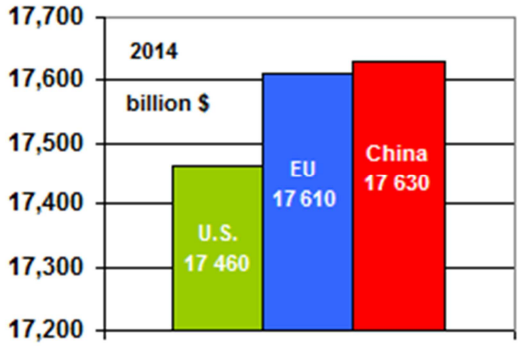

Figure 1. *GDP (purchasing power parity). 2014 [49].*

When in 2013 was leader United States with 16 720, second EU 15 850 and then China 13 390 billion USD, then in 2014 there has been principle change - the world's economic (GDP by PPP) leader has increased China. The basis of GDP by official exchange rate was in 2014: EU 17.42, United States 17.42 and China 10.36 trillion USD. [49 - 50]

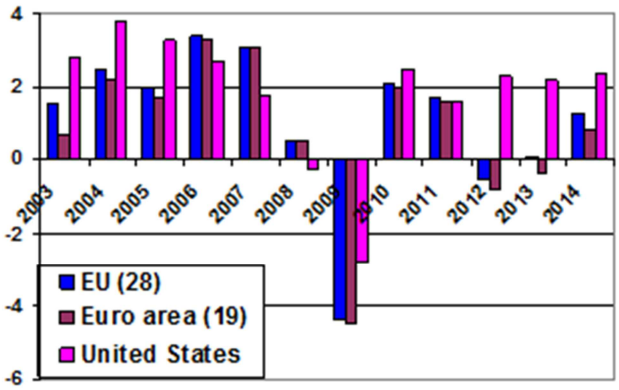

Figure 2. *Real GDP growth rate, % [50].*

In 2013 was GDP real growth rate of United States 1.6%, of EU 0.1% and of China 7.7%. In 2014 was GDP real growth rate of United States 2.4%, of EU 1.4% and of China 7.4%.

Based on current prices and exchange rates of the euro, the EU is still low superiority in front the United States.

Table 1. *Real GDP growth rate of CEE-8. % change on previous year [50].*

	2003	2007	2008	2009	2010	2011	2012	2013	2014
EU 28	1.5	3.1	0.5	-4.4	2.1	1.7	-0.5	0.1	1.3
Euro 19	0.7	3.1	0.5	-4.5	2	1.6	-0.8	-0.4	0.8
Bulgaria	5.4	6.9	5.8	-5	0.7	2	0.5	1.1	1.7
Czech	3.6	5.5	2.7	-4.8	2.3	2	-0.8	-0.7	2.0
Estonia	7.5	7.9	-5.3	-14.7	2.5	8.3	4.7	1.6	2.1
Croatia	5.6	5.2	2.1	-7.4	-1.7	-0.3	-2.2	-0.9	-0.4
Latvia	8.6	9.8	-3.2	-14.2	-2.9	5	4.8	4.2	2.4
Lithuania	:	11.1	2.6	-14.8	1.6	6.1	3.8	3.3	2.9
Hungary	3.8	0.5	0.9	-6.6	0.8	1.8	-1.5	1.5	3.6

	2003	2007	2008	2009	2010	2011	2012	2013	2014
Poland	3.6	7.2	3.9	2.6	3.7	4.8	1.8	1.7	3.4
Romania	5.5	6.9	8.5	-7.1	-0.8	1.1	0.6	3.4	2.8
Slovenia	2.8	6.9	3.3	-7.8	1.2	0.6	-2.6	-1.0	2.6
Slovakia	5.4	10.7	5.4	-5.3	4.8	2.7	1.6	1.4	2.4

Before the crisis, all CEE-8 countries experienced large increases. All of the states experienced a great GDP decline in 2009, except Poland, which was the only EU country, where the economy did not decline. While in 2010, Croatia (-1.7%) and Romania (-0.8%) were still experiencing GDP declines, in the following year, none of the countries no longer had negative GDP. However, in 2012, half of the countries under observation here, once again experienced an economic decline. In Czech Republic, Croatia and Slovenia were also experience a decline in 2013. In 2014, was the only country to still be in decline, Croatia (-0.4%).

The GDP increase in Poland was already relatively large before 2009 (+2.6%). [50]

As the only EU country, Poland did not even experience an economic decline compared to the previous year during the most difficult time; of course, the tempo of the increase varied. On the other hand, it must be highlighted that Poland does have the largest economy and population of all 13 new EU member states. If we want to provide an overall evaluation of the 13 new member states, it must be kept in mind that Poland's level has the most influence.

The development of the Baltic countries economy before and after the crisis was one of the fastest in the EU. The Baltic countries had the highest in GDP growth rates in Europe between 2000 and 2007.

Yet, the crisis led to a very deep recession, which was one of the greatest in the world, as well as in the EU. A larger or smaller recession took place in 2009, which is called the crisis year. In the following years economy grew.

In addition to the economic decline during the years 2008 – 2009, there was also a decline in 1999 (Estonia and Lithuania). If an annual real GDP increment of more than 10% can be considered excellent, then the results in 2009 was one of the largest in the world. In 2009, real GDP fell by 14.8% in Lithuania, by 14.2% in Latvia and 14.7% in Estonia.

Thus, the country covered two extremes. On the other hand, it also shows that the reforms carried out in the past were successful and established a base that enabled exiting the crisis successfully. In particular, this meant creating favourable conditions for business. Again, GDP growth in 2011 and also 2012 are highest in the EU.

Before and after (2011 – 2014) the economic depression, the Baltic States were successful. As a whole, in 2014 were all CEE-8 and Baltic countries GDP increments higher than EU-28 average. Only exception was Croatia. [49 - 50]

These complex trend lines characterize the cyclical development of the economy (GDP) in new EU Member States countries, even after the economic crisis.

5. Construction Enterprises of European Union

Below analyzed EU countries number of enterprises and of persons employed of construction companies.

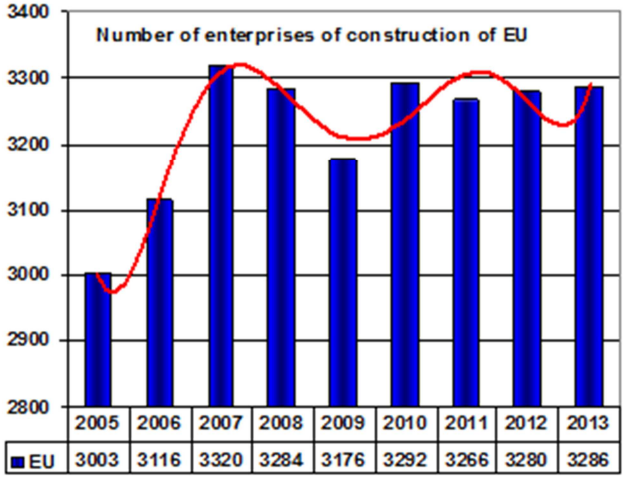

Figure 3. *Number of enterprises of construction of EU, in thousands [51].*

The construction boom was in 2007 and in 2009 sharp decline. In the coming years although the number of enterprises increased, but it was still lower than the 2007 record level.

In 2013 the EU has not reached the level of enterprises of construction of 2007.

Table 2. *Number of enterprises of construction of new EU countries, thousand [90].*

	2005	2008	2009	2010	2011	2012	2013
Bulgaria	13,244	21,493	23,606	21,164	19,543	19,068	18,732
Czech	145,036	157,479	163,097	173,872	176,251	175,799	169,548
Estonia	4,434	8,317	7,911	7,446	7,888	8,376	8,896
Croatia	:	24,824	27,083	24,671	21,987	20,170	19,236
Latvia	4,492	7,599	7,137	6,874	6,579	8,000	8,816
Lithuania	12,073	22,429	12,112	12,201	16,995	20,242	20,430
Hungary	73,404	74,175	69,611	67,354	65,322	60,284	55,201
Poland	164,597	238,125	226,387	233,019	239,232	233,731	223,796
Romania	31,023	59,389	60,135	49,348	43,503	44,607	45,382
Slovenia	14,266	19,433	19,499	19,190	18,940	18,392	18,065
Slovakia	3,984	5,436	5,474	91,432	90,886	86,412	81,902

From 2005 to 2013 were in Bulgaria, Czech Republic, Poland, Romania, Slovenia and Slovakia great increases of enterprises of construction; in Croatia and Hungary was a big loss.

In all three Baltic countries was great, nearly double, growth of enterprises of construction. In 2009 was in Estonia and Latvia small and in Lithuania had a big loss.

In all four major EU country was to 2007 significant increase of number of persons employed. Next, followed by a decline, three times as high as in Spain.

Trend of Germany was different: stability until 2010, nearly a quarter exponential growth, and further small growth (21.1%). In recent years the number of persons employed of construction of Germany also was largest in the EU.

Table 3. *Number of persons employed of CEE and Baltic countries. Construction [51].*

	2005	2007	2008	2009	2010	2012	2013
Bulgaria	158,831	223,250	259,589	237,452	182,765	150,381	145,359
Czech	390,027	403,048	412,734	409,244	410,446	395,214	375,367
Estonia	42,922	61,810	57,227	44,387	38,622	43,437	45,980
Croatia	:	:	163,257	160,144	136,560	111,447	106,340
Latvia	63,425	88,419	89,172	58,831	52,954	59,775	62,194
Lithuania	103,181	136,119	141,801	91,909	81,305	93,448	95,421
Hungary	240,250	249,105	246,726	221,287	212,730	198,317	187,717
Poland	687,707	843,010	930,213	931,885	902,247	890,864	829,648
Romania	390,221	518,514	564,776	479,255	402,868	410,340	378,371
Slovenia	66,592	80,201	89,766	86,791	77,901	62,357	60,800
Slovakia	70,819	76,156	84,323	78,854	176,323	153,110	144,545

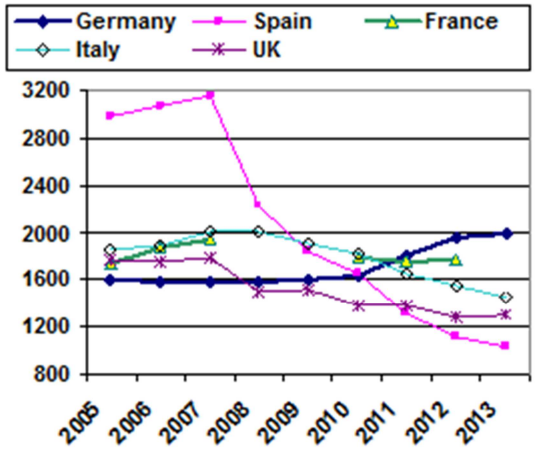

Figure 4. *Number of persons employed of large EU countries. Construction.*

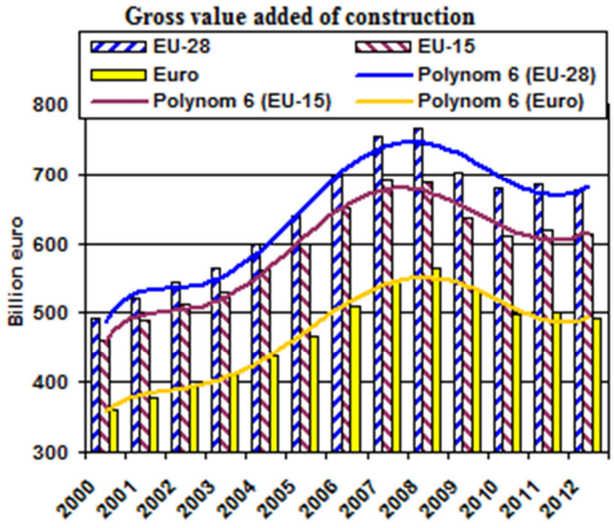

Figure 5. *Gross value added of EU. Construction [51].*

The construction boom by persons employed was in 2007 - 2008 and in 2009 - 2010 sharp recessions. In 2013 the EU has not reached it level of 2007, including all CEE-8, and Baltic countries. Slovakia was exceptional.

6. Gross Value Added of Analyses of Construction Enterprises

6.1. Total Gross Value Added Analyses

We look at the total gross value added (at basic prices) the European Union countries of construction companies.

Trend lines of gross value added changes of EU:

$$\text{EU-28 } y = -0{,}0049x^6 + 0{,}2484x^5 - 4{,}6859x^4 + 41{,}051x^3 - 169{,}52x^2 + 328{,}33x + 292{,}57;\ R^2 = 0{,}9785$$

$$\text{EU-15 } y = -0{,}005x^6 + 0{,}2448x^5 - 4{,}4706x^4 + 38{,}08x^3 - 153{,}87x^2 + 294{,}53x + 284{,}69;\ R^2 = 0{,}9796$$

$$\text{Euro } y = -0{,}0012x^6 + 0{,}081x^5 - 1{,}785x^4 + 17{,}116x^3 - 73{,}549x^2 + 150{,}22x + 266{,}31;\ R^2 = 0{,}9862$$

All (of EU-28, of EU-15, Euro area 18) trend lines run almost parallel. However, in last years of construction boom in 2007 and 2008 were differences between the trend lines of EU-28 and EU-15 increased. This indicates that in new EU Member States construction activity developed relatively faster when in old the EU Member States (EU-15). This difference between of trend lines, or value added of construction was also retained during the crisis and after crisis.

While in 2000 was share of the EU-15 94.05% of the EU-28 value added of construction, then in 2007 91.95% and in 2008 90.46%. However, the new the EU Member States, the absolute value added construction activity in comparison with the old the EU Member States, however small, less than 10%.

Table 4. *Gross value added of EU countries. Construction [51].*

	1995	2000	2006	2007	2008	2009	2010	2011	2012
Bulgaria	440	620	1,577	2,096	2,753	2,766	2,219	2,156	2,012
Czech	3,087	3,809	7,027	8,098	9,446	9,162	9,918	9,513	8,619
Hungary	1,486	2,281	3,964	4,125	4,413	3,754	3,465	3,410	3,091
Poland	7,189	12,912	16,113	20,153	24,367	22,327	25,290	26,096	26,434
Romania	:	2,098	7,645	11,793	15,242	12,455	11,339	11,220	11,278
Slovenia	809	1,247	1,957	2,450	2,761	2,464	2,016	1,888	1,822
Slovakia	705	1,418	3,175	4,176	5,849	5,654	5,466	5,698	11,492

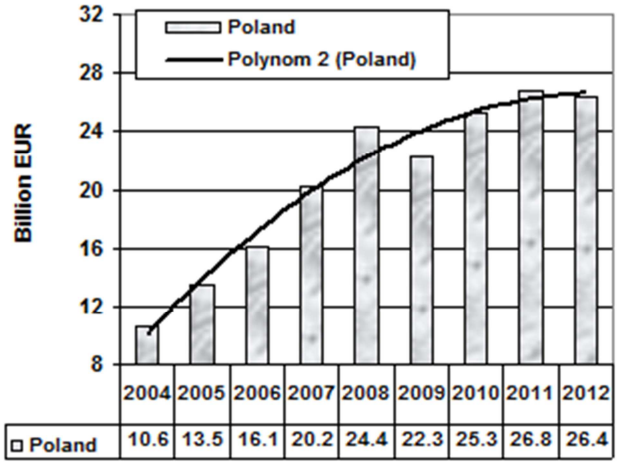

Figure 6. *Gross value added of Poland. Construction [51].*

Trend lines of gross value added changes of *Poland*:

$$y = -0{,}2403x^2 + 4{,}467x + 5{,}899;\ R^2 = 0{,}967$$

Poland was 2.5 times increase of GVA from 2004 to 2012.

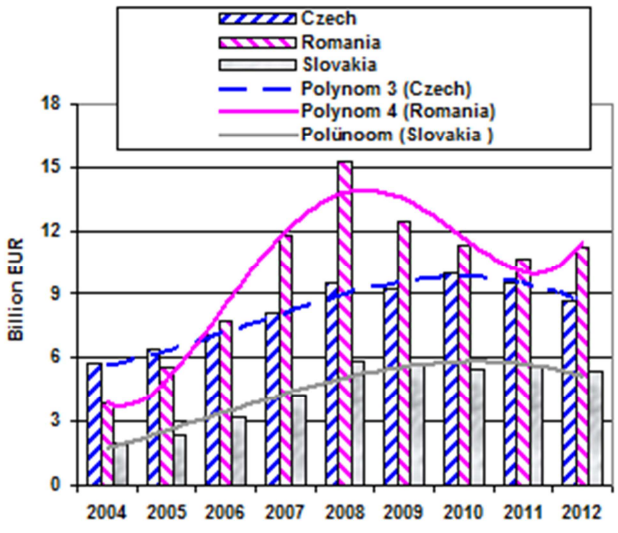

Figure 7. *Gross value added of EU countries. Construction [51].*

Trend lines of gross value added changes of EU countries:

Czech $y = -0{,}0241x^3 + 0{,}2473x^2 + 0{,}084x + 5{,}3764;\ R^2 = 0{,}9755$

Romania $y = 0{,}0457x^4 - 0{,}9014x^3 + 5{,}5544x^2 - 10{,}05x + 9{,}2795;\ R^2 = 0{,}9551$

Record level of gross value added in CEE countries Czech Republic was in 2010 and Poland in 2011, but in forward was a small decline. Record level of Bulgaria was in 2009, forward was decline. Record level of Hungary, Romania, Slovenia and Slovakia was in 2008, forward was decline.

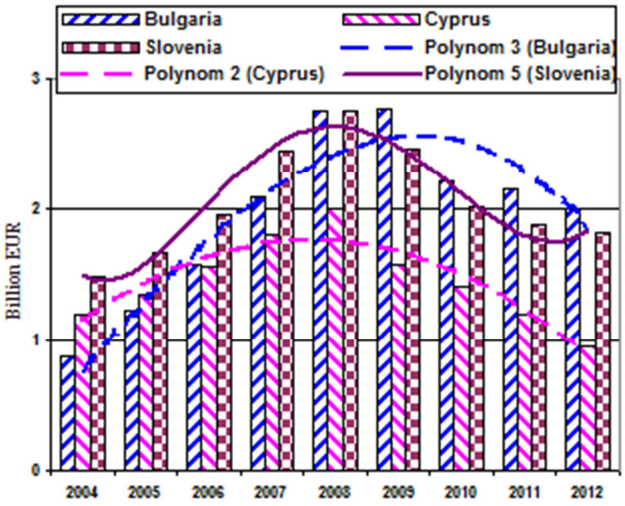

Figure 8. *Gross value added of small new EU countries. Construction [51].*

Trend lines of gross value added changes of EU countries:

Bulgaria $y = -0{,}0042x^3 - 0{,}0061x^2 + 0{,}5802x + 0{,}1987;$

$R^2 = 0{,}8946$

Cyprus $y = -0{,}0471x^2 + 0{,}437x + 0{,}753;\ R^2 = 0{,}8756$

Slovenia $y = -0{,}0002x^5 + 0{,}0116x^4 - 0{,}1728x^3 + 0{,}9567x^2 - 1{,}7422x + 2{,}4507;\ R^2 = 0{,}9612$

Table 5. *Gross value added of Baltic countries. Construction [51].*

	1995	2000	2004	2006	2007	2008	2009	2010	2011	2012
Estonia	169	326	602	1160	1511	1421	858	736	893	1180
Latvia	170	511	658	1202	1923	2080	1335	855	987	1224
Lithuania	324	661	1190	2042	2896	3261	1589	1461	1810	1775

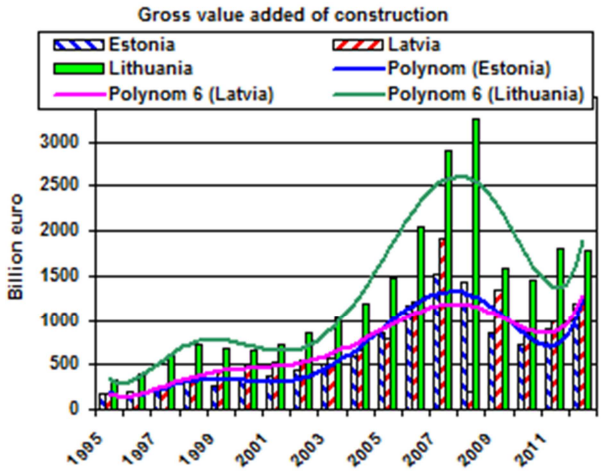

Figure 9. *Gross value added of Baltic countries. Construction [51].*

Trend lines of gross value added changes of Baltic countries:

$$\text{Lit } y = 0{,}0235x^6 - 1{,}2383x^5 + 24{,}345x^4 - 220{,}94x^3 + 940{,}3x^2 - 1608{,}2x + 1216{,}7;\ R^2 = 0{,}8674$$

$$\text{Lat } y = 0{,}0084x^6 - 0{,}4418x^5 + 8{,}7219x^4 - 80{,}898x^3 + 360{,}99x^2 - 641{,}22x + 522{,}49;\ R^2 = 0{,}5776$$

$$\text{Est } y = 0{,}0125x^6 - 0{,}6476x^5 + 12{,}539x^4 - 112{,}71x^3 + 482{,}79x^2 - 864{,}05x + 669{,}64;\ R^2 = 0{,}9385$$

The Baltic countries gross value added was before the European Union accession relatively small. Next to European economic crisis was impressive growth. Record level of Estonia was in 2007 and of Latvia and Lithuania in 2008, but in forward was big decline. From record level to 2012 was it in Estonia 21.8%, in Latvia 41.2% and in Lithuania 45.6%.

6.2. Gross Value Added by Employment Size Class

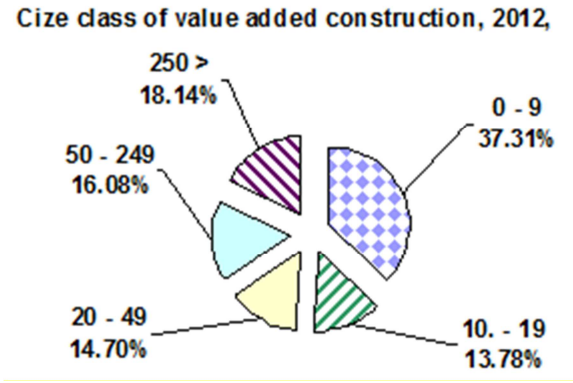

Figure 10. *Value added at factor cost of enterprises. Construction by employment size class, 2012, EU- 28 [52].*

Table 6. *Value added at factor cost of enterprises Construction by employment size class, 2012 [52].*

	0 - 9	10 - 19	20 - 49	50-249	250 >	Total
EU	183,888	67,900	72,463	79,259	89,400	492,897
%	37.31	13.78	14.70	16.08	18.14	100

Table 7. *Value added at factor cost of enterprises Construction by employment size class, 2012 [52].*

	0 - 9	10 - 19	20 - 49	50 - 249	250 >	Total
Bulgaria	180.9	115.8	237.3	463.9	245.0	1,242.9
Czech	2,133.5	517.0	817.3	1,262.1	1,295.3	6,025.2
Estonia	290.7	149.1	202.2	170.9	103.2	916.1
Croatia	316.5	140.1	220.2	368.3	369.8	1,414.9
Latvia	111.0	84.7	155.9	315.4	89.9	756.9
Lithuania	121.9	94.3	163.2	323.9	248.6	951.9
Hungary	822.2	303.5	321.2	444.3	303.5	2,194.8
Poland	4,080.8	1,183.6	1,892.3	3,472.7	2,696.0	13,325.3
Romania	825.4	369.0	552.5	1,302.5	1,106.6	4,156.1
Slovenia	508.7	230.3	220.5	212.6	68.9	1,241.0
Slovakia	1,276.7	257.0	337.1	351.3	245.3	2,467.3

The largest share of value added at factor cost of construction enterprises was size class 0-9 (37.3%).

In CEE-8 Poland, Czech, Hungary, Slovenia and Slovakia and in Baltic countries Estonia were value added at factor cost higher in size class 0-9 than 250 and more. In Bulgaria, Latvia, Lithuania and Romania were higher in size class 50-249, and in Croatia size class 250 and more.

Total were of new EU member states biggest share of value added at factor cost microenterprises (0-9), who gave a third of the total value added at factor cost.

6.3. Labour Productivity by Gross Value Added per Person Employed

Labour productivity is one of the most important economic indicators. Next we analyze the construction enterprises productivity of CEE-8 and Baltic countries by apparent labour productivity or by gross value added (GVA) per person employed total, by size class and finally per employee.

Pre-crisis level exceeded in 2012 only Belgium, Estonia, Luxembourg, Greece, Finland, Sweden, Norway and Switzerland. Germany although exceeded level of 2008, but in 2012 fall on the same level.

Apparent labour productivity was the highest in EFTA countries Norway (84.4) and Switzerland (85.7). From EU countries was greater in 2012 in United Kingdom (67.6), Denmark (53.3), Sweden (55.5), Netherlands (53.1), Austria (52.5), Finland (51.6) and Luxembourg (51.3). In 2009 was it in Ireland 117.6, but fall in 2011 to 53.3.

Table 8. *Apparent labour productivity of EU countries. Construction [51].*

	2005	2006	2007	2008	2009	2010	2011	2012
Bulgaria	4.6	5.7	8.1	9.6	9.4	7.3	8.2	8.3
Czech	:	:	:	18.1	16.4	:	16.3	15.2
Estonia	15.0	17.9	19.3	16.5	13.6	13.1	16.9	21.1

	2005	2006	2007	2008	2009	2010	2011	2012
Croatia	:	:	:	18.9	17.7	16.1	14.2	12.7
Latvia	9.9	14.6	17.8	14.8	10.4	9.5	11.0	12.7
Lithuania	9.0	11.3	14.5	13.3	8.0	8.2	9.2	10.2
Hungary	10.5	10.4	11.5	12.6	11.6	11.2	11.4	11.1
Poland	11.4	14.7	20.4	19.4	16.5	14.9	18.4	15.0
Romania	5.1	6.7	10.6	12.8	10.8	11.7	10.8	10.1
Slovenia	17.5	19.2	22.9	23.7	20.0	17.7	19.0	19.9
Slovakia	:	:	:	17.7	16.5	14.0	13.8	16.1

In new European Union Member States countries was greater apparent labour productivity in 2012 from CEE-8 countries Slovenia (19.9) and from Baltic States Estonia (21.1). But best from new Member States was quite Malta (25.5).

It was lower in Bulgaria (8.3), Romania (10.1) and Lithuania (10.2).

The differences of productivity between countries were very large, up to 46 times: Bulgaria was in 2005 4.6 and Ireland in 2009 117.6 (!). In 2012, the differences were slightly smaller inside the EU: Bulgaria was 8.3 and United Kingdom 67.6 or difference was 21 times.

Slovenian labour productivity of construction enterprises in the 2012th was 2.4 times higher than in Bulgaria and Estonian productivity was 2.5 times. Thus, the construction companies of the Baltic States and Slovenia successfully exited the economic crisis. Slovenia and Estonia had the largest gross value added per person employed in construction of the post-socialist states among new EU member states.

Table 9. *Apparent labour productivity. Enterprises of construction by employment size class, 2012 [51].*

	0 - 9	10 - 19	20 - 49	50-249	250 >	Total
Bulgaria	5.2	5.7	8.3	9.8	12.4	8.3
Czech	10.2	13.2	16.1	22.3	31.9	15.2
Estonia	14.9	21.6	29.1	26.0	29.8	21.1
Croatia	7.8	11.0	15.3	16.2	17.8	12.7
Latvia	7.1	10.2	13.6	15.7	21.4	12.7
Lithuania	5.9	7.6	9.1	11.1	18.9	10.2
Hungary	7.9	11.2	12.5	17.3	20.0	11.1
Poland	9.1	16.4	20.3	22.5	22.3	15.0
Romania	8.7	6.8	7.4	11.9	14.5	10.1
Slovenia	15.2	25.4	29.6	23.5	21.5	19.9
Slovakia	12.6	24.7	24.4	21.4	22.5	16.1

As a rule, greatest apparent labour productivity was in size class 250 and more. The exceptions were Ireland, Luxembourg and Malta, where was the highest labour productivity in size class 0- 9.

In size class 250 and more in 2012 was the highest apparent labour productivity in EFTA countries Norway (95.3) and Switzerland (100.6). From EU countries was it greater by the same size class in Italy (84.7), United Kingdom (75.3), Austria (73.0), Sweden (69.3) and Finland (67.3).

Many countries, including also CEE and Baltic countries, were labour productivity by size class differences to three times, in Portugal up to four times. Differences of labour productivity by size class were very small in Denmark and also in France.

The exception was Ireland, who labour productivity of construction was in size class 0- 9 nearly three times higher than in size class 250 and more.

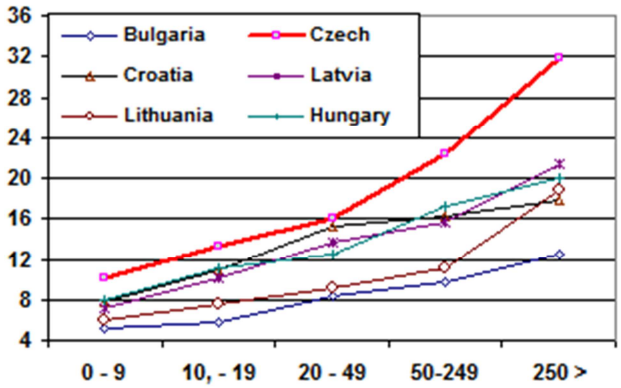

Figure 11. *Apparent labour productivity. Enterprises of construction by employment size class, 2012 [51].*

Finally we analyze the construction companies productivity by gross value added per employee.

The difference between the employed and the employee has been given to their definitions [1].

These differences between per person employed and per employee are small. Conclusion on the basis of 16 EU and two EFTA countries: the upgrading of enterprise size class also increased labour productivity in enterprises of construction.

Table 10. *Gross value added per employee of EU countries. Construction [51].*

	2005	2006	2007	2008	2009	2010	2011	2012
Bulgaria	5.0	6.0	8.6	10.1	10.0	7.9	8.9	9.0
Czech	:	:	:	27.6	25.5	:	26.7	25.5
Estonia	15.3	18.4	19.8	16.9	14.2	13.6	17.5	21.7
Croatia	:	:	:	21.2	20.3	18.3	16.0	14.2
Latvia	10.0	14.7	17.9	15.0	10.5	9.7	11.4	13.3
Lithuania	9.4	12.0	15.6	15.0	8.3	8.4	9.7	10.9
Hungary	13.1	12.6	14.0	15.3	14.2	13.7	14.4	13.6
Poland	15.5	20.6	28.2	26.9	22.4	20.7	25.4	20.9
Romania	5.2	6.8	10.8	13.1	11.0	11.9	11.0	10.4
Slovenia	20.6	22.9	27.0	27.8	23.6	21.2	23.2	24.7
Slovakia	:	:	:	17.8	16.6	28.0	28.8	34.3

Also in this group of countries is large, nearly double the differences.

However, all of these countries, the level is much lower than in Western European countries.

More detailed analysis of the labour productivity of companies in the CEE-8 and Baltic countries have in the authors' earlier works. Taking into account this publication and the previous work of the authors [15 - 36] and other

authors' works [37 - 39] have made the following conclusions and suggestions.

7. Conclusions

- In 2014 there has been principle change - the world's economic (GDP by PPP) leader has increased China.
- The economy of the USA has generally developed quicker than that of the EU. The EU would come first in nominal GDP and second in GDP (PPP) in the world.
- The EU-28 and the euro area emerged from the crisis, as evidenced by the positive GDP growth.
- Before the crisis, all CEE-8 countries experienced large increases. All of the states experienced a great GDP decline in 2009, except Poland, which was the only EU country, where the economy did not decline.
- In 2014 of CEE-8 countries, was the only Croatia (-0.4%) in decline.
- The development of the Baltic countries economy before and after the crisis was one of the fastest in the EU, but in 2009 were very big fall of real GDP.
- The construction boom in EU was in 2007 and in 2009 sharp decline.
- In 2013 the EU has not reached the level of enterprises of construction of 2007.
- From 2005 to 2013 were in Bulgaria, Czech Republic, Poland, Romania, Slovenia and Slovakia great increases of enterprises of construction; in Croatia and Hungary had a big loss.
- In all three Baltic countries was great, nearly double, growth of enterprises of construction.
- The construction boom by persons employed of CEE and Baltic countries was in 2007 - 2008 and in 2009 - 2010 was sharp recessions. In 2013 the EU has not reached it level of 2007.
- New EU Member States construction activity developed relatively faster when in old the EU States, but it share the absolute value added of construction activity in comparison with the old the EU States, was small, less than 10%.
- Poland was 2.5 times increase of GVA in enterprises of construction from 2004 to 2012.
- Record level of gross value added in enterprises of construction in CEE countries Czech Republic was in 2010 and Poland in 2011, Bulgaria in 2009, and Hungary, Romania, Slovenia and Slovakia in 2008.
- Record level of GVA in enterprises of construction of Estonia was in 2007 and of Latvia and Lithuania in 2008, but in forward was big decline.
- The largest share of value added at factor cost of construction enterprises was size class 0-9 (37.3%).
- In CEE-8 Poland, Czech Republic, Hungary, Slovenia, Slovakia and Estonia were value added at factor cost higher in size class 0-9 than 250 and more. In Bulgaria, Latvia, Lithuania and Romania were higher in size class 50-249, and in Croatia size class 250 and more.
- Total were of new EU member states biggest share of value added at factor cost microenterprises (0-9), who gave a third of the total value added at factor cost.
- Pre-crisis level by labour productivity exceeded in 2012 only Belgium, Estonia, Luxembourg, Greece, Finland, Sweden, Norway and Switzerland.
- Apparent labour productivity was the highest in Norway (84.4), Switzerland (85.7), United Kingdom (67.6), Denmark (53.3) and Sweden (55.5). In 2009 was it in Ireland 117.6.
- In CEE-8 countries was greater apparent labour productivity in 2012 in Slovenia (19.9) and in Baltic States in Estonia (21.1). It was lower in Bulgaria (8.3), Romania (10.1) and Lithuania (10.2).
- The differences of productivity between the EU countries were very large, up to 46 times (!). In 2012, the difference was 21 times. Estonian productivity was 2.5 times higher than in Bulgaria.
- Many countries, including also CEE and Baltic countries, were labour productivity by size class differences to three times, in Portugal up to four times.
- On the basis of 16 EU and two EFTA countries: the upgrading of enterprise size class also increased labour productivity in enterprises of construction.
- In principle, the construction companies of the Baltic and CEE countries as a whole exited the economic crisis successfully, some sooner, some later. On the other hand, the crisis meant the death of thousands of companies and a rise in unemployment.
- There were great differences in the dynamics of the labour productivities of countries during the crisis and labour productivity by size class, thus also in how the economic crisis was overcome.
- To get a more accurate overview of what were the lessons learnt by countries as a result the economic crisis, other key indicators in their interconnection should be observed as well. A more detailed analysis of various types of construction would also provide a more accurate picture.

References

[1] Political Europe. CIA https://www.cia.gov/library/publications/the-world-factbook/graphics/ref_maps/political/pdf/europe.pdf

[2] Tanning, L.; Tanning, T. (2007). Uus Euroopa Liit - 27 (New European Union-27). Tallinn, 530 p.

[3] Former Soviet Union (FSU). Appendix b: international organizations and groups. The World Factbook. CIA https://www.cia.gov/library/publications/the-world-factbook/appendix/appendix-b.html

[4] CIA's Analysis of the Soviet Union, 1947-1991 https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/cias-analysis-of-the-soviet-union-1947-1991/index.html

[5] Instruments of soviet control. Historical Review Program. CIA. pp. 1-44 https://www.cia.gov/library/publications/historical-collection-publications/wartime-statutes/wartime-statutes.pdf

[6] Tanning, L. (2006). Euroopa probleem – Teine maailmasõda (European problem - The Second World War). Tallinn, 600 p.

[7] Soviet Union Economy – 1991.Source: 1991 CIA World Factbook http://www.theodora.com/wfb1991/soviet_union/soviet_union_economy.html http://www.photius.com/rankings/index.html

[8] Russia. The World Factbook. CIA. Retrieved 1 February 2013. https://www.cia.gov/library/publications/the-world-factbook/geos/rs.html

[9] Kindleberger, C.P. and Aliber, R. (2005), Manias, Panics, and Crashes: A History of Financial Crises, 5th ed. Wiley.

[10] Laeven L. and Valencia F. (2008), Systemic banking crises: a new database. International Monetary Fund Working Paper 08/224.http://www.imf.org/external/pubs/cat/longres.cfm?sk=22345.0

[11] Global Financial Crisis Overview. available at: http://www.world-crisis.net/index.html#overview (22.10.2013)

[12] The Theory of Financial crises. available at: http://www.world-crisis.net/financial-crisis/crisis-theory.html (22.10.2013)

[13] Recession. Merriam-Webster Online Dictionary. Retrieved 19 November 2008. available at: http://www.merriam-webster.com/dictionary/recession

[14] Recession definition. Encarta World English Dictionary [North American Edition]. Microsoft Corporation. 2007. Retrieved 19 November 2008. available at: http://encarta.msn.com/encnet/features/dictionary/DictionaryResults.aspx?refid=1861699686

[15] Tanning, L.; Tanning, T. (2015). Analysis of the Resource Productivity of New Members of the European Union. Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport. Science and Education Publishing. USA, 3(1), 21 - 31.

[16] Tanning, L.; Tanning, T. (2014). Central and Eastern European Countries before and after the 2008 Financial Crisis: Economic Overview and Transportation Companies. Journal of Business Theory and Practice. Scholink INC., United States, 2(2), 221 - 246.

[17] Tanning, T.; Tanning, L. (2014). Labour Productivity Analyses of Gross Value Added and Turnover Per Person Employed of Transportation Companies of European Countries in 2005 – 2011. International Journal of Economic Theory and Application: American Association for Science and Technology, 1(1 March), 9 - 18.

[18] Tanning, L.; Tanning, T. (2014). Labour Productivity of Transportation Enterprises by Turnover per Person Employed Before and After the Economic Crisis: Economic Crisis Lessons from Europe. American International Journal of Contemporary Research, 4(1), 52 - 76.

[19] Tanning, L.; Tanning, T. (2014). The Economic Crisis Lessons of Transportation Companies by Labour Productivity in Baltic and Central and Eastern Europe Countries. Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport. Science and Education Publishing. USA, 2(4), 94 - 103.

[20] Tanning, L.; Tanning, T. (2014). Gross Value Added per Person Analyses of Transportation Companies of new European Union countries in 2005 – 2011. SOP Transactions on Marketing Research, USA, 1(2), 1 - 15.

[21] Tanning, T.; Tanning, L. (2013). An analysis of labour productivity in Central and East European countries. International Journal of Arts and Commerce, 2 (1), 1 - 18.

[22] Tanning, L.; Tanning, T.(2013). Labour Productivity Analyses in Central and East European and Baltic Countries. PARIPEX – Indian Journal of Research, 2(8 Aug), 53 - 55.

[23] Tanning, T.; Tanning, L. (2013). The analysis of labour productivity in East European countries. Journal of Technology, Education, Management, Informatics, 2(2), 136 - 141.

[24] Tanning, T.; Tanning, L. (2013). The Baltic States Companies Working Efficiency Before and After the Economic Crisis. Journal of International Scientific Publications: Economy and Business, 7, 342 - 363.

[25] Tanning, L.; Tanning, T.(2013). The Economic Crisis Lessons from Europe. Enterprise Size Class Analyses of Transportation Companies of the Baltic Countries before and After the Economic Crisis. American International Journal of Contemporary Research, Vol 3(10), 13 - 24.

[26] Tanning, L.; Tanning, T.(2013). The Gross Added Value of Transportation Enterprises in the Poland and Other Central and Eastern European Countries. Indian Journal of Applied Research (IJAR), 9, 136 - 137.

[27] Tanning, L.; Tanning, T.(2013). The Professionals Saved the Estonian Economy (Economic Lessons from the Crisis). International Journal of Arts and Commerce, 2 (5), 16 - 26.

[28] Tanning, T.; Tanning, L. (2013). The Turnover of Transportation Companies in the European Countries of the Former Eastern Bloc Before and After the Economic Crisis. Tem Journal - Technology, Education, Management, 3, 253 - 260.

[29] Tanning, L.; Tanning, T.(2013). Turnover Analyses of Transportation Companies of the new European Union states Before and After the Economic Crisis. The Economic Crisis Lessons from Europe. American International Journal of Social Science, 2(7), 37 - 48.

[30] Tanning, T.; Tanning, L. (2013). Why Eastern European wages are several times lower than in Western Europe? Global Business and Economics Research Journal (Jakarta, Indonesia), 2 (1), 22 - 38.

[31] Tanning, L.; Tanning, T.(2013). Working efficiency before and after the economic crisis in the Baltic states. Global Business and Economics Research Journal, Jakarta, Indonesia, Vol 2(5), 92 - 101.

[32] Tanning, L.; Tanning, T.(2012). Baltic States Problem - Labour Market; Analysis Employment, Unemployment and Vacancies of Estonia; Improved Beveridge Curve. International Journal of Business and Social Science (USA), No. 21, 36 - 56.

[33] Tanning, T.; Tanning, L. (2012). Modernized Beveridge curve. Journal of Technology, Education, Management, Informatics, Vol.1 (4), 258 - 269.

[34] Tanning, T. (2013). Companies Working Efficiency and Economic Crisis the Example of Baltic States. Global Research Analysis (GRA), India, 2(6), 213 - 215.

[35] Tanning, T. (2013). Top Specialists Rescued the National Economy - Economic Lessons from the Crisis. PARIPEX - Indian Journal of Research (PIJR), 3(5), 253 - 255.

[36] Tanning, L.; Tanning, T.(2013). The Baltic States companies working efficiency before and after the economic crisis. International Journal of Social Sciences and Entrepreneurship, 1(2), 484 - 495.

[37] Saari, S. (2006). Productivity. Theory and Measurement in Business. Espoo, Finland: European Productivity Conference. http://www.mido.fi/index_tiedostot/Productivity_EPC2006_Saari.pdf

[38] Saari, S. (2011). Production and Productivity as Sources of Well-being. MIDO OY. pp. 25. http://www.mido.fi/index_tiedostot/PRODUCTION%20AND%20PRODUCTIVITY%20AS%20SOURCES%20OF%20WELL%20BEING%20FINAL.pdf

[39] Kalle, E. (2013) Tootlikkusealane evolutsioon Eestis (The evolution of productivity in Estonia). TTU, 244 p.

[40] Summary methodology for SBS. Eurostat http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/sbs_esms.htm

[41] Methodology and classifications. Structural business statistics (SBS). SBS methodology by country. Eurostathttp://epp.eurostat.ec.europa.eu/portal/page/portal/european_business/methodology_classifications

[42] Statistical classification of economic activities in the European Community NACE Rev. 2. 363 pp. http://epp.eurostat.ec.europa.eu/portal/page/portal/nace_rev2/introduction

[43] What are SBS? Eurostat http://ec.europa.eu/eurostat/web/structural-business-statistics/overview

[44] Gross value added. Eurostat http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Gross_value_added

[45] Definition. Investopedia http://www.investopedia.com/terms/g/gross-value-added.asp

[46] Productivity. The Free Dictionary http://www.thefreedictionary.com/productivity

[47] Statistical concepts and definitions. Summary methodology for SBS. Eurostat http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/sbs_esms.htm

[48] Methodology and classifications. Structural business statistics. Eurostat. http://epp.eurostat.ec.europa.eu/portal/page/portal/european_business/methodology_classifications

[49] Country Comparison: GDP (Purchasing Power Parity). CIA. 2 May 2015 https://www.cia.gov/library/publications/the-world-factbook/rankorder/2001rank.html

[50] Real GDP growth rate – volume. Code: tec00115.Eurostat. Last update: 19.06.2015 http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tec00115

[51] Annual detailed enterprise statistics for construction (NACE Rev. 2, F). Code: sbs_na_con_r2.Structural business statistics (sbs). Eurostat. Last update: 11-06-2015 http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_con_r2&lang=en#

[52] Construction by employment size class (NACE Rev. 2, F). Code: sbs_sc_con_r2. Eurostat. Last update: 11-06-2015 http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_sc_con_r2&lang=en