University of Economics in Bratislava
Faculty of International Relations

Conference Proceedings
International Scientific Conference and Workshop

Mutual Relations between the Republic of Korea

and V4 Countries in Trade and Investment

Visegrad Fund

Bratislava	Busan
June 22 – 24, 2015	September 14 – 15, 2015

Partners:

Content:

Welcoming Speeches

WELCOMING SPEECH OF H. E. SANG-HOON PARK, AMBASSADOR OF THE REPUBLIC OF KOREA TO THE SLOVAK REPUBLIC

Chairman Ludmila Lipkova,
Vice Chairman Martin Gress,
Members of the Scientific Committee,
Distinguished participants,

It gives me great pleasure to address this important conference. Let me thank the University of Economics, Faculty of International Relations for kindly giving me this opportunity

A quarter-century ago, Korea and Visegrad countries set up diplomatic ties. Since then, their relations have made remarkable achievements in various areas, especially in the economic area.

The Visegrad Group as a whole is the second largest trade partner and the third largest investment destination of Korea among the EU member states. The trade relation between Korea and the V4 has been strengthened, despite the recent economic crisis in Europe, showing a steady trade volume at around 13 billion dollars. For many Korean companies, V4 countries are the gateway to the European markets. Some 330 Korean companies are already present in the V4 countries, doing active business.

Last year, the Ministers of Foreign Affairs of the Visegrad Group and Korea met in Bratislava for their first meeting, which turned out to be highly successful, producing many concrete results. Last week, we had the V4+Korea Political Consultations in Bratislava, the second of its kind, with the first meeting held last year in Seoul. We are now considering the possibility of holding the V4+Korea summit either in the latter part of this year or early next year.

This rapid progress in our relations would not have been possible without the firm and solid basis of our existing cooperation as well as our strong will to enhance the cooperation.

Besides, the V4 and Korea are like-minded friends and natural partners. We share universal values of democracy, human rights and market economy. We have mutually beneficial economic structure and pro-business economic policy. We aspire to contribute to peace and prosperity of our regions and of the world.

I believe that we still have huge potential for cooperation to tap into. By further promoting mutually beneficial trade and investment cooperation, we can make a more prosperous future. I am confident that this conference will provide a valuable opportunity to share our wisdom and to make an important step forward to mutual prosperity.

Finally, I would like to thank the University of Economics in Bratislava for organizing this important conference. I would also like to express my heartfelt thanks for the invaluable support which the International Visegrad Fund has provided for this meaningful project.

I wish you all a successful and fruitful Conference.

Thank you.

Bratislava, 22 June 2015

WELCOMING SPEECH OF H.E. MILAN LAJČIAK, AMBASSADOR OF THE SLOVAK REPUBLIC TO THE REPUBLIC OF KOREA

Dear Professor Lipková, Dean of the Faculty of International Relations, University of Economics in Bratislava,

Dear Professor Dong-Jin Kim, Director of EU Centre, Pusan National University,

Distinguished guests, researchers, representatives of associations, dear participants,

Thank you for organising this event, for giving me opportunity to be with you and to share your precious views. It is my pleasure to say a few words on this occasion and to express my welcoming remarks

The Republic of Korea has made a tremendous progress over the past several decades and has become one of the world leading powers in many industries and in many specialised fields.

If somebody would write the book of the economic history of the world, I would say that not China but the South Korea should be on the first place and in the prime focus of world economists dealing with the miracle of the Han river.

Only 87 USD per capita in 1953 and 35.000 USD per capita in 2015. One of the most backward country in 50-ies and one of the most advanced countries in the 21st century. Such progress and such development!!! In 60 years South Korea became the country with a lot of superlatives – the first in global production of memory chips, second in productions of naval ships, fifth in vehicle production and the sixth in steel production of the world. And even more important – South Korea is focusing on research and development area and belongs to the leading OECD countries in allocation financial resources into technological development. 4,1 % of GDP are going to R@D. I think we should congratulate our Koran partners for this achievement.

On the other side – we have here representatives of the V4 countries of the central Europe - and I should say with pride - that you could not find the region in the world with more rapid and complex reform process and transformation performance in all aspects of social and economic transgression in the world. Unique experience of transformation from communism to democracy, from centralized planned economy to market economy, tremendous changes in modernizing society and in social–economic profile of these countries in a short span of 25 years. The most consolidated block of countries among the EU and the fastest growing region in EU.

I suppose, there is no need for me to go into details here as you have been studying and researching the topic and comparing economic and business environment of the South Korea and V4 countries on your own. Nevertheless, let me mention few facts playing into this course and helping to understand what is the reason behind this exercise, behind this project, and what are prospective of this efforts.

I would like to focus on some macroeconomic similarities of V4 with RoK – that facilitate our cooperation – similarities that are worthwhile to get our attention. Let me present only some of them:

o **The size of the market**: South Korea accounts for about 50 mil. Population, V4 countries even more – for 64 million

o The cumulated **size of economies** of V4 is the **6th largest in EU** (1 trillion USD in 2014), in case of South Korea – 1,3 trillion USD in nominal digits, when going to PPP calculations V4 takes a little over RoK

o To make more comparisons - in **GDP per capita** V4 and RoK are also very much close – here the V4 countries are reaching between 71% and 85% of GDP per capita of RoK (35.000 USD), measured in PPP

o   At the same time **V4 countries fall only the second to Germany** in terms of overall **trade volume** wit RoK (11,9% of RoK trade volume with EU, 13,5 bill. USD in 2014)

o   And not to forget to mention – **V4 are the largest export market** for Korean goods in EU (22,1% of all RoK export to EU, 11, 4 bill. USD in 2014)

o   **When talking about automotive industry,** the share of V4 and RoK automotive industry in the economic performance of our countries, **which is one of the key sectors** of V4 and RoK – vehicle production on yearly basis of V4 countries is about 3,3 million and in South Korea about 4,2 mill. vehicles.

o   V4 countries, as probably will be mentioned today, are the **3rd largest FDI recipient of Korean investors in EU** after GB and NL (roughly 9% of all RoK investments in EU) that makes them **an important trade and investment partner for Korea**

o   **Slovakia has the special – unique place in the relationship with RoK - not only in terms of V4 countries but also in the whole EU. Among all these statistics, Slovakia has been number 4 export market for Korea in EU** in the past several years with a **bilateral trade volume** reaching nearly 5 billion USD (Korean statistics) and **one of the most important investment destinations** of South Korea in the central European region **with fastest growing business activities with RoK** in the whole EU. **I should very proudly to say that in the coming statistics – for instance - the KIA Slovakia** is officially placed as the most productive and effective car factory in the whole EU. That is something special and something **worthwhile to build on further business relationship**.

o   **Furthermore - the special place of Slovakia in V4 + RoK relationship is reflected also by the fact that the whole process of V4+RoK cooperation started one year ago (July 2014) by ministerial meeting in Bratislava under Slovak V4 Presidency and during one-year period has developed** in many fields of our mutual interest - political consultation, university cooperation, culture exchanges, utilising IVF for developing programs, knowledge sharing projects and in other areas.

I am proud of this reality and of V4 economic performance with South Korea and from this perspective it is important, if not vital, **that we present V4 as one region in your country**, as one block with the same interests and try our best to persuade Korean businessmen that V4 is the right place for their investments, for their production base and the right place for their business expansion across the Europe (whether it be west or east)

And even though it may seem like there is still enough interest from Korean side, **we need to push it further** because I believe, that the potential for more incoming investments has not been fully explored yet.

We also have more ambitions towards establishing R&D centres and therefore **we are now turning Korean focus also to this area**; there are some first attempts, namely by Kia and Samsung Electronics, but we would like to see much wide-reaching development in this area; I am sure that the V4 countries have a lot to offer here.

Maybe it is a pity that we haven´t managed to involve more business and R&D oriented audience even during today´s seminar; nevertheless, that doesn´t prevent us from having your results published or disseminated among the business community, relevant business bodies, associations, and perhaps, they can access it and use it for the purpose of decision making for their future investments

Finally, let me express my hope for the future that we will get more universities and academic bodies involved in similar projects and by doing so, we not only can hope for strengthening mutual ties between V4 and Korea but we can also be sure of pushing our economies forward.

It is my pleasure to be here today to support this particular project and to see very concrete results of a joint activity of universities of V4 countries *(though Poland is not participating)* together with Busan National University.

Let me conclude by wishing this interesting workshop to bring to organizers and all participants a lot of inspiration and new ideas, and successful outcome of research efforts. I am fully convinced that   that the projects like yours could promote and push ahead mutual interests of our countries …

I am looking forward to your presentations today and tomorrow and I hope to have a fruitful discussion later on.

Thanks for your attention.

Busan, 14 September 2015

**WELCOMING SPEECH OF DONG-JIN KIM, DIRECTOR OF THE PUSAN NATIONAL UNIVERSITY
EU CENTER**

Ambassador of Slovakia to Korea, dear V4 colleague professors and researchers, and ladies and gentlemen:

Back in June this year, we had a great and successful first international seminar between V4 and Korea in Slovakia, where many valuable research works related to mutual cooperation in trade and investment were presented and discussed.

As you may be all aware, V4 is the group of 4 strong economic countries of central Europe consisting of Slovakia, Czech Republic, Hungary, and Poland. They have been one of the fastest growing countries in EU over the last decade and without doubt, will continue to grow for the next few decades to come.

Today and tomorrow, as a back to back academic seminar, we will have the second international conference with more detailed and interesting subjects which will give you all the audience gathered here the unique opportunity to understand the past and current relations between V4 and Korea.

In this sense, I would like to say that the conference is the perfect event for exchanging each other's views and ideas for future cooperation between the two on an academic basis.

So, my thanks go to V4 participants who have come a long way here to give presentations and special thanks to Slovakia who made the whole program a huge success.

I wish you all V4 friends to have wonderful time and enjoy your stay seeing and feeling many good things about Pusan.

Again, thank you all for being in this conference.

Thank you very much.

Pusan, 14 September 2015

WELCOMING SPEECH OF ĽUDMILA LIPKOVÁ, DEAN OF THE FACULTY OF INTERNATIONAL RELATIONS

Your excellency, dear prof. Dong-Jin Kim, director of the Pusan National University EU Center, dear Ms. Yoo-Kyung Won, dear Mr. Sang-Hoon Nam,

Dear colleagues from Czech Republic, Hungary and Korea,

I am very glad that we meet at the workshop dedicated to „Mutual Relations between the Republic of Korea and V4 Countries in Trade and Investment" in, for us partners from the V4 countries quite remote, Busan.

The impulse for organizing this workshop was extraordinary economic development of the Republic of Korea since the sixties of the twentieth century. Republic of Korea became during last five decades one of the leading world economies and important investor also in our countries of Central and Eastern Europe – Czech Republic, Hungary, Poland, and Slovakia. Korean investments in our countries provide support not only for economic development and employment, but also for mutual trade.

These topics are the main topics of our workshop. I hope that besides the expert knowledge we will exchange with each other, we will also have time during our stay here in Busan to deepen our relations on a more informal basis, which will lead to deepening of the relations and cooperation among all our partner universities.

I would also like to thank the International Visegrad fund which financially supported our project for the opportunity to present the research papers of all partner universities participating in the project, namely Busan National University EU Center, University of Economics in Prague, Corvinus university of Budapest, and University of Economics in Bratislava.

I cordially greet all of you and wish to all of us successful work stay in Busan.

Busan, 14 September 2015

Mutual Trade Between Korea and the V4 Countries

MUTUAL RELATIONS BETWEEN THE REPUBLIC OF KOREA AND V4 COUNTRIES: AN OVERVIEW

Martin Grešš[1]

The main objective of this paper is to analyze the mutual relations between the RoK and the V4 countries from the point of view of trade and investment relations. We come to conclusion that mutual relations are rather asymmetric favoring the Republic of Korea in both trade and investment based on the trade balance of the V4 countries with the Republic of Korea and almost non-existent FDI outflows from the V4 countries to the Republic of Korea with the exception of Hungary.

Key words: V4 countries, Republic of Korea, trade, FDI
JEL: F10, F29

1 INTRODUCTION

V4 countries and the Republic of Korea (the RoK) became in the past years important players in the international relations. While the RoK experienced quite rapid economic growth during the previous century, the V4 countries underwent transformation from centrally planned economies to market economies only 20 years ago and recorded significant increases in their growth during the first decade of the 21st century.

Bilateral relations between the RoK and V4 countries developed already in the 90's. However, since the V4 countries joined the European Union (the EU), there was a massive mutual relations development in both, trade and investment as documented with data in the tables in further sections of this paper. We note that mutual trade and investment relations between the RoK and V4 countries are quite significant also in terms of share of the V4 countries on total EU inflows of the FDI from the RoK.

Concerning the literature, we notice that the works studying the relations between the RoK and the V4 countries is quite neglected, some sectoral issues are raised in the works of Jun and Hyun (2014), Kim and Rhe (2009), and Moon (2001) and bilateral issues by Éltetö and Völgyi (2013), Tseng (2013), and Semoon and Gofusova (2008). Also reports on bilateral relations between the RoK and individual V4 countries are available through embassies of the V4 countries in the RoK.

The main objective of this paper is to analyze the mutual relations between the RoK and the V4 countries from the point of view of trade and investment relations in a general overview. More in-depth analysis of these relations is carried out in the papers of this proceedings.

2 METHODOLOGY

This paper is based on the analysis of selected variables of international trade and investment. Concerning the mutual trade relations (Section 3 of the paper), we analyze exports and imports between the RoK and the V4 countries using the data obtained from the COMTRADE database available online. We chose the years 1993-2013. Year 1993 was chosen as the first year in our analysis because of the split of former Czechoslovakia into two independent countries – Czech Republic and Slovakia. Year 2013 was the last year for which the data on mutual trade was available.

For Section 4, we used the online database Bilateral FDI Statistics provided by UNCTAD. Our analysis included the period of 2001 to 2012 for which the data was available.

---

[1] Faculty of International Relations, University of Economics in Bratislava, Dolnozemska cesta 1, 852 35 Bratislava, Slovakia, martin.gress@euba.sk, +421 2 6729 5463.

We focused only on one aspect of mutual FDI flows between the RoK and the V4 countries, which is the outflow of the FDI from the RoK to V4 countries. Main reason for this unilateral analysis is fact, that the outflows from the V4 countries to the RoK are almost non-existent with the exception of Hungary, which is by far the only investor of the V4 region in the RoK.

3 MUTUAL RELATIONS IN TRADE

This section of the paper presents mutual trade relations between the RoK and the V4 region. Table 1 shows total volumes of the RoK exports to world in bil. USD and share of individual V4 countries on these exports. Table demonstrates rising volumes of the RoK exports to the world which increased during observed period almost 7-fold from 82.23 bil. USD in 1993 to 559.62 bil. USD in 2013. We notice a decrease in total volume of exports from the RoK especially in years when the crisis struck the economy, mainly 1998 (South-East Asian crisis) and 2009 (global financial and economic crisis). Another important aspect is the share of individual V4 countries on total RoK. During the 90's there was no significant share of these countries with the average share of 0.13% in 1993 with two significant outliers – Poland with a share of 0.29% and Slovakia with a share of 0.02%. Throughout the last decade of the 20th century, the share of the V4 countries remained almost the same with insignificant changes in the share of Czech Republic, Hungary, and Slovakia. The only exception was Poland. Its share between years 1993 and 1999 more than doubled from 0.29% to 0.71%. Total share of the V4 countries on total exports from the RoK increased from 0.51% in 1993 to 2.11% in 2013. This development shows rising significance of the V4 countries in the RoK exports, especially after the V4 countries joined the EU in 2004 (rise in Slovakia's share from 0.06% to 0.14% for example).

Table 1: RoK exports to world and share of V4 countries, in bill. USD, %

Year	*World*	*CZE %*	*HUN %*	*POL %*	*SVK %*
1993	82.23	0.10	0.10	0.29	0.02
1994	96.01	0.09	0.11	0.29	0.00
1995	125.06	0.11	0.13	0.33	0.02
1996	129.71	0.14	0.14	0.60	0.08
1997	136.15	0.13	0.13	0.90	0.02
1998	132.30	0.08	0.14	0.76	0.04
1999	143.69	0.06	0.11	0.71	0.02
2000	172.27	0.04	0.10	0.31	0.01
2001	150.43	0.05	0.15	0.22	0.01
2002	162.47	0.07	0.22	0.21	0.01
2003	193.82	0.08	0.34	0.20	0.06
2004	253.84	0.12	0.32	0.32	0.14
2005	284.42	0.12	0.39	0.41	0.24
2006	325.46	0.17	0.37	0.80	0.39
2007	371.48	0.26	0.51	0.94	0.73
2008	422.00	0.20	0.36	0.98	0.82
2009	363.53	0.21	0.47	1.14	0.86
2010	466.38	0.25	0.51	0.94	0.95
2011	555.21	0.31	0.27	0.74	0.74
2012	547.85	0.33	0.21	0.67	0.84
2013	559.62	0.30	0.38	0.64	0.79

Source: COMTRADE.

Different situation was witnessed in the first decade of the 21st century. The development of the Czech Republic copied the development of the 90's with very little change until 2007 when the share more than doubled. In Hungary, the share increased from 0.1% in 2000 to 0.51% in 2010 (increase of 500%). Poland also saw tripling its share from 0.31% to 0.94% in 2010 with highest share reached in 2009 at 1.14%, which was the highest share of the V4 country on the RoK exports in observed period. The most remarkable increase in the share on the RoK exports was however witnessed by Slovakia. In 2000, its share was at 0.01% with the increase to 2010 to a share of 0.95% (increase of 9 500%). Development of the V4 shares during first years of current decade was relatively stable with highest change (decrease) in case of Poland.

In table 1, we observe that during the observed period, there was an important change in the position of Poland and Slovakia. While in 1993 Poland with its share of 0.29% ranked first, in 2013 Slovakia ranked first with a share of 0.79%.

Table 2: RoK imports from world and share of V4 countries, in bill. USD, %

Year	World	CZE %	HUN %	POL %	SVK %
1993	83.79	0.04	0.023	0.05	0.002
1994	102.34	0.05	0.022	0.10	0.025
1995	135.11	0.04	0.016	0.10	0.006
1996	150.33	0.04	0.018	0.11	0.005
1997	144.61	0.04	0.037	0.06	0.004
1998	93.28	0.03	0.038	0.03	0.007
1999	119.75	0.05	0.054	0.05	0.007
2000	160.48	0.08	0.067	0.04	0.005
2001	141.10	0.07	0.070	0.03	0.007
2002	152.12	0.07	0.069	0.03	0.008
2003	178.83	0.06	0.049	0.04	0.010
2004	224.46	0.05	0.055	0.04	0.010
2005	261.24	0.06	0.058	0.04	0.012
2006	309.38	0.08	0.074	0.09	0.016
2007	356.84	0.10	0.072	0.08	0.020
2008	435.27	0.09	0.083	0.07	0.019
2009	323.08	0.10	0.094	0.07	0.020
2010	425.21	0.08	0.094	0.06	0.023
2011	524.41	0.10	0.090	0.07	0.027
2012	519.58	0.11	0.091	0.10	0.033
2013	515.57	0.11	0.091	0.15	0.036

Source: COMTRADE.

Table 2 presents imports of the RoK from the world in bill. USD and shares of individual V4 countries on these imports in %. Development of total imports of the RoK copies the development of exports with more than 6-fold increase in total volume of imports from 1993 to 2013 with decreases in the volume in the times of crisis in 1998 and 2009. Concerning the share of the V4 countries on the imports to RoK, these shares are significantly lower than in exports. While the average share of the V4 countries on exports from the RoK in 1993 and 2013 was 0.51% and 2.11% respectively, average share on RoK imports in 1993 and 2013 was 0.115% and 0.387% respectively. We notice the increase in share on exports from RoK by 400% which is not, however followed by the increase in exports to RoK with only 336%. The average share of the V4 countries in 1993 was 0.029% with one significant

outlier – Slovakia with 0.002%. In 2013, the average increased to 0.097% with the same outlier (0.036%). Decomposing the total V4 share among the individual V4 countries, we observe similar development in their share on the RoK imports. Poland maintained highest share during the first half of the 90's with the increase by 100% from 0.05% in 1993 to 0.11% in 1996 with the decline in the second half back to 0.05% in 1999. Czech Republic had a stable share ranging from 0.03 to 0.05 during the 90's. Hungary witnessed sinusoid development with a share of 0.023% in 1993 decreasing during 1994-1996 and then increasing again since 1997 to 0.054% in 1999. However, the highest change in the share of exports to the RoK was witnessed in Slovakia with rising share of 0.002% in 1993 to 0.007 in 1999 (increase of 350%). During first decade of the 21st century, there was an increase in the share of all V4 countries with the highest increase in the case of Slovakia (329%). Currently (2013), the highest share on the exports to the RoK is witnessed in Czech Republic (0.11%).

Table 3: V4 countries and their share on exports from RoK, in mil. USD, %

Year	V4	V4 % of World	CZE % of V4	HUN % of V4	POL % of V4	SVK % of V4
1993	424.50	0.52	19.90	19.56	56.66	3.87
1994	472.48	0.49	19.00	21.62	58.39	0.99
1995	736.47	0.59	17.89	22.89	55.84	3.38
1996	1260.17	0.97	14.89	14.62	62.05	8.44
1997	1603.56	1.18	10.93	11.00	76.47	1.60
1998	1345.51	1.02	7.87	13.70	74.50	3.93
1999	1295.76	0.90	7.08	12.25	78.90	1.76
2000	785.79	0.46	8.36	22.92	67.25	1.48
2001	647.78	0.43	11.25	35.23	51.96	1.56
2002	838.69	0.52	12.98	43.34	41.61	2.06
2003	1310.98	0.68	12.02	50.45	29.16	8.37
2004	2284.11	0.90	13.70	35.35	35.34	15.61
2005	3304.72	1.16	10.25	33.26	35.55	20.93
2006	5645.23	1.73	9.99	21.27	46.29	22.44
2007	9071.40	2.44	10.65	20.83	38.68	29.84
2008	9920.86	2.35	8.36	15.25	41.50	34.90
2009	9759.50	2.68	7.90	17.46	42.49	32.14
2010	12355.20	2.65	9.43	19.31	35.46	35.81
2011	11392.36	2.05	15.03	12.95	36.00	36.02
2012	11244.81	2.05	15.88	10.29	32.70	41.13
2013	11804.39	2.11	14.26	17.91	30.50	37.33

Source: COMTRADE.

Table 3 shows the data for total V4 imports from the RoK and share on individual V4 countries on total imports from RoK to V4 countries. Figure 1 presents the same data in a more intelligible format. Total exports from the RoK to V4 countries in absolute value rose from 424.5 mil. USD in 1993 to 11.8 bill. USD in 2013 representing an increase of 27 80% which shows the rising importance of the V4 countries for the RoK. Decomposing total volumes of exports from RoK to V4 countries to individual V4 countries is shown in last four columns of Table 3. From the data provided, we see that during the 90's, Poland recorded the greatest share on total imports to V4 countries with its highest share in 1999 at 78.9%. On the other hand, Slovakia recorded in this period the lowest share of all V4 countries with record low of 0.99% in 1994. Concerning Czech Republic and Hungary, even though their shares

were at almost the same level in 1993 (19.9% and 19.56% respectively), there was a significant change in following years when Hungary ranked second of the V4 countries with a share of 12.25% in 1999, while Czech Republic ranked third at 7.08%. The development of shares on imports from the RoK to V4 countries changed rather dramatically after these countries became part of the EU in 2004. We notice significant increase in the share of Slovakia (from 8.37% in 2003 to 15.61% in 2004) and especially after the year 2010. In 2013, the last observed year, Slovakia ranked first with more than one thirds of all the imports coming to V4 countries from the RoK. We also notice dramatic decline in Poland's share during the 21st century. Opposite Slovakia, where the share increased by 2 523% between 2000 and 2013, Poland recorded a decline by 55% in the same period. Figure 1 shows the data in graphical representation. We clearly see the rising share of Slovakia after 2004 and declining share of Poland being the largest trading partner of the RoK during the 90's. Hungary also recorded rather turbulent development of its share on the V4 imports from the RoK during the whole observed period. After rather low share in the 90's, there was a rapid rise in its share during yeas prior to the EU enlargement of 2004 (especially during the period 2001-2003) and decline since 2005 until 2013. The increase in the share of Hungary copied the trend of massive inflow of the RoK's FDI into Hungary in the period of 2000-2004. Concerning the Czech Republic, its share was relatively stable throughout the whole observed period.

Figure 1: V4 countries and their share on V4 total imports from RoK, in %
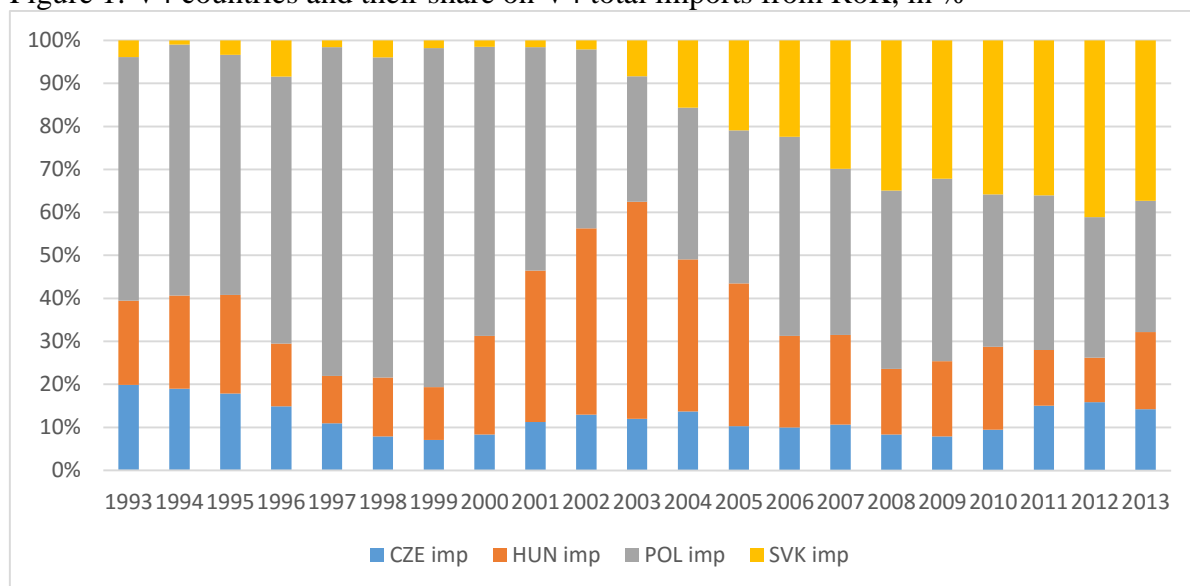
Source: COMTRADE.

Table 4 presents absolute volume of exports from the V4 countries to the RoK in the observed period in mil. USD together with the V4 share on world's exports to RoK and individual V4 countries on total V4 exports to RoK. We notice the different pattern of imports to RoK from individual V4 countries. While in exports from the RoK to V4 countries, there is a significant dominance of Poland in the observed period with rising dominance of Slovakia after 2004, situation in imports to RoK from the V4 countries is different. There is a clear pattern of rather insignificant exports from Slovakia to the RoK with a share ranging from 2% in 1993 to 9.4% in 2013. Czech Republic and Hungary have a share of approximately one quarter of total exports from the V4 to the RoK at 28.07% and 23.51% respectively in 2013. Poland ranked first with a share of 39.03% in 2013. However, the development in the observed period was quite turbulent. During the 90's, Poland recorded the highest share of

63% in 1995 and 1996. From 2000 however, there was an increase in the exports from the Czech Republic and Hungary with a combined share of 78% in 2000.

Table 4: V4 countries and their share on imports to RoK, in mil. USD, %

Year	V4	V4 % of World	CZE % of V4	HUN % of V4	POL % of V4	SVK % of V4
1993	100.81	0.12	34.63	19.20	44.20	1.98
1994	198.75	0.19	25.02	11.53	50.61	12.83
1995	208.62	0.15	23.39	10.06	62.61	3.93
1996	254.43	0.17	23.30	10.57	62.93	3.20
1997	207.47	0.14	26.83	26.10	43.97	3.09
1998	101.14	0.11	29.12	35.35	28.85	6.68
1999	190.41	0.16	32.34	34.27	29.10	4.29
2000	298.40	0.19	42.52	35.89	18.91	2.67
2001	253.98	0.18	38.87	39.08	17.94	4.11
2002	265.55	0.17	37.75	39.66	17.74	4.85
2003	282.72	0.16	37.01	30.68	26.01	6.30
2004	343.59	0.15	31.51	35.87	25.84	6.78
2005	448.27	0.17	33.43	33.66	25.93	6.98
2006	808.57	0.26	32.01	28.27	33.50	6.22
2007	998.61	0.28	36.97	25.81	30.16	7.06
2008	1143.80	0.26	34.49	31.60	26.85	7.06
2009	938.82	0.29	35.92	32.42	24.88	6.78
2010	1102.77	0.26	29.81	36.35	24.81	9.03
2011	1489.42	0.28	33.67	31.62	25.26	9.45
2012	1752.45	0.34	32.67	27.10	30.53	9.70
2013	1986.25	0.39	28.07	23.51	39.03	9.39

Source: COMTRADE.

Figure 2: V4 countries and their share on V4 total exports to RoK, in %
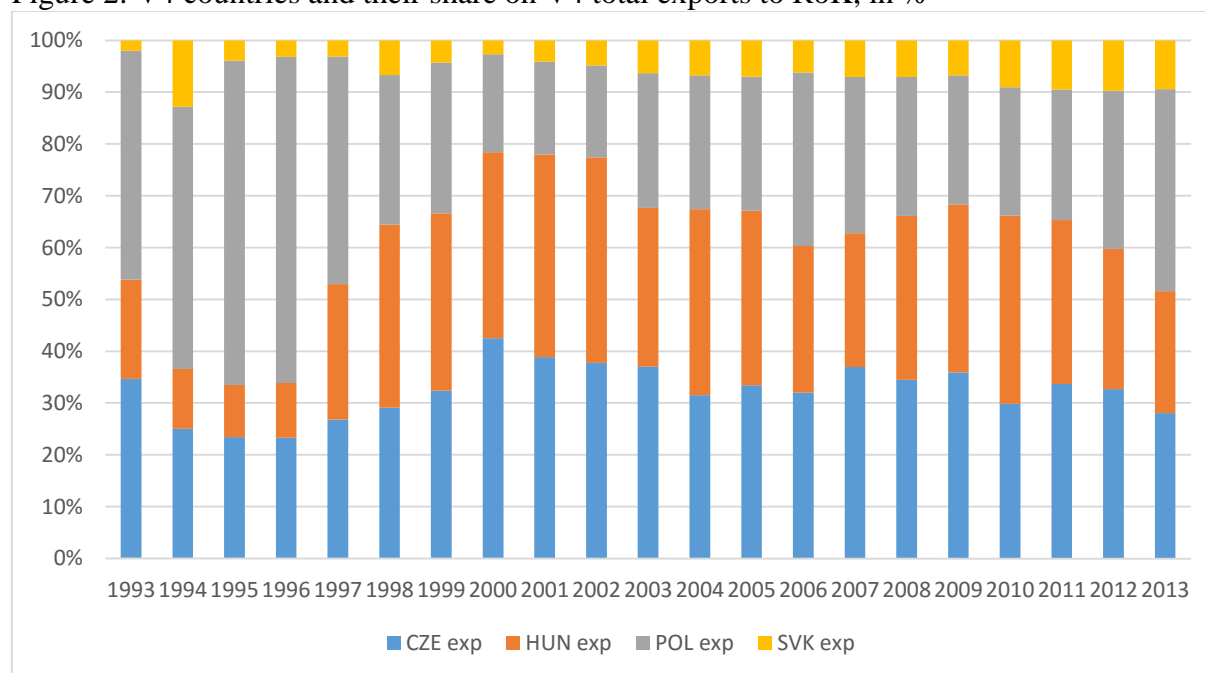
Source: COMTRADE.

Table 4 and Figure 2 clearly show that the RoK is an important trading partner for the Czech Republic, Hungary, and Poland. Despite the fact, that Slovakia has the highest share on total exports from the RoK to the V4 countries, it is not true for the opposite flow from the V4 countries to the RoK.

Figure 3 presents the combined data for trade flows between the RoK and the V4 countries in the form of trade balance of the V4 countries with the RoK in mil. USD.

During the 90's, Czech Republic, Hungary, and Slovakia recorded relatively stable trade balance from 1995-2000. The only exception was Poland with negative trade balance in the whole observed period. After the trade expansion from 2001, there was a significant change in the trade balance of all V4 countries. From 2004 all the V4 countries recorded trade deficits with the RoK, importing from the RoK larger volumes of goods and services than exporting to the RoK their own production. Poland and Slovakia performed the worst with the deficits reaching -400 mil. USD in 2010 with latter reaching -4 500 mil. USD in 2012. Currently, the highest deficit is recorded by Slovakia, and the lowest by Hungary.

Figure 3: V4 countries and their trade balance with the RoK, in mil. USD
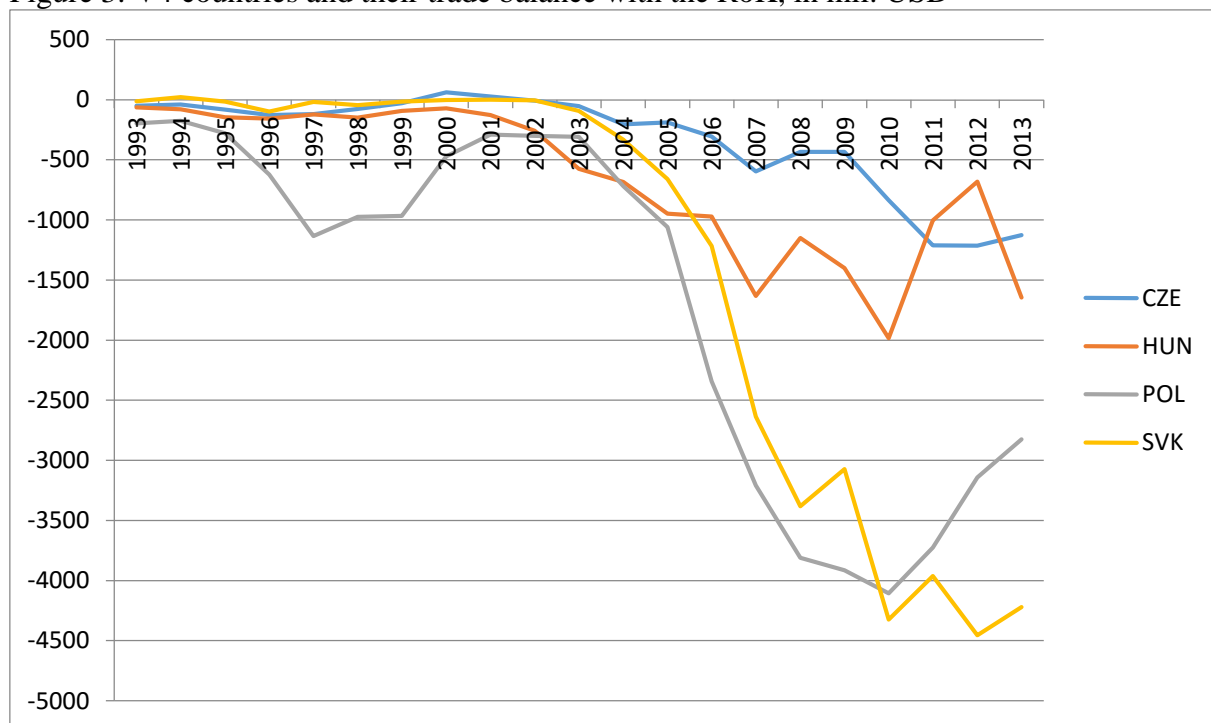
Source: COMTRADE.

4 MUTUAL RELATIONS IN INVESTMENT

This section of the paper analyzes FDI outflows of the RoK to the world, the EU, and V4 countries (Table 5), to V4 countries (Table 6) and to the EU (Table 7).

Table 5 presents FDI outflows of the RoK to the world during the 21st century. We notice that FDI outflows to the V4 countries were rather negligible in case of Czech Republic and Slovakia prior to the EU enlargement of 2004. From 2005, however, the situation changed, especially for Slovakia recording fourth highest volume of FDI from RoK in 2005 during the observed period. The highest volume of the FDI was recorded in Czech Republic in 2007 amounting to 535.73 mil. USD. Based on the latest data (2012), we notice that Slovakia ranked first with the volume of 531.83 mil. USD almost reaching the Czech FDI inflow from RoK of 2007. Besides Slovakia, also FDI inflow to Czech Republic was significant at 391.5 mil. USD. FDI inflow to Hungary and Poland leveled at one fourth of the FDI flowing to Slovakia (147.81 mil. USD and 144.19 mil. USD respectively).

Table 5: RoK FDI outflows, in mil. USD

Year	World	EU	CZE	HUN	POL	SVK
2001	1986.91	1929.41	-	32.63	12.97	-
2002	2842.08	593.47	-	79.20	-7.22	-
2003	4026.08	123.61	5.47	7.30	12.54	-
2004	5667.48	624.64	-	-6.29	32.60	83.62
2005	6387.23	519.26	10.10	12.57	78.13	222.73
2006	10807.99	929.09	111.30	72.98	220.78	285.51
2007	19966.53	3189.19	535.73	6.64	117.39	131.56
2008	20867.37	1773.35	226.99	-23.39	85.82	104.44
2009	18138.86	4151.47	93.83	-	21.74	34.06
2010	21464.41	5437.78	13.48	12.48	26.91	-
2011	26989.26	3944.83	211.04	161.51	0.78	289.50
2012	27354.28	4417.09	391.50	147.81	144.19	531.83

Source: UNCTAD Bilateral FDI Statistics.

Shares of the V4 countries (total and individual) of the total world FDI inflows from the RoK are presented in Table 6. V4 countries are rather significant with a share on total RoK FDI outflows at 4.44% in 2012. However, the trend of the FDI inflows to the V4 countries is not clearly increasing. From 2001 to 2007 there was an increase in the absolute flow of the FDI from 45.6 mil. USD in 2001 to 791.32 mil. USD in 2007 representing more than 17-fold increase in the inflow to V4 countries. However, in the following years (2008-2010), with the impact of the global economic and financial crisis, there was a steep decline in the inflows from 393.87 mil. USD in 2008 to 52.88 mil. USD in 2010. Second decade of the 21st century witnessed a sharp increase in the FDI inflow with more than 12-fold increase between 2010 and 2011 and almost doubling again between 2011 and 2012. Massive FDI inflows in 2011 and 2012 were recorded especially in Slovakia and Czech Republic.

Table 6: RoK FDI outflows, in mil. USD, %

Year	V4	V4 % of World	V4 % of EU	% of World			
				CZE	HUN	POL	SVK
2001	45.60	2.30	2.36	0.00	1.64	0.65	0.00
2002	71.98	2.53	12.13	0.00	2.79	-0.25	0.00
2003	25.31	0.63	20.48	0.14	0.18	0.31	0.00
2004	109.93	1.94	17.60	0.00	-0.11	0.58	1.48
2005	323.53	5.07	62.31	0.16	0.20	1.22	3.49
2006	690.57	6.39	74.33	1.03	0.68	2.04	2.64
2007	791.32	3.96	24.81	2.68	0.03	0.59	0.66
2008	393.87	1.89	22.21	1.09	-0.11	0.41	0.50
2009	149.64	0.82	3.60	0.52	0.00	0.12	0.19
2010	52.88	0.25	0.97	0.06	0.06	0.13	0.00
2011	662.83	2.46	16.80	0.78	0.60	0.00	1.07
2012	1215.33	4.44	27.51	1.43	0.54	0.53	1.94

Source: UNCTAD Bilateral FDI Statistics.

Table 7 together with third column of Table 6 (V4% of the EU) show the importance of the V4 region for FDI outflows from the RoK to the EU. As Table 6 shows, there was a significant inflow of the RoK FDI flowing to the EU to V4 countries in the years immediately following their accession to the EU in 2004. In 2005 and 2006, share of the V4 region on total EU FDI inflows from the RoK amounted to 62.31% and 74.33% respectively. In 2006, three fourths of all the FDI outflows from RoK to the EU were coming to the V4 region. Since 2007 the share of the V4 region declined rather significantly, reaching the lowest share of 0.97% in 2010. However, there was a surge in the V4 region share again in 2011 and 2012 reaching more than 25% on the EU inflows in 2012.

After decomposing the V4 region share to individual countries, we see that the greats share of FDI inflows from the RoK was recorded in Slovakia. In 2005, Slovakia constituted almost one half of all the RoK FDI inflows (42.89%); reaching almost one third in 2006 (30.73%). In 2006 more than one half of all the FDI inflows to the EU were coming to Slovakia and Poland (54.5%). Even though the share of these two countries declined sharply in the following years, in 2012 Slovakia constituted 12% of all the FDI inflows to the EU from the RoK and together with Czech Republic constituted one fifth of the inflow.

Share on the EU FDI inflows from the RoK is also reflected in the second part of Table 7. Even though Slovakia did not participate on the FDI inflow from the RoK in 2001-2003, there was a rapid increase in 2004. Slovakia constituted 13.39% of the EU inflows and 76% of the V4 inflows. Its share on the V4 inflows declined in following years, reaching even 0% in 2010. In the second decade of the 21st century however, its share reached more than 43% on the V4 inflows in both 2011 and 2012.

Table 7: RoK FDI outflows, in %

Year	% of EU				% of V4			
	CZE	HUN	POL	SVK	CZE	HUN	POL	SVK
2001	-	-	-	-	0.00	71.56	28.44	0.00
2002	-	-	-	-	0.00	110.02	-10.02	0.00
2003	-	-	-	-	21.61	28.86	49.53	0.00
2004	0.00	-1.01	5.22	13.39	0.00	-5.72	29.65	76.07
2005	1.95	2.42	15.05	42.89	3.12	3.89	24.15	68.84
2006	11.98	7.85	23.76	30.73	16.12	10.57	31.97	41.34
2007	16.80	0.21	3.68	4.13	67.70	0.84	14.83	16.63
2008	12.80	-1.32	4.84	5.89	57.63	-5.94	21.79	26.52
2009	2.26	0.00	0.52	0.82	62.71	0.00	14.53	22.76
2010	0.25	0.23	0.49	0.00	25.50	23.60	50.90	0.00
2011	5.35	4.09	0.02	7.34	31.84	24.37	0.12	43.68
2012	8.86	3.35	3.26	12.04	32.21	12.16	11.86	43.76

Source: UNCTAD Bilateral FDI Statistics.

5 CONCLUSION

Based on the analysis presented in the previous sections, we come to the conclusion on rather asymmetric mutual relations between the V4 countries and the RoK in both trade and investment relations. We base our conclusion regarding the mutual trade relations on the findings in section 3 and mutual investment relations on findings in section 4 of this paper.

Concerning the trade relations, even though the RoK is important partner for the V4 countries in terms of exports from the RoK to V4 countries, this is not the case of vice-versa trade flows which is documented in Tables 3 and 4. Share of the V4 countries on total export flows from the RoK amount to 2.11%, however, in case of import flows to the RoK constituting only 0.39%. Total volume of the V4 countries exports to the RoK amounted in

2013 to 1 986.25 mil. USD, while imports from the RoK amounted to 11 804.39 mil. USD causing significant negative trade balance of the V4 countries in their mutual trade relations with the RoK as presented in Figure 3.

Section 4 of this paper focused on the analysis of FDI flows between the V4 countries and the RoK. Since there is almost non-existent FDI outflows from the V4 countries to the RoK (with the exception of Hungary), position of the V4 region in mutual investment relations is even more asymmetric than in mutual trade. On the other hand, FDI outflows of the RoK to the V4 region is significant as shown in Tables 5-7. FDI inflows to V4 region from the RoK constituted 27.51% of total RoK inflows to the EU, making the V4 region the most important place for the RoK investment. In 2005 and 2006 the asymmetry between the V4 region and the rest of the EU was even deeper, share of the V4 region totaled at 62.31% in 2005 and 74.33% in 2006. Despite the decline in following years, the share of the V4 region on total FDI inflows to the EU remains high.

For further research we propose observation of analyzed variables of trade and investment in order to capture any trends, positive or negative, that may develop and to formulate measures in order to enhance the positive trends. For corresponding state organs, especially in the V4 countries, we propose to focus on implementing strategies that will lead to the increase in trade flows from the V4 countries to the RoK.

REFERENCES:
1. COMTRADE. [Online.] Available online: <http://comtrade.un.org/data/>.
2. ÉLTETÖ, A. – VÖLGYI, K. (2013): Integrated in the global value chains – trade developments between Hungary and Asia. In: Eastern Journal of European Studies, 2013, 4, 1, pp. 57-79.
3. JUN, J.-K. – HYUN, J. H. (2014): Anticipation or risk aversion? The effects of the EU enlargement on Korean trade and FDI activities in Central and Eastern Europe. In: Journal for East European Management Studies, 2014, 19, 4, pp. 486-503.
4. KIM, J., M. – RHE, D., K. (2009): Trends and determinants of South Korean outward foreign direct investment. In: The Copenhagen Journal of Asian Studies, 2009, 27, 1, pp. 126-154.
5. MOON, H., Ch. (2001): Outward foreign direct investment by enterprises from the Republic of Korea. In: Global players from emerging markets: Strengthening enterprise competitiveness through outward investment. New York and Geneva: United Nations, 2007. pp. 92-106.
6. SEMOON, C. – GOFUSOVA, K. (2008): Two-way trade products between Korea and Slovakia. In: International Economics and Finance Journal, 2008, 3, 1, pp. 65-73.
7. TSENG, S.-M. (2013): Trade flows between Czech Republic and East Asia. In: Review of Economic Perspectives, 2013, 13, 3, pp. 146-158.
8. UNCTAD Bilateral FDI Statistics. [Online.] Available online: <http://unctad.org/en/Pages/DIAE/FDI%20Statistics/FDI-Statistics-Bilateral.aspx.List of literature in alphabetical order>.

COMPARATIVE ANALYSIS OF THE ECONOMIC DEVELOPMENT OF THE V4 COUNTRIES AND THE REPUBLIC OF KOREA

Ľudmila Lipková[2]

The paper deals with a comparative analysis of economic development in the Czech Republic, Hungary, Poland and Slovakia - Visegrad Four countries and the Republic of Korea from 1990 to the present. We compare the absolute volume of GDP, the share of the V4 countries and the Republic of Korea of world GDP, GDP per capita, structure of GDP. Besides the main macroeconomic indicators, the paper also analyzes the flow and stock of foreign population living in the V4 countries and the Republic of Korea. We come to conclusion of diversity between the economies of all the observed countries and especially the differences between the economy of Korea and economies of the V4 countries in both general characteristics and macroeconomic characteristics.

1 INTRODUCTION

V4 countries and Republic of Korea (Korea) represent important part of the world economy from the point of view of their economic development in the previous periods. Even distant, these five countries are tied by mutual trade and investment relations which bring them closer to each other. Besides trade and investment relations, also their comparison based on macroeconomic indicators and general characteristics is important in order to provide more in-depth view of the structures of these economies.

Comparative economic analysis of the V4 countries and Korea is quite neglected in the literature. From a Korean perspective, Tourk (2014) focuses on comparison between Korea and Egypt in both colonial and post-colonial periods. Also Weber (2001) provides some insights to economic system reform in Korea and other south-east Asian countries.

The aim of this paper is comparative economic analysis of the V4 countries and Korea in terms of general characteristics and macroeconomic characteristics.

The source of data in this paper was provided from three online databases: Nationsonline, OECD Statistics, and World Development Indicators for the selected years. For basic characteristics, provided by Nationsonline, we used latest data available online. In case of economic structures of individual economies of V4 countries and Korea years 2000 and 2014, for the GDP development years 1990, 2000, 2010, and 2014. For value added by activity we chose the last year of 2014 for which the data were available. In case of immigrant flows and stock, we used available data for period 2000-2012. As a source of trade relations between the V4 countries and Korea, trade reports from V4 embassies in Korea may be used as a source of relevant data, such as Embassy of the Slovak Republic in Seoul (2015).

2 GENERAL CHARACTERISTICS OF THE V4 COUNTRIES AND KOREA

Table 1 provides basic characteristics of the V4 countries and Korea. We see that Korea is by far the most populous country of all the examined countries with a population of over 50 mill. people. Poland is the only country from the V4 region keeping more or less with Korea, even though its population of 38.2 mil. people is only 76% of Korea population. The smallest country of the whole group is Slovakia with 5.45 mill. people constituting only 11%

---

[2] University of Economics in Bratislava – Faculty of International Relations, Dolnozemská cesta 1/b, 852 35 Bratislava 5, Slovakia, ludmila.lipkova@euba.sk.

of Korea population. Based on the numbers of total population in all the countries, one can see that the population of Korea constitutes greatest share of the world population at 0.68% with Slovakia, as the least populous country, with a share of 0.08%.

Another important characteristic of the examined countries is the share of foreign population on the total population. We see that, even though population of the Czech Republic constitutes only 21.3% of Korea population, the share of foreign population in the Czech Republic is 2-fold higher than in Korea. Hungary and Slovakia have almost the same share of foreign population on their total populations, while Poland only has 0.15% share of foreign population. However, in absolute numbers, Slovakia as the least populous country of the V4 region is a home to approximately 71 thousand foreign people, while Poland (7 times larger than Slovakia in terms of both population and area) comprises of only 57 thousand foreign people.

Comparing the area of all the observed countries and their total population yields the differences in population density, especially for Poland and Korea as two most populous countries. While Poland is 3-times larger than Korea, its population density is only 122 people per km squared comparing to Korea with 506 people per km squared. The least densely populated country is Hungary with 107 people per km squared.

We also note the important indicator of the population – growth of population, in our case for year 2013. We can see that with the exception of Hungary, there was a growth in the number of people in all observed countries with highest increase recorded in Korea. Based on the rule of 70, one might expect the doubling of the population in Korea (if we assume constant population growth of 2013) in next 137 years by 2152.

Table 1: Basic characteristics of the V4 countries and the Republic of Korea

	Czech Rep.	*Hungary*	*Poland*	*Slovakia*	*Rep. of Korea*
Population	10.74 mil.	9.93 mil.	38.22 mil.	5.45 mil.	50.42 mil.
Share on world population	0.15%	0.14%	0.53%	0.08%	0.68%
Foreign population share on total population	4%	1.4%	0.15%	1.3%	2%
Area	78 867 km^2	93 028 km^2	312685 km^2	40035 km^2	99678 km^2
Share on world area	0.05%	0.06%	0.21%	0.03%	0.07%
Growth of population in 2013	+0.36%	-0.22%	+0.01%	+0.07%	+0.51%
Net migration	+43 390	+15 752	-8613	+3 450	+61441
Population density	136	107	122	111	506
Urbanization rate	73%	71%	61%	55%	84%

Source: Nationsonline.

Figures 1 and 2 show the immigrant inflow and stock in observed countries. One can see that there is a quite difference between Korea and V4 region in terms of both, inflow and stock of immigrants. While the inflow of immigrants is very low in the V4 countries (with the

exception of the Czech Republic in 2007) and almost non-existent in case of Slovakia, it is significantly higher in Korea. While the total number of immigrants' inflow to V4 countries in 2012 amounted to 100 thousand people (with most coming to Poland – 47 thousand and least to Slovakia – 3 thousand), in Korea the number of inflow of foreigners reached 300 thousand, 3-times more than for the whole V4 region, and 100-times more than in Slovakia.

Figure 1: Immigrants inflow in thousands
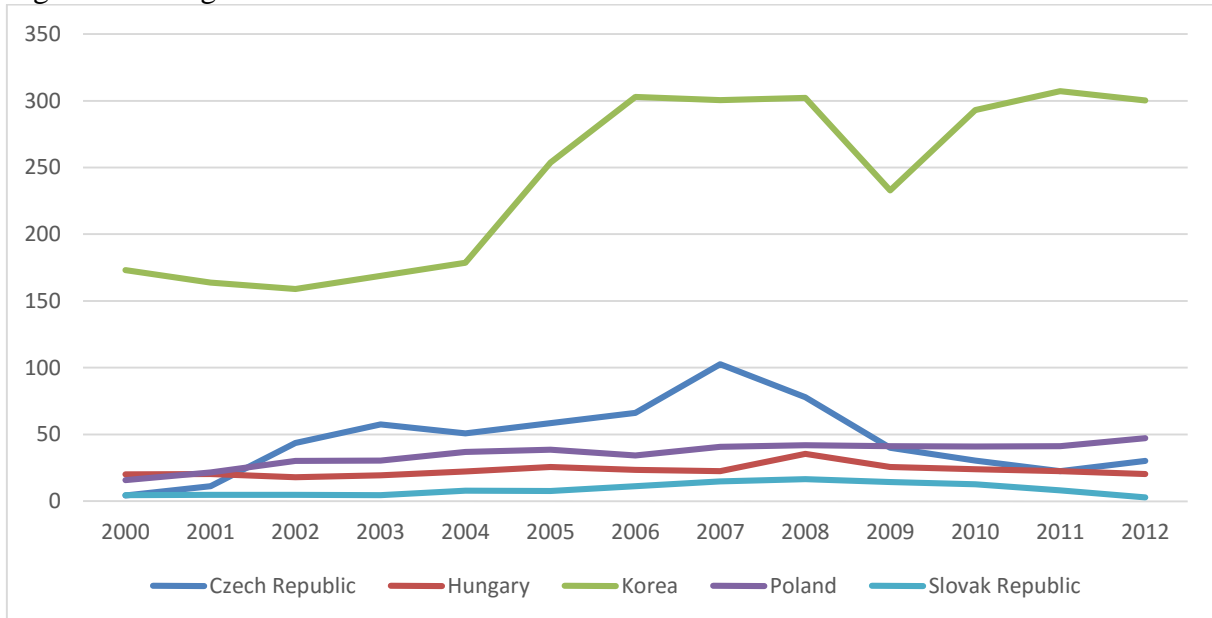
Source: OECD.

Figure 2: Immigrants stock in thousands
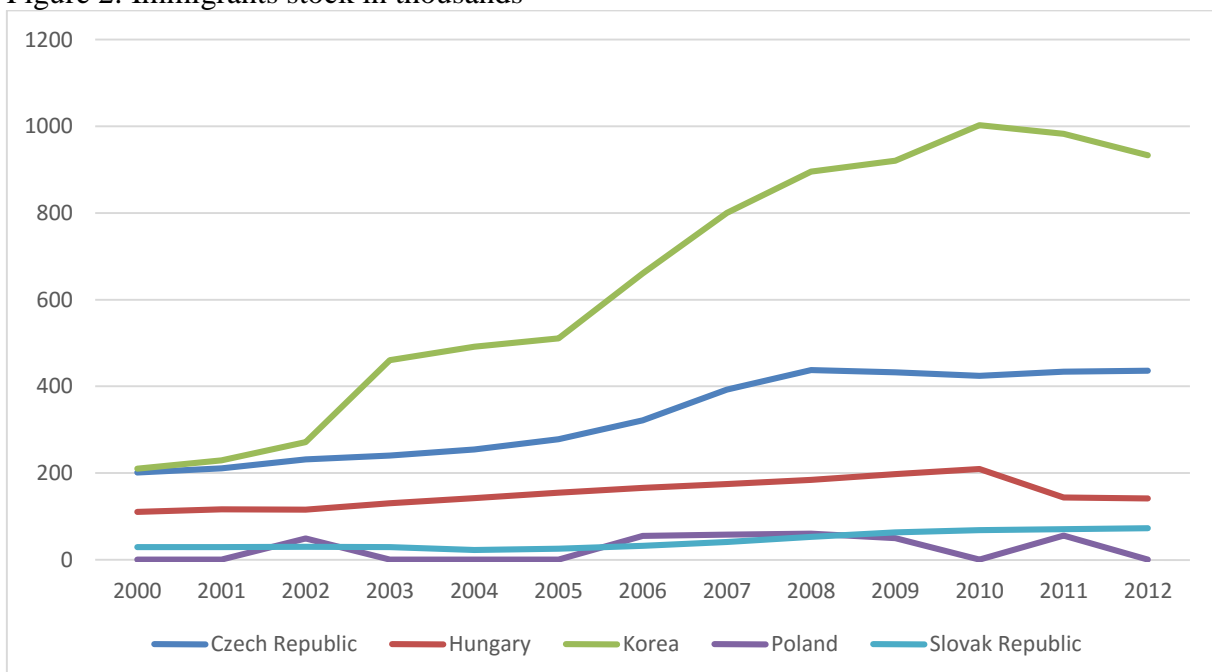
Source: OECD.

We can see the similar situation, as with the immigrants' inflow, also in figure 2, which represents the total stock of foreign people living in the V4 countries and on Korea. The only exception is the beginning of the 21st century, especially years 2000-2002. During

this period, there were almost the same stocks of foreign population in the V4 countries and Korea recorded for the Czech Republic and Korea. However, after this 3-year period, there was a massive increase in the stock of foreign population in Korea which was not followed by the same development in the Czech Republic, even though the stock of foreign population in this country is much larger than in other countries of the V4 region.

If we compare Korea and the V4 countries in terms of the foreign population stock, we can see again the great difference for year 2012. While in Korea, the stock reached more than 930 thousand people, combined stock of foreign population in the V4 region amounted to only 705 thousand[3] (or 76% of total stock of foreign population in Korea). Of these 705 thousand, 62% lived in the Czech Republic, and only 8% in Poland.

3 MACROECONOMIC CHARACTERISTICS OF THE V4 COUNTRIES AND KOREA

This sections aims to analyze of the economic characteristics of the V4 region and its individual countries and Korea. We focus on 3 different comparisons of these individual economies. The first one concentrates on differences in the value added by activity, or the structure of the GDP (Table 3). Second part (Tables 4 and 5) focuses on the differences in basic macroeconomic indicators for all the observed countries between the years 2000 and 2014. Last table (Table 6) consists of the main macroeconomic indicator and its different views – total value of GDP, nominal GDP per capita and GDP per capita in PPP. This table also presents the share of all the observed economies of the world GDP.

Table 3 shows the current economic structure of the observed economies of Korea and V4 countries. Primary sector (agriculture, hunting, forestry, and fishing) composes a small fraction of the total value added in all the countries with highest share of 4.44% in Hungary and lowest share in Korea (2.34%). On the other hand, looking at the data from the beginning of the 21st century, one can see that the share of primary sector in Korea decreased by almost 50% from more than 4% in 2000, while there was an increase in manufacturing sector to current share of 30.3%. Concerning manufacturing, Korea has the highest share of this sector in the value added followed by the Czech Republic with 26.6% and Poland with the lowest share of 19.2%. Comparing energy and its value added together with manufacturing yields some interesting results. Despite the fact of highest share of manufacturing on the value added of all observed countries, Korea has also the lowest share of energy on value added levelling at 3%. On the other hand, there is Poland with the lowest share of manufacturing on the value added, but with the highest share of energy at 6.64%. These data show quite a strong energy effectiveness of the Korean economy and not as high energy effectiveness of Polish economy.

Looking at the individual sectors of national economy and their share on value added, we can see no significant differences between all the observed economies, however, we can notice certain slight differences. The highest share of manufacturing goes to especially Korea and Czech Republic (30.3% and 26.6% respectively). On the other hand, there are economies of Poland and Slovakia, where retail sector has the highest share (30.2% in Poland and 27% in Slovakia). Manufacturing and retail in Hungary share the same values at around 23.5%.

More importantly, since there should be high share of service sector in developed economies, combination of wholesale and retail, repairs, hotels and restaurants and transport with financial, real estate, renting and business activities together with other service activities reveals their combined share of approx. 60% of value added in all observed economies, making the service sector the most important sector in all the national economies ranging from 59.4% in Korea to 64.8% in Hungary. Combined manufacturing and construction sectors on the other hand compose approx. one third of the value added ranging from 26.7% in Poland to 35.2% in Korea. These data show the importance of service sector for all the

---

[3] Data for Poland are taken for 2011, since no data were available for 2012.

individual observed economies with lower share of secondary sector and rather negligible primary sector. Based on this observation we may conclude that all the V4 economies together with the economy of Korea are well developed and have their place within the club of the most developed countries grouped in the OECD.

Table 3: Value added by activity in 2014, in %

	Korea	*Czech Rep.*	*Hungary*	*Poland*	*Slovakia*
Agriculture, hunting and forestry, fishing	2.34	2.70	4.44	3.32	3.74
Energy	3.00	5.79	3.10	6.64	4.31
Manufacturing	30.29	26.58	23.26	19.22	20.38
Construction	4.94	5.58	4.32	7.52	8.29
Wholesale and retail trade, repairs, hotels and restaurants, transport	18.78	22.73	23.52	30.22	27.03
Financial intermediation, real estate, renting and business activities	20.92	19.56	20.97	16.58	18.42
Other services activities	19.72	17.17	20.36	16.50	17.83

Source: OECD.

Tables 4 and 5 provide the information and data on development of the observed economies within a period of first 15 years of the 21st century, namely years 2000 and 2014. Since Table 6 provides more detailed data on the GDP, we do not take into account the GDP from tables 4 and 5, even though it is the most important indicator of the overall performance of the national economies. Instead, we focus on other indicators relevant for our comparison of the economies of the V4 countries and Korea.

One of the striking differences is the data on government deficit as a % of GDP. The only country with government revenues higher than expenditures was Korea with a surplus of 5.4% in 2000 and 1.2% in 2014. We also observe rapid improvement of the government deficit of Slovakia after joining the EU in 2004 and later the European monetary union in 2009. While the deficit was -12.3% in 2000, it significantly improved to -2.9% in 2014. The other V4 countries' deficits reached approx. -3% of the GDP.

Another difference in which Korea has much better performance is the government debt as % of GDP. Even though Korean debt doubled in the course of past 15 years from 16% to almost 35%, it still is the lowest debt of all observed countries. Deficits in the V4 region reached from 33% in Czech Republic to 60% in Hungary in 2000 while increasing in 2014 from 59% in Czech Republic to 100% in Hungary. Even though the increase in the government debt was most rapid in Korea, it still has the lowest government debt of all observed countries.

Important aspect of external economic relations are trade relations with other countries. Since the V4 countries are small and open economies, it is not surprising that these countries are more opened than Korea, even though there was an increase in the share of trade as % of GDP from 68% to 96% in Korea between 2000 and 2014. Despite this increase, the most opened economies in 2014 were Slovakia, Hungary, and Czech Republic. These three economies were also the most opened economies in 2000, however, Slovakia took over from Hungary.

Table 4: Economic structures of V4 and Korea economies in 2000

	Korea	Czech Rep.	Hungary	Poland	Slovakia
Total GDP bil. USD, constant 2005 USD	712.76	112.12	91.04	262.99	49.01
GDP p.c., PPP current USD	18091	16287	12073	10611	11160
Government deficit % of GDP	5.4	-3.7	-2.9	-3	-12.3
Government debt % of GDP	16.3	33.1	60.1	45.4	57.6
Trade % of GDP	68	98	137	61	111
Exports % of GDP	35	48	67	27	54
Imports % of GDP	33	50	71	34	57
Current account balance % of GDP	2.4	-4.8	-8.4	-6	-3.4
FDI Inflows, bil. USD	9.28	4.98	2.76	9.45	2.38
FDI Outflows, bil. USD	4.99	0.043	0.62	0.017	0.029
Unemployment rate	4.4	8.8	6.3	16.1	18.9
Employment rate 15-24	29.4	38.3	32.5	24.5	29.0
Employment rate 25-54	72.2	81.6	73.0	70.9	74.7
Employment rate 55-64	57.8	36.3	21.9	28.4	21.3
R&D expenditures mil. USD	21.3	2.3	1.4	3.5	0.5
- as % of GDP	2.99	2.06	1.54	1.32	1.07
Researchers per 1000 employed	5.1	2.9	3.4	3.8	4.9

Source: WDI, OECD.

Table 5: Economic structures of V4 and Korea economies in 2014

	Korea	Czech Rep.	Hungary	Poland	Slovakia
Total GDP bill. USD, constant 2005 USD	1238.48	157.08	117.24	429.52	85.22
GDP p.c., PPP current USD	34356	30445	24498	24882	27585
Government deficit % of GDP	1.2	-2	-2.6	-3.2	-2.9
Government debt % of GDP	34.7	58.8	100.1	62.3	60.3
Trade % of GDP	96	160	175	92	180
Exports % of GDP	50.6	83.6	91.1	46.7	91.9
Imports % of GDP	45.3	76.8	83.7	45.2	87.8
Current account balance % of GDP	5.4	1	2.9	-1.4	2.1
FDI Inflows, bil. USD	12.22	4.99	3.09	-6.04	0.591
FDI Outflows, bil. USD	29.17	3.3	2.27	-4.85	-0.422
Unemployment rate	3.5	6.1	7.7	9	13.2
Employment rate 15-24	25.8	27.1	23.5	25.8	21.8
Employment rate 25-54	75.7	83.8	79.2	78.4	76.8
Employment rate 55-64	65.6	54.0	41.8	42.5	44.8
R&D expenditures mil. USD	68.2	5.5	3.1	7.4	1.2
- as % of GDP	5.50	3.48	2.63	1.73	1.36
Researchers per 1000 employed	12.8	6.7	6.1	4.6	6.7

Source: WDI, OECD.

One of the most influential indicators of innovative and knowledge economy is the expenditures on research and development, total and as a % of GDP. Based on the data provided by tables 4 and 5, it is worth considering whether the economies of the V4 countries may be considered as knowledge economies. Even though there was an increase in % of GDP for all the V4 economies, it is still not sufficient and far below the share of these expenditures in Korea. Korean R&D expenditures amounted to 5.5% of GDP in 2014, while in V4 economies this share ranged from the highest share 3.5% in Czech Republic to the lowest share of 1.36% in Slovakia.

Table 6: Total GDP, GDP p. c., share of world GDP

	GDP p.c. PPP			
	1990	*2000*	*2010*	*2014*
Korea	8 611	18 091	30 465	34 356
Czech Rep.	12 731	16 287	27 051	30 445
Hungary	..	12 073	21 478	24 498
Poland	6 003	10 611	20 757	24 882
Slovakia	..	11 160	24 432	27 585
	GDP p.c.			
	1990	*2000*	*2010*	*2014*
Korea	6 642	11 948	22 151	27 970
Czech Rep.	3 902	5 995	19 764	19 554
Hungary	..	4 614	12 958	13 903
Poland	1 698	4 493	12 530	14 423
Slovakia	2 396	5 402	16 510	18 417
	GDP Total, const. 2005 USD			
	1990	*2000*	*2010*	*2014*
Korea	378 498 675 210	712 755 953 193	1 098 693 622 608	1 238 692 478 013
Czech Rep.	106 766 752 653	112 177 410 737	153 348 956 898	157 075 387 980
Hungary	..	91 042 897 048	111 089 253 817	117 236 681 813
Poland	181 449 245 081	262 992 527 456	382 949 926 063	429 524 917 070
Slovakia	..	49 013 928 616	78 622 310 658	85 216 017 908
World	30 935 395 293 247	40 809 425 370 510	52 646 237 071 858	58 055 285 493 348
	Share of World GDP			
	1990	*2000*	*2010*	*2014*
Korea	1.22	1.75	2.09	2.13
Czech Rep.	0.35	0.27	0.29	0.27
Hungary	..	0.22	0.21	0.20
Poland	0.59	0.64	0.73	0.74
Slovakia	..	0.12	0.15	0.15

Source: WDI.

Table 6 presents the data on the most important macroeconomic indicator – GDP and its various forms. First part of the table provides data on GDP p. c. for both PPP and nominal values. Second part of the table shows total real GDP in constant prices of 2005 in USD and last part provides the information on the share of all observed economies of the world GDP.

In case of the GDP p. c. development, we can say that highest values in both PPP and nominal p. c. GDP were achieved by Korea in the whole period of 2000-2014. While in 2000 Korea reached p. c. PPP GDP at 18 thousand USD and 12 thousand in case of nominal p. c. GDP, in 2014 it was 34.4 thousand USD and 28 thousand USD respectively. However, after we compared the changes in both PPP and nominal p. c. GDP, we come to conclusion, that even Korea had the highest GDP p. c. in both PPP and nominal terms, the change between 2000 and 2014 was highest in V4 countries, mainly in Slovakia, which recorded the highest increase in both PPP and nominal p. c. GDP at 147.2% and 241% respectively.

Total value of GDP composes third part of Table 6. Based on the size of economies, it is clear that Korea has the highest GDP in terms of absolute value with 1.2 trill. USD in 2014. However, after looking at the numbers in this part of Table 6 and comparing the change between 2000 and 2014, we can see that Slovakia, even though the smallest economy of all observed countries, had the same increase in its absolute value GDP as Korea between 2000 and 2014 of 74%. Average world GDP increase reached only 42%. Lowest increase in terms of absolute value GDP increase was witnessed in Hungary at 29%. There is also difference when comparing total GDP change to changes in GDP p. c. both nominal and PPP. While Korea ranked fourth in GDP p. c. PPP change and fifth in nominal GDP p. c. change, it ranked first together with Slovakia in the increase of total GDP. The lower changes in p. c. change may be due to certain extent to growth rate of the population, which is much higher in Korea than in the V4 countries.

Considering the share of world GDP, it is clear that Korea, based on the size of its economy, had the largest share of the world GDP since 1990. While in 2000, its share reached 1.75%, there was an increase in 2014 to 2.13%. comparing years 2000 and 2014, we clearly see there is almost no change in the share of individual V4 economies throughout the period of the beginning of the 21st. century. The size of economies fully corresponds with their share of the world GDP with largest share of Poland and lowest share of Slovakia.

4 CONCLUSION

Based on the previous sections, we can see the diversity between the economies of all the observed countries and especially the differences between the economy of Korea and economies of the V4 countries in both general characteristics and macroeconomic characteristics.

From the point of view of basic characteristics, we conclude that Korea is not only the most populous country, it is also a country with the highest population density, highest urban rate, and highest share of the world population together with the highest population growth rate.

Concerning the foreign population and its participation on the total population in observed countries, we conclude that even though Korea is the most populous country, the highest share of foreign population is recorded in Czech Republic at 4% of total population (while in Korea only 2%). Another significant difference between Korea and V4 countries is also inflow and stock of foreign population. Both of these indicators are by far highest in Korea with inflow being higher 3-times and stock being higher by 1.3-times than total of V4 countries.

From the point of macroeconomic characteristics, we conclude that while services are similarly important for the value added for all observed economies at approx. 60%, value added of manufacturing sector is highest in Korea (30%).

Concerning government deficit, Korea is the only country that recorded surplus in the first years of the 21st century.

Focusing on the GPD, since Korean economy is the largest economy by size, it is clear that its share of world GDP is highest at 2.13% in 2014. In terms of GDP p. c. both PPP and

nominal, Korea recorded highest numbers since the beginning of the 21st century. However, looking at the change between 2000 and 2014, the highest growth was recorded by the smallest economy – Slovakia with 147% increase in GDP p. c. PPP and 241% increase in nominal GDP p. c.

For further research we propose to focus also on other relevant indicators from the point of view of national economy of all the observed countries.

REFERENCES

1. EMBASSY OF THE SLOVAK REPUBLIC IN SEOUL. (2015): Ekonomická informácia o teritóriu. In: *Ministerstvo zahraničných vecí.* Available online: < https://www.mzv.sk/documents/1150769/620840/EIT_Korea_2015.pdf >.
2. NATIONSONLINE. Available online: <http://www.nationsonline.org/oneworld/countries.html>.
3. OECD STATISTICS. Available online: <http://stats.oecd.org/>.
4. TOURK, K. (2014): Comparative Analysis of Economic Development in Colonial and Post-colonial Egypt and Korea. In: *Seoul Journal of Economics*, 2014, 27, 3, pp. 223-55.
5. WDI – WORLD DEVELOPMENT INDICATORS. Available online: http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators
6. WEBER, M. (2001): Reforming Economic Systems in Asia: A Comparative Analysis of China, Japan, South Korea, Malaysia and Thailand: Conclusions. In: *Reforming economic systems in Asia: A comparative analysis of China, Japan, South Korea, Malaysia and Thailand*. Cheltenham: Elgar, 2001, pp. 205-12. ISBN 1-84064-845-7.

COMPARATIVE ADVANTAGE OF V4 COUNTRIES: TRENDS AND CHANGES BETWEEN 2003 AND 2013

Ondřej Sankot, Pavel Hnát[4]

In this paper, a comparative study of V4 countries in terms of identified comparative advantages in years 2003 and 2013 is provided. In order to transform theoretical aspects of the original Ricardo Model into an empirical study, concept of revealed comparative advantage (RCA), based on Balassa Model is used. As Balassa model shows specific limitations in measuring revealed comparative advantage, further RCA indicators are examined and linked with recent challenges of the business environment of the V4 countries.

Key words: Comparative Advantage, Revealed Comparative Advantage, Czech Republic, Hungary, Poland, Slovakia
JEL: F11, F14, F41

1 INTRODUCTION

Since the beginning of the 90`s and the collapse of the Eastern Bloc, economies of the Visegrad Group (the Czech Republic, Hungary, Poland and Slovakia; V4) have gone through the unique process of economic transformation. Today, all of them stay as open economies integrated to western economic and trade structures. However, the gap between the most developed countries in the world and V4 economies remains in many aspects significant. In order to reduce that gap and promote further convergence, understanding of the current position of V4 countries in the global economy is necessary.

This paper focuses on identification of their comparative advantages. It first explains the most suitable way of identifying revealed comparative advantage by different indices. Then uses the most suitable method to display the V4 countries outcomes at a very detailed disaggregated level. Aggregated Lafay index is also used to clearly display the main movements in comparative advantage between 2003 and 2013. Visegrad countries are compared and data is linked with recent challenges of the business environment. Data for years 2003 and 2013 are provided in order to enable a time comparison. The Theory of Comparative Advantage belongs to the earliest macroeconomic models, it explains international goods flows in the context of country`s factor endowments. Despite the fact that globalization and related international factor mobility reduces the importance of original factor distribution and despite state interventions in the economy, the comparative advantage remains an explanation of country`s pattern of trade and therefore also its position in the global economy.

As a theoretical model, comparative advantage has always been regarded as an useful explanation of country`s international trade pattern. However, it is still challenging to convert theoretical aspects of this model into relevant empirical study, describing trade patterns of a real, existing economy. At present, national economies are interconnected and interdependent due to globalization processes, which rules out comparing autarkic variables of national economies, such as autarkic prices or autarkic production costs. Moreover, even if we had reliable autarkic prices, they would not necessarily display the real comparative advantage (De Benedictis and Tamberi, 2004), due to barriers described by oligopoly theory (Cordella, 1998). That is why, revealed comparative advantage (RCA), based on analysis of post-trade variables, serves as the second best option, overcoming practical limitations of the original

---

[4] Ondřej Sankot , Pavel Hnát, Ph.D., Department of World Economy, University of Economics, Prague, Nám. W. Churchilla 4, 130 67 Prague 3, ondrej.sankot@vse.cz, hnatp@vse.cz.

Ricardo model (Sanidas and Shin, 2010). RCA still enables to describe comparative advantage retrospectively, under assumption that comparative advantage of an economy is mirrored by its international trade patterns.

More approaches could be used to identify revealed comparative advantage. In this paper, revealed comparative advantage, based on the Balassa Index (Balassa, 1965) and later derived methods will be applied. Balassa Index enables us to examine in which sectors an economy has a comparative advantage. Nevertheless, it lacks the ability to serve as an indicator to make comparisons across sectors, economies and time periods (Bowen, 1983; Cai and Leung, 2008; De Benedictis and Tamberi, 2001; De Benedictis and Tamberi, 2004; Hillman, 1980; Yu et al., 2009). In order to overcome these deficiencies, several new indicators based on principles identified by Balassa have been established. In this paper, following indicators will be taken into account. Symmetric RCA index (Dalum et at., 1998), weighted RCA index (Proudman and Redding, 2000), additive RCA index (Hoen and Oosterhaven, 2006), normalized RCA (Yu et al., 2009) and Lafay index (Lafay, 1992; Zaghini, 2003). Even though these indicators are still not capable of identifying and describing the comparative advantage in its full complexity, revealed comparative advantage and its variations could illuminate differences among countries and serve as a base for further research.

Essential data will be derived from the World Trade Organization Statistic Database, where the trade dataset is organized in accordance with the Standard International Trade Classification (SITC). All the data in this paper refer to years 2003 and 2013.

This paper should contribute to deeper understanding of economic structure in V4 countries and its development in time, which resulted from processes linked to an economic transformation. Revealed comparative advantage together with the knowledge of trade territorial structure is an essential information for potential foreign investors as well as for domestic policymakers, who take actions in the economic field.

2 REVEALED COMPARATIVE ADVANTAGE MEASUREMENT

The original Ricardian model (Ricardo, 1815), explains international trade flows as a result of different factor endowments in each particular economy. Because labour productivity differs among particular economies, each economy could specialize itself on production of a good, it manufactures relatively more efficiently and gains through goods exchange in the international market. Ricardo used in his model just two countries and two goods, however the idea that international trade could identify sector(s), where the particular economy is relatively more productive, remains to be a part of overwhelming consensus (Irwin, 1991).

In order to identify and quantify the comparative advantage of an economy, we have to determine the relation between economic conditions as a source of comparative advantage on the one side and usable and quantifiable indicator on the other side. This relation was described by Ballance (Balance et al., 1987) and is indicated by the following diagram (1):

$$EC \rightarrow CA \rightarrow TPC \rightarrow RCA \qquad (1)$$

"According to (1), economic conditions (EC) that vary across countries determine the international pattern of comparative advantage (CA), which lies under the pattern of international trade, production and consumption (TPC). The relationship between EC, CA and TPC can be understood as what the international trade theories have been trying to identify: what kind of economic conditions determine comparative advantage that makes the trade to take place, and how the trade is going to affect the economy" (Sanidas and Shin, 2010). As long as we are not able to determine exact autarkic prices and autarkic production costs within an economy, we have to rely on available trade data from the past to identify a revealed

comparative advantage (RCA) as a second best alternative. RCA describe the pattern of CA, which is based on TPC. In other words, CA determines TPC and available combinations of TPC are recorded by RCA (Sanidas and Shin, 2010; Vollrath, 1991).

Furthermore, the original theory considers only simplified 2x2 situation, where merely 2 countries trade with one another and the whole trade volume consists of 2 types of good only. Since the current global economy is not that transparent and straightforward, some authors dispute the relation between CA and TPC in multi-country and multi-commodity world (Drabicki and Takayama, 1979). This suggests that the question of "the degree of advantage exhibited by a particular country over various goods or the degree of advantage exhibited by various countries with respect to a particular traded good" (Hillman, 1980) identified by RCA, remains.

RCA should be supplemented with other data to distinguish whether the export volume is caused by comparative advantage or not, which could increase the explanatory value of RCA. Especially government policies could alter country`s original comparative advantage, as e.g. Clarida and Findlay (1992), suggest. However, RCA could still "certainly be used for the descriptive purpose of identifying in which sectors a country exports more or less than average" (Deardorff, 2011). Given that international trade conforms the comparative advantage, the country, which exports more particular goods than the benchmark, produces this good more efficiently and disposes of the comparative advantage in its production.

Despite the fact that RCA does not have to provide an accurate identification and quantification of the comparative advantage in its original terms, according to Balance et al., (1987), RCA as a post-trade indicator can identify much about underlying pattern of the comparative advantage. Deardorff, who proved, that there is a negative correlation between net exports and relative autarkic prices (Deardorff, 1980), also shares this belief. That is why Sanidas and Shin (2010) also consider RCA "to deliver proper information with respect to comparative advantage" (Sanidas and Shin, 2010).

As many indicators as there are combinations of post-trade variables (Balance et al. 1987) could measure RCA. This paper focuses on the most common Balassa`s revealed comparative advantage index (BI) and indexes that patterned on BI. For further RCA indicators please see e.g. Balance et al., (1987), Memedovic (1994) or Vollrath (1991).

2.1 REVEALED COMPARATIVE ADVANTAGE - BALASSA INDEX (BI)

The most common formula for identification of RCA was described by Balassa (1965). Adopting previous idea of Liesner (1958), Balassa concentrates on the relative export performance of the country. BI compares export share of the particular export commodity with the share of the commodity on the total world exports. Following formula holds (2):

$$BIij = \frac{\frac{Xij}{Xi}}{\frac{Xwj}{Xw}} \tag{2}$$

where Xij stands for exports of commodity j by country i, Xi stands for total export of country i, Xwj stands for world`s exports of commodity j, whereas Xw represent world`s total exports. "A given country is considered to have comparative advantage (disadvantage) in commodity, when the commodity`s exports market size of country in terms of its total national exports market size is greater (less) than the commodity`s world exports market size in terms of the world total exports market size, i.e. when is greater (less) than unity" (Sanidas and Shin, 2010). Comparative advantage neutral point is reached, when BI equals to one. In this case, country has neither comparative advantage nor disadvantage.

BI is straightforward and easily applicable as export data are generally available and calculation is simple. However, BI provides only information whether country has comparative advantage in particular commodity, or not (Yeats, 1985). Results of BI are incomparable across time and space, due to its asymmetry, as BI reaches values from one to infinity. That is why different indicators have emerged.

2.2 ALTERNATIVE INDICATORS

In order to overcome shortcomings of BI, alternative indicator has to fulfil four conditions. It has to demonstrate stable mean across time and space, symmetry around mean or median, independence of classification and stable distribution across time and space (Hoen and Oosterhaven, 2006).

Symmetric Revealed Comparative Advantage Index (SI) deals with the asymmetry problem using log transformation (Vollrath, 1991). SI also enables to calculate RCA in cases, where $X_{ij} = 0$. Dalum et al., (1998) define SI by following formula (3):

$$SIij = \frac{BIij - 1}{BIij + 1} \qquad (3)$$

SI represents simple log transformation of BI (De Benedictis and Tamberi, 2001), reaches values from -1 to 1 (SI= 0 at the comparative advantage neutral point). SI thus provides a symmetric alternative for BI, however it still lacks the stable mean across time and space, implying different opinions on its comparability (Laursen, 1998; Benedictis and Tamberi, 2001).

According to Proudman and Redding (1998), the mean of BI is be fixed by its normalizing, using **Weighted Revealed Comparative Advantage Index (WI)**. WI is calculated by following formula (4), where N stands for the number of sectors.

$$WIij = \frac{BIij}{\frac{1}{N}\sum_{j=1}^{N} BIij} \qquad (4)$$

The mean of WI equals to 1, allowing time comparison within one particular country. Nevertheless, WI reaches values from 0 to infinity, which bring back the problem of asymmetry. Comparative advantage neutral point depends on the level of sectoral aggregation (Benedictis and Tamberi, 2001).

Hoen and Oosterhaven (2006) replaced multiplicative point of BI by an additive form. For **Additive Revealed Comparative Advantage Index (AI)**, following formula (5) holds:

$$AIij = \frac{Xij}{Xi} - \frac{Xwj}{Xw} \qquad (5)$$

Value of AI ranges from -1 to 1, with comparative advantage neutral point at 0. AI distribution is symmetric, the mean value is centred and constant. Moreover, AI does not depend on the level of sectoral aggregation, enabling cross sectoral analysis. On the other hand, according to Hoen and Oosterhaven (2006), AI does not follow normality due to high kurtosis; Cross-country analysis is also disputed.

"Some researchers expressed RCA using a hypothetical state: they used a deviation of the actual data from the value that would have been in the comparative-advantage-neutral (CAN) point" (Sanidas and Shin, 2010). CAN point represents "one possible norm against which a country`s actual trade could be compared" (Bowen, 1985). This approach is

incorporated in **Normalized Revealed Comparative Advantage Index (NI)**, calculated according to Yu et al., (2009) by the following formula (6):

$$NIij = \frac{Xij}{Xw} - \frac{Xwj*Xi}{Xw*Xw} \tag{6}$$

NI value fall in between -0.25 and 0.25, comparative advantage neutral point (export value expected in the CAN state) equals to 0. Because normalization proceeds by the total amount of the world export, NI value tends to be very small. As recommended by Yu et al., (2009), NI values in this paper will be scaled by 10000. NI is perfectly comparable across time and space, mean value and NI sum remain stable. "This explains well the notion of zero sum imbedded in comparative advantage: if a country gains comparative advantage in one sector, then the country loses comparative advantage in other sectors; and if one country gains comparative advantage in a sector, then other countries lose comparative advantage in the sector" (Sanidas and Shin, 2010). However, NI still does not demonstrate the normal distribution.

Different approach is represented by **Lafay Index (LFI)**. Lafay index includes imports into RCA analysis. According to Zaghini (2003), Lafay index is to be computed by following formula (7):

$$LFI_{ij} = \left[\frac{X_{ij}-M_{ij}}{X_{ij}+M_{ij}} - \frac{\sum_{j=1}^{N}(X_{ij}-M_{ij})}{\sum_{j=1}^{N}(X_{ij}+M_{ij})}\right] * \frac{(X_{ij}+M_{ij})}{\sum_{j=1}^{N}(X_{ij}+M_{ij})} * 100 \tag{7}$$

where Mij stands for imports of commodity j by country i. Previously, Lafay (1992) calculated RCA as a trade balance of a commodity in relation to GDP. In this paper, modified approach will be used, RCA will be computed as a trade balance of a commodity in relation to the total export volume. Unlike previous indexes, LI does not consider world variables. Comparative advantage neutral point is reached when LFI = 0. For value exceeding 0, country is considered to have a comparative advantage in a given commodity and vice versa. Sum of LFI is always 0. "This implies that the LI`s distribution of a country has the invariant mean value over time, which puts more reliability on the over-time comparison of sectors within a country" (Sanidas and Shin, 2010).

LFI can be further decomposed in 3 separate indexes (8, 9, 10), with following relation (11) between LFI and related subindexes.

$$LFI\ 1_{ij} = \frac{X_{ij}-M_{ij}}{X_{ij}+M_{ij}} \tag{8}$$

$$LFI\ 2_{ij} = \frac{\sum_{j=1}^{N}(X_{ij}-M_{ij})}{\sum_{j=1}^{N}(X_{ij}+M_{ij})} \tag{9}$$

$$LFI\ 3_{ij} = \frac{(X_{ij}+M_{ij})}{\sum_{j=1}^{N}(X_{ij}+M_{ij})} \times 100 \tag{10}$$

$$LFI = (LFI\ 1 - LFI\ 2) \times LFI\ 3 \tag{11}$$

LFI 1 can also be interpreted as export specialization in the particular commodity, LFI 2 is export specialization of a country and LFI 3 indicates relative significance of the commodity for international trade of a country.

All the 5 alternative RCA indexes try to overcome some of BI shortcomings, but each of them has its own pros and cons. Correct usage and interpretation of above mentioned RCA indexes hence remains crucial. Brief summary of used RCA indexes is recorded in table 1.

Table 1: RCA indexes comparison

	BI	*SI*	*WI*	*AI*	*NI*	*LFI*
CAN point	1	0	1	0	0	0
Sum over sectors	-	-	-	0	0	0
Sum over countries	-	-	-	-	0	-
Independence from aggregation level	X	X	X	√	√	X
Independence from reference group of countries	X	X	X	X	√	X
Symmetry	X	√	X	√	√	√
Normality	X	X	X	X	X	X
Cross sector comparability	X	X	X?	X	√	?
Cross country comparability	X	X	√?	√	√	?
Over time comparability	X	X	X?	?	√	√

Source: Sanidas, Shin, 2010

3 REVEALED COMPARATIVE ADVANTAGE IN V4 COUNTRIES

In this part, calculations of the six RCA indicators are carried out for the Czech Republic, Hungary, Poland, Slovakia in years 2003 and 2013. Commodities with the highest identified comparative advantage are recorded in tables. At first, the most important export commodities (based on export volume) are depicted, followed by computed RCA indexes. Individual indexes, that do not change the sequence of commodities with the highest comparative advantage, are grouped together. As BI, SI and WI identify comparative advantage even in sectors with a tiny share on the total export volume, separate table that reflects only commodities with higher than 1% share on the total export volume is added. Items that indicate a commodity produced with a comparative advantage are marked bold. As a good produced with a comparative advantage holds for purposes of this paper such a commodity, which placed itself in a table of top ten commodities in all the six RCA indicators used (BI, SI and WI, all of them for volumes exceeding 1% of total exported volume; AI, NI and LFI). For easier time comparisons of particular indicators, commodities that are present in a single year (either only 2003 or only 2013) are marked in italics. For each analysed country, a chart depicting a development of Lafay index for aggregated SITC 1 commodities is provided. This serves only as a brief outline describing a development of comparative advantage in time. For detailed description, tables containing all the 6 RCA indexes are intended.

3.1 CZECH REPUBLIC

The Czech Republic belongs according to the World Bank to high-income economies (World Bank, 2015). With 10.52 million inhabitants (World Bank, 2015), its economy is rather small, but highly open. The openness of the economy, calculated as a sum of exports and imports divided by the total GDP amounts to 145% (UNCTAD stat, 2015; World Bank, 2015; own calculation). As depicted in tables 2 and 3, Czech exports are dominated by SITC 7 products (8 out of ten 10 most exported commodities in both years).

According to tables 4 – 11, the Czech Republic produced following commodities with a comparative advantage in both years 2003 and 2013: manufactures of base metal (699); parts and accessories of vehicles (784). Rubber tyres, tyre treads or flaps (625); automatic data processing machines (752) and motor vehicles for the transport of persons (781) demonstrated comparative advantage only in year 2013, however, they did not fulfil the conditions in 2003 due to one group of indicators only. Glassware (665), pumps for liquids (742) and furniture and parts were produced with an advantage in 2003, but not in 2013. Contrariwise, Baby carriages, toys, games, sporting goods (894), heating and cooling equipment and parts (741) demonstrated a comparative advantage in 2013, but not in 2003.

Table 2: Export Czech Republic, 2003

PRODUCT [SITC]	Export volume	Share
[781] Motor vehicles for the transport of persons	3,488,865	7.16%
[784] Parts & accessories of vehicles	3,412,091	7.00%
[752] Automatic data processing machines	2,493,298	5.12%
[699] Manufactures of base metal	1,602,210	3.29%
[778] Electrical machinery & apparatus	1,499,388	3.08%
[772] Apparatus for electrical circuits; board, panels	1,381,052	2.83%
[821] Furniture & parts	1,270,354	2.61%
[773] Equipment for distributing electricity	1,050,123	2.16%
[764] Telecommunication equipment & parts	1,033,363	2.12%
[742] Pumps for liquids	791,024	1.62%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 3: Export Czech Republic, 2013

PRODUCT [SITC]	Export volume	Share
[781] Motor vehicles for the transport of persons	15,323,969	9.52%
[784] Parts & accessories of vehicles	11,743,798	7.29%
[752] Automatic data processing machines	9,383,437	5.83%
[772] Apparatus for electrical circuits; board, panels	4,955,831	3.08%
[764] Telecommunication equipment & parts	4,866,456	3.02%
[699] Manufactures of base metal	4,604,485	2.86%
[778] Electrical machinery & apparatus	4,343,413	2.70%
[741] Heating & cooling equipment & parts	3,054,880	1.90%
[773] Equipment for distributing electricity	3,029,265	1.88%
[894] Baby carriages, toys, games & sporting goods	3,016,092	1.87%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 4: Balassa, Symmetric RCA, Weighted RCA Index Czech Republic, 2003

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	48,720,350			
[677] Rails & railway track construction	90,034	8.54	0.790	7.021
[322] Briquettes, lignites and peat	45,746	8.44	0.788	6.946
[665] Glassware	718,023	8.00	0.778	6.583
[811] Prefabricated buildings	156,687	6.30	0.726	5.182
[678] Wire of iron or steel	167,588	5.64	0.699	4.641
[325] Coke & semi-cokes of coal, lign., peat	114,568	4.84	0.658	3.981
[742] Pumps for liquids	791,024	4.74	0.652	3.904
[712] Steam turbines & other vapour turb., parts	79,051	4.55	0.640	3.741
[581] Tubes, pipes and hoses of plastics	243,940	4.41	0.631	3.630
[692] Metal containers for storage or transport	240,903	4.37	0.628	3.600

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 5: Balassa, Symmetric RCA, Weighted RCA Index Czech Republic, 2013

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	161 001 987			
[895] Office and stationery supplies	1 058 130	6.90	0.746	5.927
[677] Rails and railway track construction	242 806	6.47	0.732	5.559
[593] Explosives and pyrotechnic products	208 088	6.28	0.725	5.400
[351] Electric current	1 801 549	6.19	0.722	5.325
[762] Radio-broadcast receivers	876 361	6.12	0.719	5.260
[678] Wire of iron or steel	513 702	5.12	0.673	4.402
[581] Tubes, pipes and hoses of plastics	884 617	4.45	0.633	3.823
[268] Wool and other animal hair	220 923	3.81	0.584	3.275
[692] Metal containers for storage or transport	658 067	3.76	0.580	3.233
[322] Briquettes, lignite and peat	114 514	3.65	0.570	3.144

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 6: Balassa, Symmetric RCA, Weighted RCA Index Czech Republic, 2003 (more than 1% of the export volume):

2003				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	48,720,350			
[665] Glassware	718,023	8.00	0.778	6.583
[742] Pumps for liquids	791,024	4.74	0.652	3.904
[691] Structures & parts of iron, steel, alum.	498,817	4.28	0.621	3.521
[676] Iron & steel bars, rods, angles, shapes	766,877	3.93	0.595	3.235
[699] Manufactures of base metal	1,602,210	3.83	0.586	3.153
[773] Equipment for distributing electricity	1,050,123	3.60	0.566	2.964
[625] Rubber tyres, tyre treads or flaps	675,578	3.34	0.539	2.748
[892] Printed matter	651,001	3.09	0.512	2.546
[784] Parts & accessories of vehicles	3,412,091	2.92	0.490	2.403
[821] Furniture & parts	1,270,354	2.57	0.440	2.113

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 7: Balassa, Symmetric RCA, Weighted RCA Index Czech Republic, 2013 (more than 1% of the export volume):

2013				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	161 001 987			
[351] Electric current	1 801 549	6.19	0.722	5.325
[894] Baby carriages, toys, games, sporting goods	3 016 091	3.65	0.570	3.136
[784] Parts and accessories of vehicles	11 743 797	3.64	0.569	3.128
[699] Manufactures of base metal	4 604 484	3.52	0.558	3.029
[742] Pumps for liquids	1 786 427	3.25	0.530	2.795
[752] Automatic data processing machines	9 383 436	3.11	0.514	2.677
[741] Heating and cooling equipment and parts	3 054 880	3.08	0.511	2.654
[625] Rubber tyres, tyre treads or flaps	2 353 051	2.99	0.500	2.574
[773] Equipment for distributing electricity	3 029 265	2.93	0.492	2.525
[781] Motor vehicles for the transport of persons	15 323 969	2.65	0.453	2.284

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 8: Additive, Normalized RCA Index Czech Republic 2003

PRODUCT	Export volume	AI	NI
[SITC] Total all products	48,720,350		
[784] Parts & accessories of vehicles	3,412,091	0.046	2.992
[699] Manufactures of base metal	1,602,210	0.024	1.579
[752] Automatic data processing machines	2,493,298	0.023	1.520
[781] Motor vehicles for the transport of persons	3,488,865	0.019	1.230
[778] Electrical machinery & apparatus	1,499,388	0.016	1.055
[821] Furniture & parts	1,270,354	0.016	1.034
[773] Equipment for distributing electricity	1,050,123	0.016	1.012
[772] Apparatus for electrical circuits; board, panels	1,381,052	0.014	0.939
[665] Glassware	718,023	0.013	0.838
[742] Pumps for liquids	791,024	0.013	0.832

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

All in all, it is clear that the Czech Republic holds most of its comparative advantage in manufacturing and especially in machinery and transport equipment. For 1990s such evolution was explained by ECB (Zaghini, 2003) as "unexpected catching-up evolution referring to a positive legacy of state socialism: human capital endowment with respect to both health standard and level of education was relatively high in many countries of the communist bloc compared to market-oriented economies with similar level of per-capita income." Moreover, during its transition process, the Czech Republic attracted a significant amount of foreign direct investment. This investment played an important role in the country's transition as an important source of financing and supplement of inadequate domestic resources to finance both ownership structure and capital formation. Compared to

other financing options, FDI facilitates transfer of technology, know-how and skills, and helps local enterprises to expand into foreign markets. Due to a relative progress in its transition process the Czech Republic has soon attracted significant amounts of FDI form the most developed markets. If measured by share on gross capital formation or by FDI inflow per capita, it was the Czech Republic which attracted the highest relative amount of FDI even in V4 comparison. (Hnát, Stuchlíková, 2014). Since further upgrading faces significant problems chart 1 clearly shows that between 2003 and 2013 comparative advantage in machinery and transport equipment further increased according to Lafay Index. Small increase was recorded also by group 8 and a reduction of comparative disadvantage shows also group 5 (chemicals). Contrariwise, situation worsened in production of SITC 3 (fuels) and SITC 6 (manufactured goods classified by material).

Table 9: Additive, Normalized RCA Index Czech Republic 2013

PRODUCT	Export volume	AI	NI
[SITC] Total all products	161 001 987		
[781] Motor vehicles for the transport of persons	15,323,969	0.059	5.072
[784] Parts & accessories of vehicles	11,743,798	0.053	4.519
[752] Automatic data processing machines	9,383,437	0.040	3.381
[699] Manufactures of base metal	4,604,485	0.020	1.750
[772] Apparatus for electrical circuits; board, panels	4,955,831	0.017	1.480
[778] Electrical machinery & apparatus	4,343,413	0.014	1.215
[894] Baby carriages, toys, games & sporting goods	3,016,092	0.014	1.162
[741] Heating & cooling equipment & parts	3,054,880	0.013	1.096
[773] Equipment for distributing electricity	3,029,265	0.012	1.060
[625] Rubber tyres, tyre treads or flaps & inner tubes	2,353,052	0.010	0.832

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Chart 1: Lafay Index Czech Republic (2003, 2013)
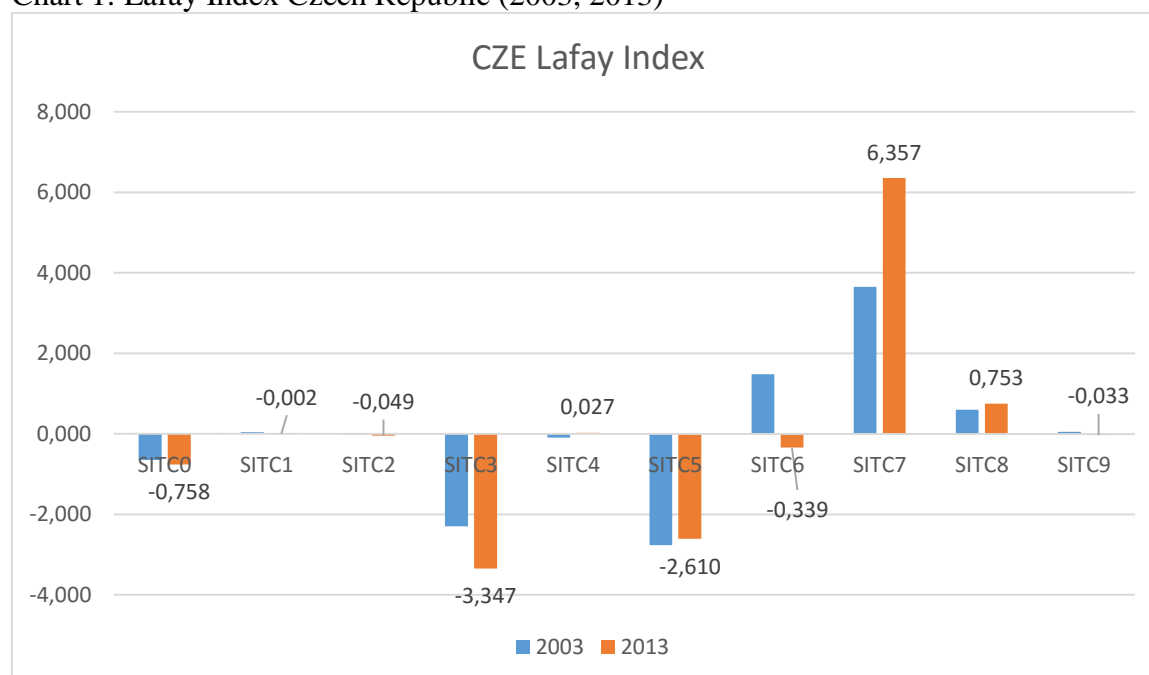
Source: UNCTADstat (2015), own calculations

Table 10: Lafay Index Czech Republic, 2003

2003		LFI Decomposition		
PRODUCT [SITC]	LFI	LFI 1	LFI 2	LFI 3
[781] Motor vehicles for the transport of persons	2.221	0.430	-0.025	4.883
[784] Parts & accessories of vehicles	1.475	0.243	-0.025	5.491
[752] Automatic data processing machines	0.836	0.171	-0.025	4.260
[821] Furniture & parts	0.787	0.412	-0.025	1.800
[665] Glassware	0.618	0.711	-0.025	0.840
[778] Electrical machinery & apparatus	0.531	0.185	-0.025	2.532
[699] Manufactures of base metal	0.481	0.147	-0.025	2.795
[625] Rubber tyres, tyre treads or flaps & inner tubes	0.470	0.495	-0.025	0.904
[676] Iron & steel bars, rods, angles, shapes & sections	0.456	0.387	-0.025	1.106
[742] Pumps for liquids	0.436	0.346	-0.025	1.176

Source: UNCTADstat (2015), own calculations

Table 11: Lafay Index Czech Republic, 2013

2013		LFI Decomposition		
PRODUCT [SITC]	LFI	LFI 1	LFI 2	LFI 3
[781] Motor vehicles for the transport of persons	3.868	0.721	0.063	5.878
[784] Parts & accessories of vehicles	1.008	0.222	0.063	6.346
[752] Automatic data processing machines	0.854	0.233	0.063	5.024
[741] Heating & cooling equipment & parts	0.575	0.487	0.063	1.356
[894] Baby carriages, toys, games & sporting goods	0.454	0.376	0.063	1.447
[625] Rubber tyres, tyre treads or flaps & inner tubes	0.413	0.447	0.063	1.073
[778] Electrical machinery & apparatus	0.389	0.229	0.063	2.332
[699] Manufactures of base metal	0.371	0.211	0.063	2.511
[761] Television receivers, whether or not combined	0.356	0.535	0.063	0.754
[821] Furniture & parts	0.350	0.294	0.063	1.516

Source: UNCTADstat (2015), own calculations

3.2 HUNGARY

Hungary belongs according to the World Bank it to upper middle-income economies (World Bank, 2015). Hungary has 9.89 million inhabitants (World Bank, 2015). The openness of the economy, calculated as a sum of exports and imports divided by the total GDP amounts to 179,2% (UNCTAD stat, 2015; World Bank, 2015; own calculation). Due to tables 12 and 13, Hungarian exports were even more dominated by SITC 7 products in 2003 (9 out of 10 groups). In 2013, orientation on SITC 7 descended a bit (8 out of the 10 most exported commodities).

Table 12: Export Hungary, 2003

PRODUCT [SITC]	Export volume	Share
[764] Telecommunication equipment & parts	5,417,783	12.598%
[713] Internal combustion piston engines, parts	4,071,448	9.468%
[752] Automatic data processing machines	2,456,749	5.713%
[784] Parts & accessories of vehicles	1,614,109	3.753%
[781] Motor vehicles for the transport of persons	1,513,335	3.519%
[772] Apparatus for electrical circuits; board, panels	1,389,052	3.230%
[778] Electrical machinery & apparatus	1,271,774	2.957%
[773] Equipment for distributing electricity	1,175,043	2.732%
[821] Furniture & parts	825,378	1.919%
[761] Television receivers, whether or not combined	817,583	1.901%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 13: Export Hungary, 2013

PRODUCT [SITC]	Export volume	Share
[713] Internal combustion piston engines, parts	7,536,480	6.959%
[781] Motor vehicles for the transport of persons	7,397,272	6.830%
[764] Telecommunication equipment & parts	7,050,423	6.510%
[784] Parts & accessories of vehicles	4,464,371	4.122%
[772] Apparatus for electrical circuits; board, panels	3,950,047	3.647%
[542] Medicaments (incl. veterinary medicaments)	3,920,202	3.620%
[761] Television receivers, whether or not combined	3,169,987	2.927%
[752] Automatic data processing machines	2,986,739	2.758%
[778] Electrical machinery & apparatus	2,828,254	2.612%
[874] Measuring, analysing & controlling apparatus	2,814,725	2.599%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

As shown in tables 14 – 21, Hungary demonstrates following comparative advantages. Internal combustion piston engines, parts (713) and Television receivers, whether or not combined (761) were produced with an advantage in both 2003 and 2013. Equipment for distributing electricity (773) and Telecommunication equipment and parts (776) demonstrated comparative advantage in 2003, but they both did not qualify in 2013 due to LFI only. In 2003, other meat and edible meat offal (012), sound recorders or reproducers (763) and automatic data processing machines (752) were produced with an advantage, while measuring, analysing & controlling apparatus (874) proved advantage only in 2013.

Table 14: Balassa, Symmetric RCA, Weighted RCA Index Hungary, 2003

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	43,003,656			
[713] Internal combustion piston engines, parts	4,071,448	8.492	0.789	9.561
[245] Fuel wood (excluding wood waste) and wood charcoal	23,075	8.051	0.779	9.064
[612] Manufactures of leather, saddlery & harness	70,986	5.411	0.688	6.091
[773] Equipment for distributing electricity	1,175,043	4.571	0.641	5.145
[764] Telecommunication equipment & parts	5,417,783	4.098	0.608	4.613
[873] Meters & counters	120,623	3.887	0.591	4.376
[761] Television receivers, whether or not combined	817,583	3.800	0.583	4.278
[762] Radio-broadcast receivers, whether or not combined	358,236	3.742	0.578	4.213
[056] Vegetables, roots, tubers, prepared, preserved	273,341	3.613	0.566	4.068
[012] Other meat and edible meat offal	577,856	3.507	0.556	3.949

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 15: Balassa, Symmetric RCA, Weighted RCA Index Hungary, 2013

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	108,297,670			
[612] Manufactures of leather; saddlery & harness	214,095	9.104	0.802	9.552
[713] Internal combustion piston engines, parts	7,536,480	8.020	0.778	8.414
[761] Television receivers, whether or not combined	3,169,986	6.550	0.735	6.872
[873] Meters & counters	486,315	6.338	0.727	6.650
[044] Maize (not including sweet corn), unmilled	793,587	3.882	0.590	4.072
[351] Electric current	697,931	3.571	0.562	3.746
[773] Equipment for distributing electricity	2,300,615	3.319	0.537	3.482
[421] Fixed vegetable fats & oils, crude, refined	740,946	3.293	0.534	3.455
[325] Coke & semi-cokes of coal, lign., peat; retort carbon	123,319	3.175	0.521	3.331
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,633,843	3.094	0.511	3.246

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 16: Balassa, Symmetric RCA, Weighted RCA Index Hungary, 2003 (more than 1% of the export volume):

2003				
PRODUCT	*Export volume*	*BI*	*SI*	*WI*
[SITC] Total all products	43,003,656			
[713] Internal combustion piston engines, parts	4,071,448	8.492	0.789	9.561
[773] Equipment for distributing electricity	1,175,043	4.571	0.641	5.145
[764] Telecommunication equipment & parts	5,417,783	4.098	0.608	4.613
[761] Television receivers, whether or not combined	817,583	3.800	0.583	4.278
[012] Other meat and edible meat offal	577,856	3.507	0.556	3.949
[763] Sound recorders or reproducers	775,323	3.158	0.519	3.555
[772] Apparatus for electrical circuits; board, panels	1,389,052	2.327	0.399	2.620
[775] Household type equipment, electrical or not	611,408	2.176	0.370	2.450
[752] Automatic data processing machines	2,456,749	2.057	0.346	2.316
[778] Electrical machinery & apparatus	1,271,774	2.036	0.341	2.292

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 17: Balassa, Symmetric RCA, Weighted RCA Index Hungary, 2013 (more than 1% of the export volume):

2013				
PRODUCT	*Export volume*	*BI*	*SI*	*WI*
[SITC] Total all products	108,297,670			
[713] Internal combustion piston engines, parts	7,536,480	8.020	0.778	8.414
[761] Television receivers, whether or not combined	3,169,986	6.550	0.735	6.872
[773] Equipment for distributing electricity	2,300,615	3.319	0.537	3.482
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,633,843	3.094	0.511	3.246
[772] Apparatus for electrical circuits; board, panels	3,950,047	2.711	0.461	2.845
[874] Measuring, analysing & controlling apparatus	2,814,725	2.591	0.443	2.719
[012] Other meat and edible meat offal	1,124,725	2.563	0.439	2.689
[775] Household type equipment, electrical or not	1,457,021	2.496	0.428	2.618
[716] Rotating electric plant & parts thereof	1,329,863	2.427	0.416	2.547
[764] Telecommunication equipment & parts	7,050,423	2.186	0.372	2.293

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 18: Additive, Normalized RCA Index Hungary, 2003

PRODUCT	Export volume	AI	NI
[SITC] Total all products	43,003,656		
[764] Telecommunication equipment & parts	5,417,783	0.095	5.459
[713] Internal combustion piston engines, parts	4,071,448	0.084	4.788
[752] Automatic data processing machines	2,456,749	0.029	1.683
[773] Equipment for distributing electricity	1,175,043	0.021	1.224
[772] Apparatus for electrical circuits; board, panels	1,389,052	0.018	1.056
[778] Electrical machinery & apparatus	1,271,774	0.015	0.863
[761] Television receivers, whether or not combined	817,583	0.014	0.803
[784] Parts & accessories of vehicles	1,614,109	0.014	0.778
[763] Sound recorders or reproducers	775,323	0.012	0.706
[012] Other meat and edible meat offal	577,856	0.010	0.551

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 19: Additive, Normalized RCA Index Hungary, 2013

PRODUCT	Export volume	AI	NI
[SITC] Total all products	108,297,670		
[713] Internal combustion piston engines, parts	7,536,480	0.061	3.499
[764] Telecommunication equipment & parts	7,050,423	0.035	2.029
[781] Motor vehicles for the transport of persons	7,397,272	0.033	1.868
[761] Television receivers, whether or not combined	3,169,987	0.025	1.425
[772] Apparatus for electrical circuits; board, panels	3,950,047	0.023	1.323
[784] Parts & accessories of vehicles	4,464,371	0.021	1.218
[542] Medicaments (incl. veterinary medicaments)	3,920,202	0.018	1.040
[874] Measuring, analysing & controlling apparatus	2,814,725	0.016	0.917
[773] Equipment for distributing electricity	2,300,615	0.015	0.853
[778] Electrical machinery & apparatus	2,828,254	0.013	0.768

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Also Hungary holds most of its comparative advantages in manufacturing, even though also food and live animals reveal significant but decreasing advantage. As depicted by the Lafay Index recorded in chart 2, Hungary improved its comparative advantage in production of SITC 8 goods between 2003 and 2013 and reduced its comparative disadvantage at SITC 5 and 6 groups. However, trade position of Hungary worsened in production of goods SITC 0, 3 and 7 and downgrade in production of SITC 3 can be considered as significant. This contrasts with the improvement of the Czech Republic's position in machinery and transport equipment and is especially important since SITC 7 traditionally holds the biggest advantage in Hungary.

Chart 2: Lafay Index Hungary (2003, 2013)
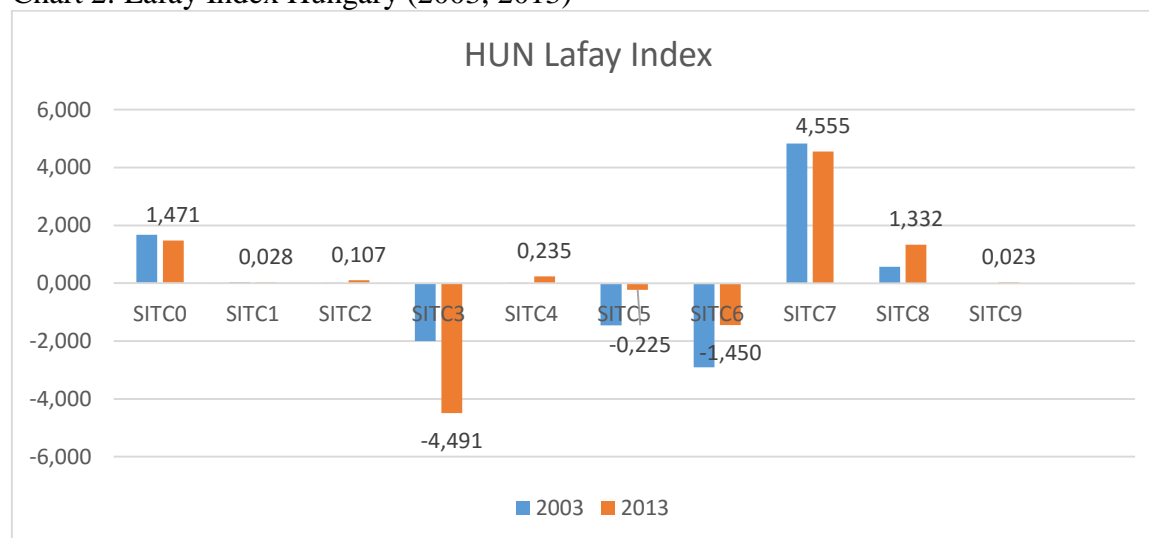
Source: UNCTADstat (2015), own calculations

Table 20: Lafay Index Hungary, 2003

2003		*LFI Decomposition*		
PRODUCT [SITC]	*LFI*	*LFI 1*	*LFI 2*	*LFI 3*
[764] Telecommunication equipment & parts	3.219	0.298	-0.052	9.205
[713] Internal combustion piston engines, parts	2.592	0.333	-0.052	6.735
[752] Automatic data processing machines	1.770	0.409	-0.052	3.847
[761] Television receivers, whether or not combined	0.804	0.711	-0.052	1.054
[763] Sound recorders or reproducers	0.709	0.621	-0.052	1.055
[773] Equipment for distributing electricity	0.608	0.239	-0.052	2.091
[012] Other meat and edible meat offal	0.605	0.807	-0.052	0.705
[784] Parts & accessories of vehicles	0.602	0.142	-0.052	3.119
[821] Furniture & parts	0.511	0.319	-0.052	1.380
[762] Radio-broadcast receivers, whether or not combined	0.358	0.734	-0.052	0.456

Source: UNCTADstat (2015), own calculations

Table 21: Lafay Index Hungary, 2013

2013		*LFI Decomposition*		
PRODUCT [SITC]	*LFI*	*LFI 1*	*LFI 2*	*LFI 3*
[781] Motor vehicles for the transport of persons	2.426	0.583	0.045	4.509
[713] Internal combustion piston engines, parts	1.940	0.425	0.045	5.102
[761] Television receivers, whether or not combined	1.009	0.560	0.045	1.961
[874] Measuring, analysing & controlling apparatus	0.913	0.574	0.045	1.726
[752] Automatic data processing machines	0.453	0.240	0.045	2.324
[625] Rubber tyres, tyre treads or flaps & inner tubes	0.431	0.438	0.045	1.097
[542] Medicaments (incl. veterinary medicaments)	0.399	0.168	0.045	3.238

[778] Electrical machinery & apparatus	0.366	0.207	0.045	2.262
[821] Furniture & parts	0.328	0.420	0.045	0.874
[775] Household type equipment, electrical or not	0.315	0.347	0.045	1.044

Source: UNCTADstat (2015), own calculations

3.3 POLAND

Poland belongs according to the World Bank to high-income economies (World Bank, 2015). With 38.51 million inhabitants (World Bank, 2015), Poland is the largest country in the V4 group. Accordingly, openness of the economy, calculated as a sum of exports and imports divided by the total GDP, amounts to 92.13% (UNCTAD stat, 2015; World Bank, 2015; own calculation), which is the lowest value in the V4 region. Orientation of Polish exports on SITC 7 is also significant, however, in a lower scale in comparison to the Czech Republic and Hungary (6/10 most exported commodities in 2003 and 7/10 in 2013), as depicted in tables 22 and 23.

Table 22: Export Poland, 2003

PRODUCT [SITC]	*Export volume*	*Share*
[821] Furniture & parts	3,871,695	7.34%
[793] Ships, boats & floating structures	2,568,652	4.87%
[713] Internal combustion piston engines, parts	2,531,193	4.80%
[781] Motor vehicles for the transport of persons	2,243,431	4.25%
[784] Parts & accessories of vehicles	2,190,214	4.15%
[699] Manufactures of base metal	1,314,325	2.49%
[773] Equipment for distributing electricity	1,217,693	2.31%
[761] Television receivers, whether or not combined	1,105,791	2.10%
[641] Paper and paperboard	936,187	1.77%
[893] Articles of plastics	886,056	1.68%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 23: Export Poland, 2013

PRODUCT [SITC]	*Export volume*	*Share*
[784] Parts & accessories of vehicles	9,658,150	4.84%
[821] Furniture & parts	9,600,032	4.81%
[781] Motor vehicles for the transport of persons	6,842,303	3.43%
[793] Ships, boats & floating structures	5,438,006	2.72%
[764] Telecommunication equipment & parts	4,731,117	2.37%
[713] Internal combustion piston engines, parts	4,721,910	2.37%
[761] Television receivers, whether or not combined	4,645,267	2.33%
[334] Petroleum oils or bituminous minerals > 70 % oil	4,562,937	2.29%
[775] Household type equipment, electrical or not	4,323,870	2.17%
[893] Articles of plastics	4,136,688	2.07%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Tables 24 – 31 show comparative advantages of Polish economy. Furniture and parts (821), internal combustion piston engines, parts (713) and television receivers, whether or not

combined (761) were produced at advantage in both 2003 and 2013. Comparative advantage in production of ships, boats & floating structures (793) was identified in year 2003, however in 2013 all the indicators besides LFI confirmed the advantage, too. Production of wood manufactures (635), coal, whether or not pulverized (321) and equipment for distributing electricity (773) demonstrated comparative advantage in 2003, whereas household type equipment, electrical or not (775) and copper (682) were produced in accordance with RCA in 2013.

Table 24: Balassa, Symmetric RCA, Weighted RCA Index Poland, 2003

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	52,755,502			
[325] Coke & semi-cokes of coal, lign., peat; retort carbon	534,904	20.877	0.909	15.345
[612] Manufactures of leather, saddlery & harness	134,484	8.356	0.786	6.142
[613] Furskins, tanned or dressed	73,867	8.201	0.783	6.028
[245] Fuel wood and wood charcoal	28,711	8.166	0.782	6.002
[821] Furniture & parts	3,871,695	7.234	0.757	5.317
[635] Wood manufacture	847,353	7.160	0.755	5.263
[793] Ships, boats & floating structures	2,568,652	6.810	0.744	5.005
[691] Structures & parts, of iron, steel, aluminium	785,750	6.229	0.723	4.579
[058] Fruit, preserved, and fruit preparations	336,951	6.030	0.715	4.432
[711] Vapour generating boilers, auxiliary plant; parts	111,568	5.896	0.710	4.334

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 25: Balassa, Symmetric RCA, Weighted RCA Index Poland, 2013

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	199,657,622			
[325] Coke & semi-cokes of coal, lign., peat; retort carbon	1,731,924	24.185	0.921	16.655
[035] Fish, dried, salted or in brine; smoked fish	774,491	11.788	0.844	8.118
[696] Cutlery	1,189,726	9.123	0.802	6.283
[045] Cereals, unmilled	261,169	6.442	0.731	4.436
[635] Wood manufacture	1,945,516	6.436	0.731	4.432
[245] Fuel wood and wood charcoal	95,375	6.325	0.727	4.356
[122] Tobacco, manufactured	1,956,863	5.906	0.710	4.067
[821] Furniture & parts	9,600,033	5.437	0.689	3.744
[761] Television receivers, whether or not combined	4,645,268	5.206	0.678	3.585
[025] Birds' eggs, and eggs' yolks; egg albumin	328,566	5.057	0.670	3.483

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 26: Balassa, Symmetric RCA, Weighted RCA Index Poland, 2003 (more than 1% of the export volume):

2013				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	52,755,502			
[325] Coke & semi-cokes of coal, lign., peat; retort carbon	534,904	20.877	0.909	15.345
[821] Furniture & parts	3,871,695	7.234	0.757	5.317
[635] Wood manufacture	847,353	7.160	0.755	5.263
[793] Ships, boats & floating structures	2,568,652	6.810	0.744	5.005
[691] Structures & parts, of iron, steel, aluminium	785,750	6.229	0.723	4.579
[321] Coal, whether or not pulverized	745,438	4.734	0.651	3.479
[713] Internal combustion piston engines, parts	2,531,193	4.304	0.623	3.163
[761] Television receivers, whether or not combined	1,105,791	4.190	0.615	3.080
[773] Equipment for distributing electricity	1,217,693	3.861	0.589	2.838
[642] Paper & paperboard, cut to shape or size, articles	757,471	3.510	0.557	2.580

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 27: Balassa, Symmetric RCA, Weighted RCA Index Poland, 2013 (more than 1% of the export volume):

2013				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	199,657,622			
[821] Furniture & parts	9,600,033	5.437	0.689	3.744
[761] Television receivers, whether or not combined	4,645,268	5.206	0.678	3.585
[775] Household type equipment, electrical or not	4,323,870	4.017	0.601	2.766
[642] Paper & paperboard, cut to shape or size, articles	2,678,880	3.886	0.591	2.676
[691] Structures & parts of iron, steel, aluminium	2,394,428	3.682	0.573	2.536
[793] Ships, boats & floating structures	5,438,007	3.526	0.558	2.428
[012] Other meat and edible meat offal	2,834,494	3.503	0.556	2.413
[553] Perfumery, cosmetics	2,804,036	3.143	0.517	2.165
[682] Copper	4,136,043	2.959	0.495	2.037
[713] Internal combustion piston engines, parts	4,721,910	2.725	0.463	1.877

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 28: Additive, Normalized RCA Index Poland, 2003

PRODUCT	Export volume	AI	NI
[SITC] Total all products	52,755,502		
[821] Furniture & parts	3,871,695	0.063	4.447
[793] Ships, boats & floating structures	2,568,652	0.042	2.921
[713] Internal combustion piston engines, parts	2,531,193	0.037	2.590
[784] Parts & accessories of vehicles	2,190,214	0.018	1.235
[773] Equipment for distributing electricity	1,217,693	0.017	1.203
[699] Manufactures of base metal	1,314,325	0.016	1.149
[761] Television receivers, whether or not combined	1,105,791	0.016	1.122
[635] Wood manufacture	847,353	0.014	0.972
[691] Structures & parts of iron, steel, aluminium	785,750	0.013	0.879
[321] Coal, whether or not pulverized	745,438	0.011	0.784

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 29: Additive, Normalized RCA Index Poland, 2013

PRODUCT	Export volume	AI	NI
[SITC] Total all products	199,657,622		
[821] Furniture & parts	9,600,033	0.039	4.156
[784] Parts & accessories of vehicles	9,658,150	0.028	3.002
[793] Ships, boats & floating structures	5,438,007	0.020	2.067
[761] Television receivers, whether or not combined	4,645,268	0.019	1.991
[775] Household type equipment, electrical or not	4,323,870	0.016	1.723
[713] Internal combustion piston engines, parts	4,721,910	0.015	1.586
[682] Copper	4,136,043	0.014	1.452
[893] Articles of plastics	4,136,688	0.013	1.331
[699] Manufactures of base metal	3,675,257	0.010	1.091
[012] Other meat and edible meat offal	2,834,494	0.010	1.074

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Situation of Poland also markedly differs from its V4 peers. Lafay Index of Polish trade, shown in chart 3, demonstrates a huge improvement of SITC 7 group between 2003 and 2013 but it must be noted that in 2003 Poland indicated slight disadvantage in the group of machinery and transport equipment, which was not very typical for the V4 countries. Major advantage belongs to miscellaneous manufactured articles but decreased markedly between 2003 and 2013. Further uplift could be observed by groups 0, 1, 5 and 6. Namely in food and live animals Poland still holds major part of its competitive advantage, same as Hungary.

Table 30: Lafay Index Poland, 2003

2003			LFI Decomposition	
PRODUCT [SITC]	LFI	LFI 1	LFI 2	LFI 3
[821] Furniture & parts	3.163	0.725	-0.120	3.744
[713] Internal combustion piston engines, parts	1.437	0.334	-0.120	3.166
[793] Ships, boats & floating structures	1.119	0.191	-0.120	3.597
[761] Television receivers, whether or not combined	0.855	0.641	-0.120	1.124
[784] Parts & accessories of vehicles	0.840	0.143	-0.120	3.197
[773] Equipment for distributing electricity	0.754	0.399	-0.120	1.452
[635] Wood manufacture	0.717	0.786	-0.120	0.791
[321] Coal, whether or not pulverized	0.619	0.751	-0.120	0.710
[842] Women's clothing, of textile fabrics	0.601	0.636	-0.120	0.795
[682] Copper	0.589	0.579	-0.120	0.843

Source: UNCTADstat (2015), own calculations

Table 31: Lafay Index Poland, 2013

2013			LFI Decomposition	
PRODUCT [SITC]	LFI	LFI 1	LFI 2	LFI 3
[821] Furniture & parts	2.041	0.735	-0.005	2.757
[784] Parts & accessories of vehicles	0.901	0.224	-0.005	3.931
[761] Television receivers, whether or not combined	0.800	0.520	-0.005	1.523
[682] Copper	0.724	0.533	-0.005	1.344
[775] Household type equipment, electrical or not	0.668	0.442	-0.005	1.494
[334] Petroleum oils or bituminous minerals > 70 % oil	0.659	0.401	-0.005	1.623
[713] Internal combustion piston engines, parts	0.470	0.243	-0.005	1.893
[691] Structures & parts, of iron, steel, aluminium	0.460	0.619	-0.005	0.737
[122] Tobacco, manufactured	0.452	0.854	-0.005	0.526
[781] Motor vehicles for the transport of persons	0.441	0.142	-0.005	2.984

Source: UNCTADstat (2015), own calculations

Chart 3: Lafay Index Poland (2003, 2013)
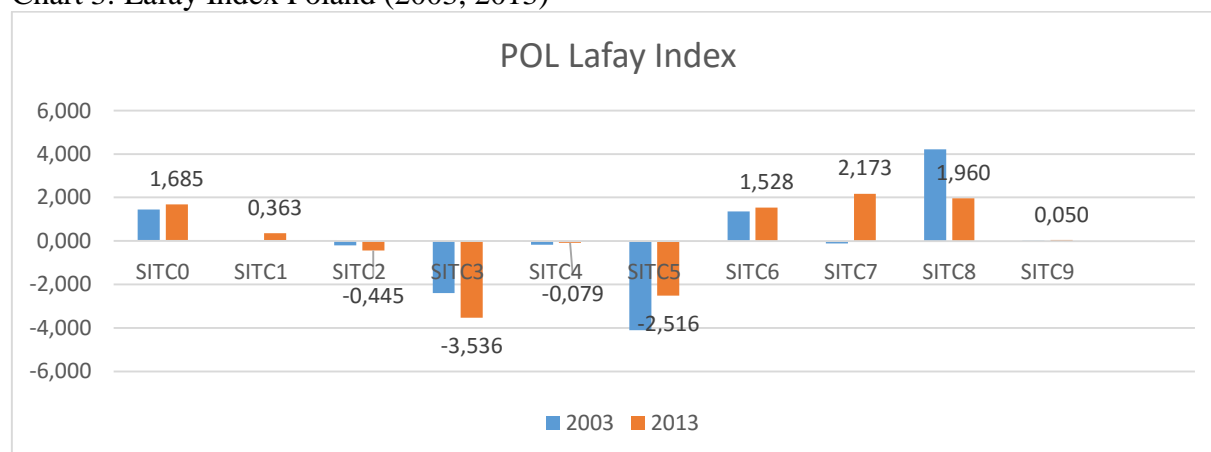
Source: UNCTADstat (2015), own calculations

3.4 SLOVAK REPUBLIC

Slovakia belongs according to the World Bank to high-income economies (World Bank, 2015). With 5.41 million inhabitants (World Bank, 2015), Slovakia is the smallest country in the V4 group, however, openness of the economy, calculated as a sum of exports and imports divided by the total GDP amounts to 184.11% (UNCTAD stat, 2015; World Bank, 2015; own calculation), which is the highest value in the V4 region. The most exported commodities of Slovakia are more balanced than in previously analyzed V4 countries. In 2003 just 3 out of 10 most exported articles belonged to SITC 7 group, as products of SITC 6 group prevailed in Slovakian exports. In 2013, 5 out of the 10 most exported articles already belonged to SITC 7 group.

Table 32: Export Slovakia, 2003

PRODUCT [SITC]	Export volume	Share
[781] Motor vehicles for the transport of persons	4,027,509	18.38%
[784] Parts & accessories of vehicles	1,914,304	8.73%
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,061,827	4.84%
[334] Petroleum oils or bituminous minerals > 70 % oil	905,347	4.13%
[821] Furniture & parts	871,119	3.97%
[773] Equipment for distributing electricity	647,913	2.96%
[851] Footwear	405,068	1.85%
[641] Paper and paperboard	393,030	1.79%
[625] Rubber tyres, tyre treads or flaps & inner tubes	365,222	1.67%
[699] Manufactures of base metal	342,828	1.56%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 33: Export Slovakia, 2013

PRODUCT [SITC]	Export volume	Share
[781] Motor vehicles for the transport of persons	14,664,848	17.16%
[761] Television receivers, whether or not combined	6,984,764	8.18%
[784] Parts & accessories of vehicles	5,942,968	6.96%
[764] Telecommunication equipment & parts	5,202,961	6.09%
[334] Petroleum oils or bituminous minerals > 70 % oil	3,981,353	4.66%
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,771,118	2.07%
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,744,393	2.04%
[699] Manufactures of base metal	1,664,757	1.95%
[773] Equipment for distributing electricity	1,334,950	1.56%
[821] Furniture & parts	1,308,857	1.53%

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

In tables 34 – 41, Slovakian comparative advantages are recorded. The Slovak Republic produced following commodities at comparative advantage in both 2003 and 2013: Flat-rolled prod., iron, non-alloy steel, not coated (673), flat-rolled prod., iron, non-alloy steel, coated, clad (674), rubber tyres, tyre treads or flaps and inner tubes (625), and motor vehicles for the transport of persons (781). Equipment for distributing electricity (773) was manufactured at advantage in 2003, but it failed to fulfil the criteria in 2013 only due to LFI.

In 2003, RCA was identified also in production of ball or roller bearings (746), furniture and parts (821) and footwear (851). Ten years later, Slovakia managed to gain comparative advantage in production of television receivers, whether or not combined (761) and Transmission shafts (748).

Table 34: Balassa, Symmetric RCA, Weighted RCA Index Slovakia, 2003

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	21,916,964			
[711] Vapour generating boilers, auxiliary plant; parts	84,289	10.722	0.829	11.168
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,061,827	9.742	0.814	10.147
[245] Fuel wood (excluding wood waste) and wood charcoal	10,061	6.888	0.746	7.174
[746] Ball or roller bearings	290,316	6.746	0.742	7.027
[773] Equipment for distributing electricity	647,913	4.945	0.664	5.151
[791] Railway vehicles & associated equipment	180,304	4.938	0.663	5.143
[812] Sanitary, plumbing, heating fixtures, fittings	110,661	4.435	0.632	4.620
[625] Rubber tyres, tyre treads or flaps & inner tubes	365,222	4.017	0.601	4.184
[351] Electric current	184,694	3.995	0.600	4.161
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	275,498	3.979	0.598	4.144

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 35: Balassa, Symmetric RCA, Weighted RCA Index Slovakia, 2013

PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	85,436,199			
[761] Television receivers, whether or not combined	6,984,764	18.294	0.896	19.239
[812] Sanitary, plumbing, heating fixtures, fittings	715,636	9.474	0.809	9.963
[678] Wire of iron or steel	342,324	6.435	0.731	6.768
[746] Ball or roller bearings	831,624	5.571	0.696	5.859
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,771,118	5.103	0.672	5.366
[781] Motor vehicles for the transport of persons	14,664,848	4.796	0.655	5.044
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	1,079,915	4.232	0.618	4.451
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,744,393	4.187	0.614	4.403
[612] Manufactures of leather; saddlery & harness	72,677	3.917	0.593	4.120
[748] Transmission shafts	995,359	3.907	0.592	4.109

Note: Export volume: thousands USD, current prices

Source: UNCTADstat (2015), own calculations

Table 36: Balassa, Symmetric RCA, Weighted RCA Index Slovakia, 2003 (more than 1% of the export volume):

2003				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	21,916,964			
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,061,827	9.742	0.814	10.147
[746] Ball or roller bearings	290,316	6.746	0.742	7.027
[773] Equipment for distributing electricity	647,913	4.945	0.664	5.151
[625] Rubber tyres, tyre treads or flaps & inner tubes	365,222	4.017	0.601	4.184
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	275,498	3.979	0.598	4.144
[821] Furniture & parts	871,119	3.918	0.593	4.081
[784] Parts & accessories of vehicles	1,914,304	3.646	0.569	3.797
[781] Motor vehicles for the transport of persons	4,027,509	3.489	0.555	3.635
[651] Textile yarn	276,989	2.663	0.454	2.774
[851] Footwear	405,068	2.539	0.435	2.645

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 37: Balassa, Symmetric RCA, Weighted RCA Index Slovakia, 2013 (more than 1% of the export volume):

2013				
PRODUCT	Export volume	BI	SI	WI
[SITC] Total all products	85,436,199			
[761] Television receivers, whether or not combined	6,984,764	18.294	0.896	19.239
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,771,118	5.103	0.672	5.366
[781] Motor vehicles for the transport of persons	14,664,848	4.796	0.655	5.044
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	1,079,915	4.232	0.618	4.451
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,744,393	4.187	0.614	4.403
[748] Transmission shafts	995,359	3.907	0.592	4.109
[784] Parts & accessories of vehicles	5,942,968	3.473	0.553	3.653
[773] Equipment for distributing electricity	1,334,950	2.441	0.419	2.567
[699] Manufactures of base metal	1,664,757	2.403	0.412	2.527
[764] Telecommunication equipment & parts	5,202,961	2.045	0.343	2.151

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 38: Additive, Normalized RCA Index Slovakia, 2003

PRODUCT	Export volume	AI	NI
[SITC] Total all products	21,916,964		
[781] Motor vehicles for the transport of persons	4,027,509	0.131	3.830
[784] Parts & accessories of vehicles	1,914,304	0.063	1.852
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,061,827	0.043	1.270
[821] Furniture & parts	871,119	0.030	0.865
[773] Equipment for distributing electricity	647,913	0.024	0.689
[334] Petroleum oils or bituminous minerals > 70 % oil	905,347	0.017	0.510
[625] Rubber tyres, tyre treads or flaps & inner tubes	365,222	0.013	0.366
[746] Ball or roller bearings	290,316	0.011	0.330
[851] Footwear	405,068	0.011	0.327
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	275,498	0.009	0.275

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Table 39: Additive, Normalized RCA Index Slovakia, 2013

| PRODUCT	Export volume	AI	NI
[SITC] Total all products	85,436,199		
[781] Motor vehicles for the transport of persons	14,664,848	0.136	6.157
[761] Television receivers, whether or not combined	6,984,764	0.077	3.503
[784] Parts & accessories of vehicles	5,942,968	0.050	2.245
[764] Telecommunication equipment & parts	5,202,961	0.031	1.410
[673] Flat-rolled prod., iron, non-alloy steel, not coated	1,771,118	0.017	0.755
[625] Rubber tyres, tyre treads or flaps & inner tubes	1,744,393	0.016	0.704
[699] Manufactures of base metal	1,664,757	0.011	0.516
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	1,079,915	0.010	0.437
[773] Equipment for distributing electricity	1,334,950	0.009	0.418
[748] Transmission shafts	995,359	0.009	0.393

Note: Export volume: thousands USD, current prices
Source: UNCTADstat (2015), own calculations

Slovak situation is rather similar to the Czech Republic since comparative advantage of Slovakia, measured by Lafay Index, recorded in chart 4, demonstrated significant improvement in production of SITC 7 machinery and transport equipment, which also holds the biggest comparative advantage. Comparative disadvantage was slightly reduced in production of SITC 5 goods. Nevertheless, at production of SITC 3, 6 and 8, Slovak position worsened. For the Czech Republic, this is actually not the case for SITC 8.

Chart 4: Lafay Index Slovakia (2003, 2013)
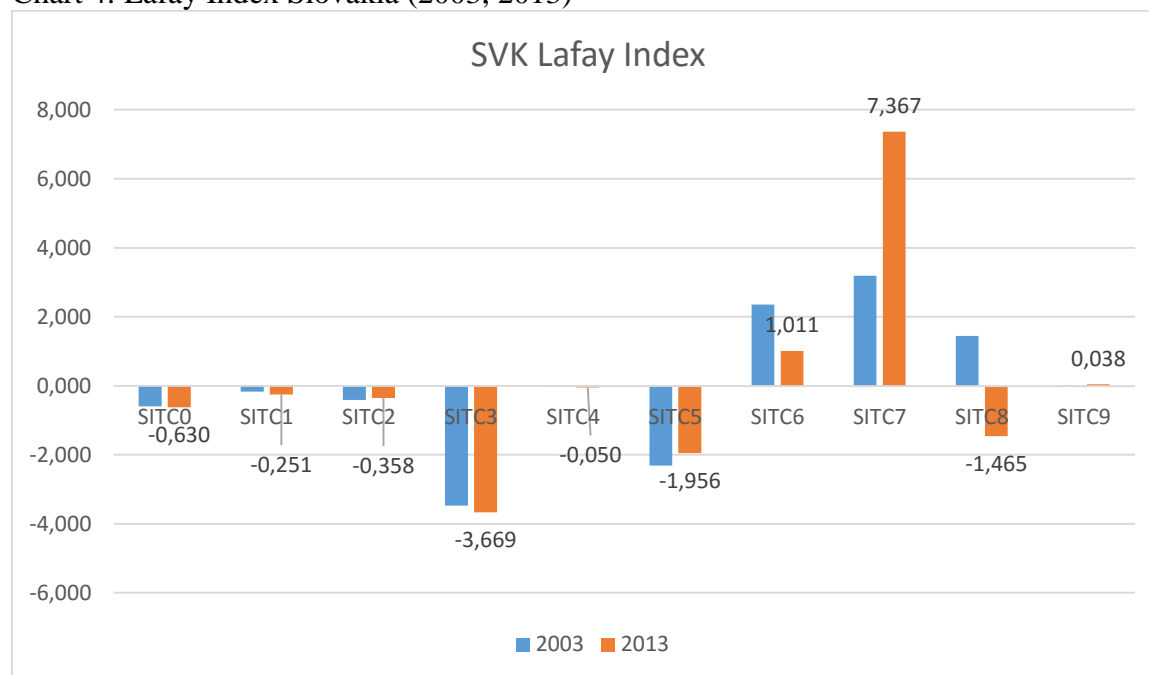
Source: UNCTADstat (2015), own calculations

Table 40: Lafay Index Slovakia, 2003

2003		*LFI Decomposition*		
PRODUCT [SITC]	*LFI*	*LFI 1*	*LFI 2*	*LFI 3*
[781] Motor vehicles for the transport of persons	7.640	0.704	-0.015	10.617
[673] Flat-rolled prod., iron, non-alloy steel, not coated	2.222	0.843	-0.015	2.588
[334] Petroleum oils or bituminous minerals > 70 % oil	1.637	0.648	-0.015	2.469
[821] Furniture & parts	1.282	0.464	-0.015	2.673
[773] Equipment for distributing electricity	0.565	0.222	-0.015	2.382
[851] Footwear	0.562	0.425	-0.015	1.277
[841] Men's clothing of textile fabrics, not knitted	0.556	0.772	-0.015	0.707
[625] Rubber tyres, tyre treads or flaps & inner tubes	0.504	0.421	-0.015	1.154
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	0.477	0.603	-0.015	0.772
[746] Ball or roller bearings	0.435	0.478	-0.015	0.883

Source: UNCTADstat (2015), own calculations

Table 41: Lafay Index Slovakia, 2013

2013			LFI Decomposition	
PRODUCT [SITC]	LFI	LFI 1	LFI 2	LFI 3
[781] Motor vehicles for the transport of persons	7.656	0.814	0.024	9.686
[761] Television receivers, whether or not combined	3.483	0.753	0.024	4.774
[334] Petroleum oils or bituminous minerals > 70 % oil	1.206	0.370	0.024	3.482
[673] Flat-rolled prod., iron, non-alloy steel, not coated	0.659	0.485	0.024	1.429
[625] Rubber tyres, tyre treads or flaps & inner tubes	0.644	0.480	0.024	1.413
[748] Transmission shafts	0.384	0.509	0.024	0.790
[812] Sanitary, plumbing, heating fixtures, fittings	0.305	0.588	0.024	0.540
[222] Oil seeds and oleaginous fruits (excluding flour)	0.274	0.813	0.024	0.347
[746] Ball or roller bearings	0.272	0.409	0.024	0.707
[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	0.260	0.282	0.024	1.010

Source: UNCTADstat (2015), own calculations

4 CONCLUSION

In this paper, a comparative study of V4 countries based on their revealed comparative advantages in years 2003 and 2013 has been presented. In theory, Ricardo Model of comparative advantage describes commodities, which are produced in a country more efficiently than abroad. While transforming this theoretical model into an empirical study, two major problems have to be solved. Ricardo model is based on autarkic economies and it is designed primarily for trade between 2 countries exchanging 2 goods. In order to overcome those difficulties, the concept of RCA, based on analysis of post-trade indicators, has been established.

More approaches can be used to calculate RCA, in this paper 6 RCA indicators (BI, SI, WI, AI, NI and LFI) are considered. Each of RCA indicators has its pros and cons and none of them is capable of identifying comparative advantage in its full complexity. Awareness of their construction, characteristics and differences among them is crucial for further detailed analysis of trade patterns and comparative advantages. In the second part, actual values of RCA indexes for V4 countries in years 2003 and 2013 are calculated. Countries of V4 group are all advanced economies, members of EU and OECD. During last 25 years they had to undergo an economic transformation from centrally planned to free market economy. The Czech Republic, Hungary and Slovakia are rather small and highly open economies. All the V4 countries have in common overall prevalence of SITC 7 products (machinery and transport equipment) in their most exported articles. Accordingly, all the V4 countries demonstrate comparative advantages primarily in this field. However, particular differences could be observed among compared countries.

Generally speaking, the Visegrad countries hold most of their comparative advantage in manufacturing and especially in machinery and transport equipment (applies especially for the Czech Republic and Slovakia); Hungary and Poland also have stable but weakening comparative advantages in food and live animals. Good and in some cases growing position in manufacturing is to be related to a quality of human capital, fairly good level of education, and significant amounts of foreign direct investment form the OECD countries, which played

an important role in the countries' transition as an important source of financing and supplement of inadequate domestic resources to finance both ownership structure and capital formation. Compared to other financing options, FDI facilitates transfer of technology, know-how and skills, and helps local enterprises to expand into foreign markets. SITC 7 shows the highest comparative advantage in all V4 countries in 2013 and has increased since 2003 in the Czech Republic, Poland, and Slovakia. Poland holds decreasing advantage in SITC 8. Common disadvantage of all V4 countries lies in mineral fuels, lubricants and related materials and in chemicals and related products; in some cases the situation even decrease.

As far as detailed results are concerned, the Czech Republic produced following commodities with a comparative advantage in both years 2003 and 2013: manufactures of base metal (699); parts and accessories of vehicles (784). Rubber tyres, tyre treads or flaps (625); automatic data processing machines (752) and motor vehicles for the transport of persons (781) demonstrated comparative advantage only in year 2013, however, they did not fulfil the conditions in 2003 due to one group of indicators only. Glassware (665), pumps for liquids (742) and furniture and parts were produced with an advantage in 2003, but not in 2013. Contrariwise, baby carriages, toys, games, sporting goods (894), heating and cooling equipment and parts (741) demonstrated a comparative advantage in 2013, but not in 2003.

Hungary demonstrates following comparative advantages. Internal combustion piston engines, parts (713) and Television receivers, whether or not combined (761) were produced with an advantage in both 2003 and 2013. Equipment for distributing electricity (773) and Telecommunication equipment and parts (776) demonstrated comparative advantage in 2003, but they both did not qualify in 2013 due to LFI only. In 2003, other meat and edible meat offal (012), sound recorders or reproducers (763) and automatic data processing machines (752) were produced with an advantage, while measuring, analysing & controlling apparatus (874) proved advantage only in 2013.

In Poland, following comparative advantages have been identified. Furniture and parts (821), internal combustion piston engines, parts (713) and television receivers, whether or not combined (761) were produced at advantage. Comparative advantage in production of ships, boats & floating structures (793) was identified in year 2003, however in 2013 all the indicators besides LFI confirmed the advantage, too. Production of wood manufactures (635), coal, whether or not pulverized (321) and equipment for distributing electricity (773) demonstrated comparative advantage in 2003, whereas household type equipment, electrical or not (775) and copper (682) were produced in accordance with RCA in 2013.

The Slovak Republic produced following commodities at comparative advantage in both 2003 and 2013: Flat-rolled prod., iron, non-alloy steel, not coated (673), flat-rolled prod., iron, non-alloy steel, coated, clad (674), rubber tyres, tyre treads or flaps and inner tubes (625), and motor vehicles for the transport of persons (781). Equipment for distributing electricity (773) was manufactured at advantage in 2003, but it failed to fulfil the criteria in 2013 only due to LFI. In 2003, RCA was identified also in production of ball or roller bearings (746), furniture and parts (821) and footwear (851). Ten years later, Slovakia managed to gain comparative advantage in production of television receivers, whether or not combined (761) and transmission shafts (748).

Taking the revealed comparative advantage, its sources and continuing dependence on FDI inflows, it can be concluded that the Visegrad countries should seek for further upgrading and integration in their export orientation. Their position in global value chains as well as it geographical location plays the most significant role in FDI and competitiveness drivers and is not about to change unless some of their common institutional weaknesses are addressed to increase the share of reinvested earnings and value added in their current account. Inefficient government bureaucracy, corruption, policy instability, and restrictive labour regulations are

usually stated as common most problematic factors for doing business in the Visegrad countries, which deserve special attention of policy makers and scholars.

REFERENCES:

1. BALASSA, B. (1965): Trade Liberalization and Revealed Comparative Advantage. In: The Manchester School, 1965, 33, pp. 99-123.
2. BALLANCE, R. H. – FORSTNER, H. – MURRAY, T. (1987): Consistency tests of alternative measures of comparative advantage. In: Review of Economics & Statistics, 1987, 69, pp. 157-161.
3. BOWEN, H. (1983): On the theoretical interpretation of indices of trade intensity and revealed comparative advantage. In: Review of World Economics, 1983, 119, pp. 464-472.
4. CAI, J. – LEUNG, P. (2008): Towards a more general measure of revealed comparative advantage variation. In: Applied Economics Letters, 2008, 15, pp. 723-726
5. CLARIDA, R. H. – FINDLAY, R. (1992): Government, Trade, And Comparative Advantage. In: American Economic Review, 1992, 82, 2, pp. 122-127.
6. CORDELLA, T. (1998): Patterns of trade and oligopoly equilibria: an example. In: Review of International Economics, 1998, 6, pp. 554-563.
7. COSTINOT, A. – DONALDSON, D. – KOMUNJER, I. (2012): What Goods Do Countries Trade? A Quantitative Exploration of Ricardo's Ideas. In: The Review of Economic Studies, 2012, 79, 2, pp. 581-608.
8. DALUM, B. – LAURSEN, K. – VILLUMSEN, G. (1998): Structural change in OECD export specialisation patterns: de-specialisation and 'stickiness'. In: International Review of Applied Economics, 12, pp. 423-443.
9. DE BENEDICTIS, L. – TAMBERI, M. (2001): A note on the Balassa index of revealed comparative advantage. In: Dipartimento di Economia, Universita' Politecnica delle Marche Working Papers, 2001, no. 158. Available online: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=289602>.
10. DE BENEDICTIS, L. – TAMBERI, M. (2004): Overall Specialization Empirics: Techniques and Applications. In: Open Economics Review, 2004, 15, pp. 323-346.
11. DEARDORFF, A. V. (1980): The general Validity of the law of comparative advantage. In: Journal of Political Economy, 1980, 88, pp. 941-957.
12. DEARDORFF, A. V. (1998): Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World? In: The Regionalization of the World Economy. Chicago: Chicago University Press, 1998. ISBN 0-226-25995-1, pp. 7-32.
13. DEARDORFF, A. V. (2005): How Robust is Comparative Advantage? In: Research Seminar in International Economics Working Papers, 2005, no. 537. Available online: <http://fordschool.umich.edu/rsie/workingpapers/Papers526-550/r537.pdf>.
14. DEARDORFF, A. V. (2011): Comparative advantage: The theory behind measurement. In: OECD: Globalization, Comparative Advantage and the Changing Dynamics of Trade. Paris: OECD Publishing, 2011. 348 p. ISBN 9789264113084.
15. DRABICKI, J. Z. – TAKAYAMA, A. (1979): An antinomy in the theory of comparative advantage. In: Journal of International Economics, 1979, 9, pp. 211-223.
16. HILLMAN, A. L. (1980): Observations on the relation between 'revealed comparative advantage' and comparative advantage as indicated by pre-trade relative prices. In: Weltwirtschaftliches Archiv, 1980, 116, pp. 315-321.
17. HNÁT, P. – STUCHLÍKOVÁ, Z. (2014): China-V4 Investment Relations – A Czech Perspectives. In: MRÁZ, S., BROCKOVÁ, K. (eds.): Current Trends and Perspectives in Development of China-V4 Trade and Investment. Bratislava: Vydavateľstvo EKONÓM, 2014. ISBN 978-80-225-3894-7, pp. 61–81.

18. HOEN, A. – OOSTERHAVEN, J. (2006): On the measurement of comparative advantage. In: Annals of Regional Science, 2006, 40, pp. 677-691.
19. IMF. (2014): World Economic Outlook. Washington: International Monetary Fund, 2014. ISBN: 978-1-47551-576-3.
20. IRWIN, D. (1991): Retrospectives: Challenges to Free Trade. In: Journal of Economic Perspectives, 1991, 5, 2, pp. 201-208
21. LAFAY, G. (1992): The measurement of revealed comparative advantages. In: DAGENAIS, M. G. – MUET, P.-A. (eds.): International Trade Modelling. London: Chapman & Hall, 1992. ISBN 0-412-45000-3, pp. 209-236.
22. LAURSEN, K. (1998): Revealed comparative advantage and the alternatives as measures of international specialisation. In: DRUID Working Papers, 1998, no. 98-30. Available online: <http://www3.druid.dk/wp/19980030.pdf>.
23. LIESNER, H. H. (1958): The European Common Market and British Industry. In: The Economic Journal, 1958, 68, pp. 302-316.
24. MEMEDOVIC, O. (1994): On the theory and measurement of comparative advantage: an empirical analysis of Yugoslav trade in manufactures with the OECD countries 1970-1986. Amsterdam: Thesis Publishers, 1994.
25. OELGEMÖLLER, J, (2012): PIGS in a poke – on the international competitiveness of the industry in Portugal, Ireland, Greece and Spain Analyzing the revealed comparative advantages (RCA). In: CAWM Discussion Papers, 2012, no. 61. Available online: <https://www.wiwi.uni-muenster.de/cawm/forschen/Download/Diskbeitraege/CAWM_DP_61_RCA_PIGS.pdf>.
26. PROUDMAN, J. – REDDING, S. (2000): Evolving patterns of international trade. In: Review of International Economics, 2000, 8, pp. 373-396.
27. RICARDO, D. (1815): Essay on the Influence of a Low Price of Corn on the Profits of Stock. London, 1815.
28. SANIDAS, E. – SHIN, Y. (2010): Comparison of Revealed Comparative Advantage Indices with Application to Trade Tendencies of East Asian Countries. Seoul: Department of Economics – Seoul National University, 2010. Available online: <http://www.akes.or.kr/eng/papers(2010)/24.full.pdf>.
29. UNCTADSTAT. (2015): UNCTADstat Data Center. Geneva: UNCTAD, 2015. Available online: <http://unctadstat.unctad.org/>.
30. VANEK, J. (1968): The Factor Proportions Theory: The N-Factors Case. In: Kyklos, 1968, 21, 4, pp. 749-756.
31. VOLLRATH, T. (1991): A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. In: Weltwirtschaftliches Archiv, 1991, 127, pp. 265-280.
32. WORLD BANK. (2015): World Bank Database. Country and Lending Groups. Washington: World Bank, 2015. Available online: <http://data.worldbank.org/about/country-and-lending-groups#OECD_members>.
33. WORLD BANK. (2015): World Bank Database. Countries and Economies. Washington: World Bank, 2015. Available online: <http://data.worldbank.org/country>.
34. YEATS, A. (1985): On the appropriate interpretation of the revealed comparative advantage index: implications of a methodology based on industry sector analysis. In: Weltwirtschaftliches Archiv, 1985, 121, pp. 61-73.
35. YU, R. – CAI, J. – LEUNG, P. (2009): The normalized revealed comparative advantage index. In: Annals of Regional Science, 2009, 43, pp. 267-282
36. ZAGHINI, A. (2003): Trade Advantages and Specialisation Dynamics in Acceding Countries. In: ECB Working Papers, 2003, no. 249. Available online: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp249.pdf>.

KOREAN TRADE WITH THE VISEGRAD COUNTRIES: PAST, PRESENT AND TRENDS FOR THE FUTURE

Martin Grančay[5]

The present paper focuses on trade between the Republic of Korea and four Visegrad countries – Czech Republic, Slovak Republic, Hungary and Poland. It analyzes developments in trade volume 1995-2013, deals with the commodity structure of trade and Revealed Comparative Advantage. It shows that Korean exports to the Visegrad region are much higher than the reverse flows and pinpoints the reasons. Finally, the paper identifies opportunities for the future of mutual trade.

Key words: foreign trade, commodity structure, comparative advantage, RCA index, EXPY, concentration index, trade similarity
JEL: F10, F13

1 INTRODUCTION

The Republic of Korea[6] is one of the most distant countries from the Visegrad region. Approximately 8,000 kilometers separate any of the Central European capitals from Seoul. The differences in historical experience and in culture are enormous. Nevertheless, despite the distance the Republic of Korea belongs to the most important investors in the Visegrad region and is an important source of imports far exceeding volumes predicted by gravity models of trade (Grančay 2013). For Slovakia, for example, the Republic of Korea is the fourth largest source of imports, far more important than China, Poland, Hungary and many other EU member states.

While there has recently been a significant amount of literature studying investment and trade relations between China and the Visegrad countries (Matura 2012, Szikorová 2012, Dudáš 2014, Jacoby 2014, Zuokui 2014, etc.) economic relations with Korea have been neglected in the scientific literature. In what is probably the most complex study Jun and Hyun (2014) researched how the European Union enlargement affected inflow of investment from Korea to Central and Eastern Europe. Their findings show that "the number of new investments increased significantly after the enlargement while the monetary amount of total investment appeared to be negligibly affected" (p. 486). This means that the new investment was mostly carried out by small and medium-sized enterprises, compared to many large investment projects that were implemented before the EU enlargement. The authors also confirmed that "FDI inflows to the CEECs [Central and Eastern European Countries] after the enlargement were not at the expense of FDI inflows into Western Europe" (p. 499).

One of the most important factors influencing the Korea-V4 trade relations is the EU-South Korea Free Trade Agreement which entered into force in July 2011.[7] Its aim is to gradually eliminate all duties for industrial and agricultural goods in trade between the regions (this should be done until July 2016) as well as the majority of non-tariff barriers. Economists have called this agreement a "deep" one (Das 2012) and have predicted trade volume increases of up to 40 % in imports from Korea and 80 % in exports to Korea (Decreux et al. 2010). Unfortunately, as of yet no studies evaluating its impact on the Visegrad region exist.

---

[5] Faculty of International Relations, University of Economics in Bratislava, Dolnozemská cesta 1/b, 85235 Bratislava, Slovak Republic, martin_grancay@yahoo.com, +421-2-67295471.
[6] The present paper uses the names Republic of Korea, South Korea and Korea interchangeably.
[7] See full text of the agreement online at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2011:127:FULL&from=EN.

Éltetö and Völgyi (2013) studied trade developments between Hungary and Asia from 2000 to 2012; some parts of their paper deal with trade with the RoK. Tseng (2013) researched a similar topic, focusing on the Czech Republic instead of Hungary. Trade between Korea and Slovakia was studied by Semoon and Gofusova (2008). None of the above mentioned papers is complex, and all of them study only partial issues. Therefore, the aim of the present paper is to offer a complex overview of trade relations between Korea and the Visegrad countries, studying not only trade volumes and structure of mutual trade, but also dealing with comparative advantage, concentration indices and advanced export quality indicators such as Hausmann, Hwang and Rodrik's (2007) EXPY.

The trade data used in the paper proceeds from the United Nations Conference on Trade and Development statistical database (2015). The data is available for the period 1995-2013. In line with best practices in international trade research, we use the technique of mirroring, i.e. we do not use export data, but prefer import data for partner countries. This stems from the assumption that statistics on import are more reliable than export data. For a discussion of advantages and issues of this approach, see UN and WTO (2012).

The paper is divided into six sections. After a brief introduction, section 2 shows the developments in mutual trade between the Republic of Korea and the Visegrad countries in the last two decades. Section 3 focuses on commodity structure of trade and comparative advantages. The next section deals with selected trade indicators. Section 5 identifies opportunities for the future of mutual trade between the regions. Finally, the last section concludes the paper.

2 DEVELOPMENT OF TRADE VOLUMES BETWEEN THE REPUBLIC OF KOREA AND THE VISEGRAD COUNTRIES

Given the status of the Republic of Korea as one of the Asian Tigers and its long history of economic reforms, it is little wonder that Visegrad countries' balance of payment in trade with Korea has been considerably negative. Even though both exports and imports have grown since 1995, the growth of imports from Korea was more than 25-fold while the growth of exports was less than 10-fold. This resulted in a deficit of mutual balance of trade totaling more than 13 billion USD in 2013.

Figure 1: Imports from the RoK to the Visegrad countries 1995-2013 (mil. $)
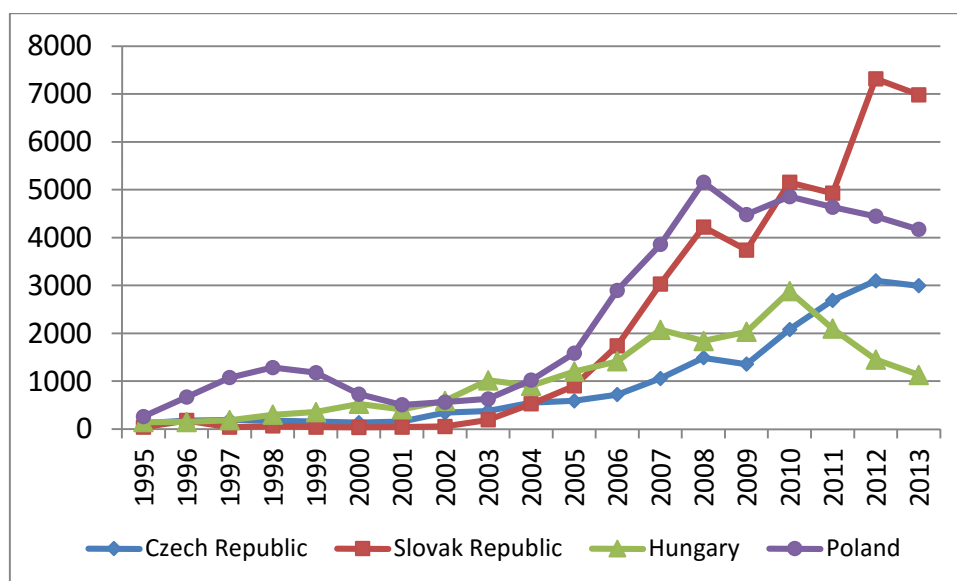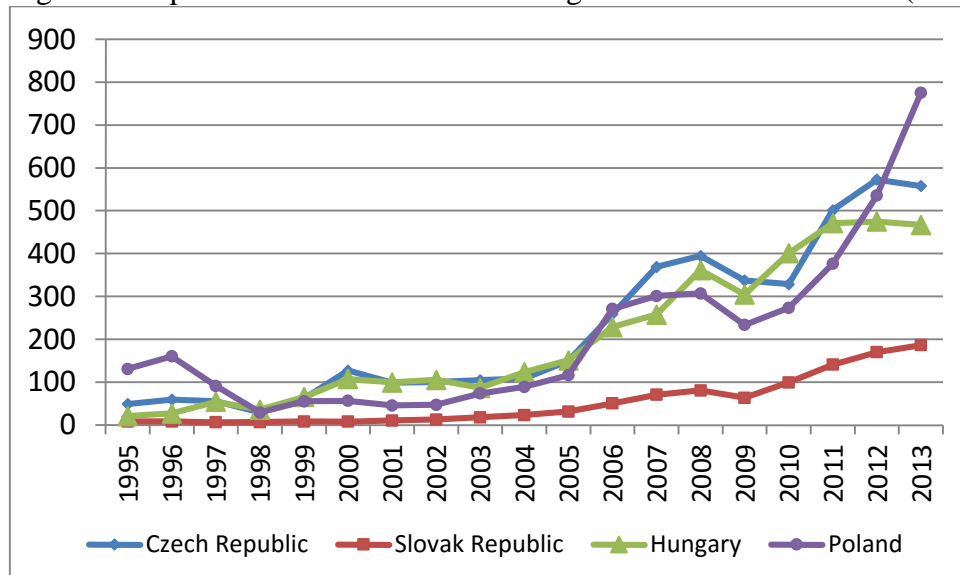

Source: UNCTAD (2015).

This development has been influenced by foreign direct investment. As Dudáš shows elsewhere in this volume, several Korean companies belong among the largest investors in the Visegrad region, such as Kia or Samsung in Slovakia, Hyundai Motor in the Czech Republic, Hankook Tire and Samsung in Hungary or LG in Poland. Trade patterns have been mostly governed by these companies' production, trade and investment strategies. For example, before Samsung started constructing its production plant in Slovakia in 2002, the country's imports from Korea were the lowest in the region at 50 million USD. Samsung's investment was followed by arrival of Kia in 2004 and several other smaller companies. As a result, Slovakia is now by far the largest importer from the RoK (Figure 1) both in absolute and relative numbers. If imports are calculated per capita, Slovakia's 1,300 USD annually is incomparable with Czech 300 USD and Polish and Hungarian 100 USD.

In general, imports from Korea are on the rise, a major exception being Hungary where they peaked in 2010 and since then they have been decreasing fast. The single main reason appears to be imports of telecommunications equipment. Historically, Korea was the main supplier of telecommunications equipment to Hungary; however, recently imports from China, Mexico and Slovakia (many of them by subsidiaries of Korean companies) have been diminishing Korea's share.

Figure 2: Exports to the RoK from the Visegrad countries 1995-2013 (mil. $)

Source: UNCTAD (2015).

Visegrad's exports to the Republic of Korea have been rising gradually in the last decade (Figure 2). The largest increase has occurred in Poland, mainly due to increased exports of engines as well as effective trade promotion policies. Poland has a relatively large Trade and Investment Promotion Section at its embassy in Seoul. Trying to further promote exports, the Czech Republic has opened a new office of Czech Invest in Seoul in 2015. Hungary and Slovakia also have economic sections at their embassies in the RoK.

The largest deficit in trade with Korea from among all the Visegrad countries is observable in Slovakia. It reached almost 7 billion USD in 2013 and can be explained by two main factors: (1) higher technological level and higher added value of Korean products, which increases demand and enables long-distance transportation of these products; and (2) Korean investment in the Slovak Republic which generates imports of production equipment and sub-deliveries (Embassy of the Slovak Republic in Seoul 2012). These factors apply to all Visegrad countries in general and it is unlikely that they will change anytime soon.

To get a better idea of how imbalanced trade relations between Korea and the Visegrad region are, Tables 1 and 2 offer a quick comparison. For South Korea, Visegrad countries are the 8th most important export partner with a 2.1 % share on total exports. Similarly, Korea is the 11th most important import partner for the Visegrad countries (2.9 %). On the other hand, a brief look at the reverse trade flows uncovers that Korean imports from the region constitute only 0.3 % - 0.4 % of total volume, lagging behind countries such as Oman, Mexico or Peru.

Table 1: Importance of trade with the RoK for the Visegrad countries (2013)

	Exports		*Imports*	
	Share	*Rank*	*Share*	*Rank*
Czech Republic	0.4 %	30	2.1 %	12
Slovak Republic	0.1 %	44	8.6 %	4
Hungary	0.3 %	35	1.1 %	19
Poland	0.4 %	32	2.1 %	12
V4	0.3 %	35	2.9 %	11
V4 (extra only)*	0.4 %	31	3.3 %	8

Note: * excluding intra-Visegrad trade.
Source: Own calculations based on UNCTAD (2015).

This is even more surprising if one considers that South Korea cannot be classified as a large economy. On the contrary, total area of the four Visegrad nations is 5-times larger than the area of the RoK; number of inhabitants is larger as well.

Table 2: Importance of trade with the Visegrad countries for the RoK (2013)

	Exports		*Imports*	
	Share	*Rank*	*Share*	*Rank*
Republic of Korea	2.1 %	8	0.4 %	33

Source: Own calculations based on UNCTAD (2015).

It is therefore obvious that there remains a huge untapped potential in mutual trade. It is our aim in this paper to identify opportunities for robust growth of Visegrad exports to South Korea.

3 COMMODITY STRUCTURE OF TRADE AND COMPARATIVE ADVANTAGES

Probably the most important and definitely the most widely used indicator of comparative advantage in scientific literature is the Revealed Comparative Advantage index (RCA). Developed by Hungarian economist Béla Balassa (1965), the index takes values from 0 to infinity, where items with a comparative advantage have RCA values higher than 1 and items with a comparative disadvantage have RCA values lower than 1. While there has been a lot of criticism and several new indices have been proposed – such as Lafay's RCA (Lafay 1992), symmetric RCA (Laursen 1998), weighted RCA (Proudman and Redding 2000) or normalized RCA (Yu et al. 2009) – the concept remains similar: a country has a comparative advantage in those goods in which it has a higher share on total exports than is world average. As an example, consider two countries (A and B) which export bananas. Let global banana exports be 1 % of the total global value of all exports. If country A's banana exports have a 5 % share on the country's total exports (i.e. higher than the world average), then country A has a comparative advantage in bananas. If bananas have a 0.5 % share on country B's total exports (i.e. lower than the world average), then this country has a comparative disadvantage in bananas.

Table 3 shows top 10 items with the highest values of RCA index in the Republic of Korea (using three-digit level SITC Revision 3 commodity classification) and compares them with respective RCA indices of the Visegrad region. Korean advantages are mainly in the fields of ship and boat construction, manufacturing of optical instruments, and chemical industry. They have remained static over the last two decades.

Table 3: Items with the highest values of the Revealed Comparative Advantage index in the Republic of Korea (2013)

No.	Item	RCA_{ROK}	RCA_{V4}
1.	[793] Ships, boats & floating structures	8.30	1.28
2.	[871] Optical instruments & apparatus, n.e.s.	8.12	0.19
3.	[572] Polymers of styrene, in primary forms	5.21	0.90
4.	[266] Synthetic fibres suitable for spinning	5.13	0.42
5.	[511] Hydrocarbons, n.e.s., & halogenated, nitr. derivative	4.61	0.37
6.	[232] Synthetic rubber	4.19	1.56
7.	[655] Knitted or crocheted fabrics, n.e.s.	4.10	0.35
8.	[513] Carboxylic acids, anhydrides, halides, per.; derivati.	3.83	0.66
9.	[673] Flat-rolled prod., iron, non-alloy steel, not coated	3.53	1.70
10.	[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	3.48	1.03

Note: Mirroring not used; direct calculations using export data.
Source: Own calculations based on UNCTAD (2015).

On the other hand, comparative advantage of the Visegrad countries is more diversified and has been very dynamic over the last two decades. It includes sophisticated goods, low technology items as well as primary commodities (Table 4). Significant differences can be observed among individual countries of the region. For example, Poland's RCA are dominated by coke, fish, cereal, fuel wood and produce of light industry. Czech Republic has the highest advantage in office supplies, rails and explosives. Slovakia and Hungary have advantage in goods such as television receivers, motor vehicles (Slovakia), transmission shafts (Slovakia) or engines (Hungary). Again, it is obvious that current comparative advantages of the Visegrad region have been influenced mostly by foreign investors, such as Volkswagen, Kia, Peugeot or Samsung in Slovakia.

Table 4: Items with the highest values of the Revealed Comparative Advantage index in the Visegrad group (2013)

No.	Item	RCA_{V4}	RCA_{ROK}
1.	[325] Coke & semi-cokes of coal, lign., peat; retort carbon	10.25	0.06
2.	[761] Television receivers, whether or not combined	6.68	0.84
3.	[035] Fish, dried, salted or in brine; smoked fish	4.26	0.10
4.	[812] Sanitary, plumbing, heating fixtures, fittings, n.e.s.	4.10	0.38
5.	[696] Cutlery	3.96	0.33
6.	[635] Wood manufacture, n.e.s.	3.58	0.04
7.	[245] Fuel wood (excluding wood waste) and wood charcoal	3.58	0.01
8.	[612] Manufactures of leather, n.e.s.; saddlery & harness	3.51	0.20
9.	[351] Electric current	3.28	n/a
10.	[713] Internal combustion piston engines, parts, n.e.s.	3.11	0.94

Note: Mirroring not used; direct calculations using export data.
Source: Own calculations based on UNCTAD (2015).

If Korea's and Visegrad's advantages are compared, a pattern emerges which shows that the Visegrad countries focus on exporting medium-skill-and-technology intensive goods, while Korea's exports are relatively more high-skill-and-technology intensive. This can be evidenced by mutual trade between the two regions (Table 5).

Imports from South Korea are dominated by telecommunication equipment, which constitutes more than one fourth of total imports. Although it might appear that this is a high level of concentration, its share has actually decreased from 44 % since 2007. Similar situation can be observed in imports of motor vehicles for the transport of persons. Today a mere 2 %, it used to have a more than 24 % share on total imports back in 1996, when Central Europe was not yet known as a car production capital of the world or Detroit of Europe (Bautzová 2007).[8] Other notable imports from the RoK include parts and accessories of vehicles, optical instruments, electrical machinery or internal combustion piston engines.

Exports to South Korea consist mainly of car and TV-production related items. The high share of engine exports has been generated by Poland where they exceed 31 % of total exports; Polish role has been prominent in export of pumps as well. Maize and parts of motor vehicles are an important export item of Hungary, export of motor vehicles is dominated by Slovakia, and the Czech Republic exports mostly optical instruments.[9]

Similar to imports, the structure of exports has changed radically in the last two decades. In 1995, the largest export items from Visegrad countries to the Republic of Korea were organo-inorganic and heterocyclical compounds (22 %) followed by iron/steel rods (14 %), man-made fibres suitable for spinning (7 %) and glassware (6 %). These four commodities together constituted a half of the Visegrad's exports to Korea; in 2013 their share dropped to less than 9 %. This shift to more skill-and-technology intensive goods with higher value added demonstrates the region's successful economic transformation and development.

Table 5: Top export and import items of the Visegrad group (2013)

	Exports to the RoK		Imports from the RoK	
1.	[713] Internal combustion piston engines, parts, n.e.s.	13.3%	[764] Telecommunication equipment, n.e.s.; & parts, n.e.s.	25.8%
2.	[743] Pumps (excluding liquid), gas compressors & fans; centr.	5.5%	[784] Parts & accessories of vehicles of 722, 781, 782, 783	12.3%
3.	[784] Parts & accessories of vehicles of 722, 781, 782, 783	4.8%	[871] Optical instruments & apparatus, n.e.s.	12.0%
4.	[772] Apparatus for electrical circuits; board, panels	3.6%	[778] Electrical machinery & apparatus, n.e.s.	4.3%
5.	[871] Optical instruments & apparatus, n.e.s.	3.5%	[776] Cathode valves & tubes	3.6%
6.	[044] Maize (not including sweet corn), unmilled	3.4%	[752] Automatic data processing machines, n.e.s.	3.0%
7.	[699] Manufactures of base metal, n.e.s.	3.4%	[713] Internal combustion piston engines, parts, n.e.s.	2.9%
8.	[874] Measuring, analysing & controlling apparatus, n.e.s.	3.1%	[772] Apparatus for electrical circuits; board, panels	2.4%
9.	[781] Motor vehicles for the transport of persons	2.8%	[743] Pumps (excluding liquid), gas compressors & fans; centr.	2.0%
10.	[778] Electrical machinery & apparatus, n.e.s.	2.6%	[781] Motor vehicles for the transport of persons	2.0%

Source: Own calculations based on UNCTAD (2015).

---

[8] These names are no exaggeration. The Slovak Republic is the largest producer of cars per capita. With a population of 5.4 million inhabitants, it produces almost one million cars annually. Similarly important is the production in the Czech Republic (Škoda, Hyundai) and Hungary (Suzuki, Audi, Opel engines).

[9] The data is based on mirroring, i.e. on Korean import statistics from the Visegrad region. If export data is used, an interesting irregularity can be noted: Almost 20 % of Czech exports appear to be baby carriages, toys, games and sporting goods. This item does not appear anywhere in the mirroring statistics.

The majority of trade between Korea and the Visegrad countries is inter-industry. However, at almost 40 % intra-industry trade is still an important part of mutual trade.[10] This can be easily demonstrated by looking at net exports and net imports of the Visegrad region and comparing them with the top export and import items. As Table 6 shows, the Visegrad region does not necessarily have the largest net exports to Korea in goods that belong to the top 10 exports in mutual trade. This is an evidence of existence of significant intra-industry trade, because if it did not exist, Table 6 and the left column of Table 5 would be identical. In reality, none of the top 5 export items belong among the items with the largest positive trade balance. Conversely, Slovakia has a negative trade balance in all of them.

Table 6: Largest net exports of the Visegrad group in trade with the RoK (2013)

No.	Item	RCA$_{V4}$	RCA$_{ROK}$	+ / -
1.	[044] Maize (not including sweet corn), unmilled	1.23	0.00	+
2.	[012] Other meat and edible meat offal	1.95	0.02	+
3.	[282] Ferrous waste, scrape; remelting ingots, iron, steel	1.61	0.18	+
4.	[711] Vapour generating boilers, auxiliary plant; parts	1.31	3.02	-
5.	[791] Railway vehicles & associated equipment	2.70	0.44	+
6.	[746] Ball or roller bearings	1.76	0.67	+
7.	[723] Civil engineering & contractors' plant & equip.	0.77	1.80	-
8.	[663] Mineral manufactures, n.e.s.	2.36	0.61	+
9.	[714] Engines & motors, non-electric; parts, n.e.s.	0.81	0.20	+
10.	[712] Steam turbines, other vapour turbin., parts, n.e.s.	2.05	0.95	+

Source: Own calculations based on UNCTAD (2015).

Table 7: Largest net exports of the RoK in trade with the Visegrad group (2013)

No.	Item	RCA$_{ROK}$	RCA$_{V4}$	+ / -
1.	[764] Telecommun. equipment, n.e.s.; & parts, n.e.s.	2.10	1.32	+
2.	[871] Optical instruments & apparatus, n.e.s.	8.12	0.19	+
3.	[784] Parts & access. of vehicles of 722, 781, 782, 783	2.13	2.86	-
4.	[776] Cathode valves & tubes	2.85	0.17	+
5.	[778] Electrical machinery & apparatus, n.e.s.	2.68	1.60	+
6.	[752] Automatic data processing machines, n.e.s.	0.46	1.59	-
7.	[772] Apparatus for electrical circuits; board, panels	1.87	1.63	+
8.	[674] Flat-rolled pr., iron, non-alloy steel, coated, clad	3.48	1.03	+
9.	[884] Optical goods, n.e.s.	2.37	0.45	+
10.	[743] Pumps (excl. liquid), gas compressors & fans	0.98	1.57	-

Source: Own calculations based on UNCTAD (2015).

Items with the largest net exports to Korea include maize, meat, ferrous waste, boilers and railway vehicles. On the other hand, items with the largest net imports from Korea are telecommunications equipment, optical instruments, parts of vehicles, and cathode valves. While there are some exceptions, net trade statistics clearly show that the goods imported to the Visegrad countries from Korea are more capital intensive and have higher value added than the goods that move in the opposite direction. Considering that the Republic of Korea had a head start and was able to rapidly develop its economy two decades before the Visegrad countries, this is of little surprise.

---

[10] Calculated using trade balance-adjusted Grubel-Lloyd index of intra-industry trade at three digit level SITC Revision 3 commodity classification.

The above mentioned statistics clearly show some general patterns in mutual trade between Korea and the Visegrad countries. However, they do not directly allow us to draw any conclusions about the quality of exports. To do that, a different concept – introduced by Hausmann, Hwang and Rodrik (2007) – has to be used. The idea is based on two indicators of export quality – PRODY and EXPY. PRODY is calculated separately for each product item. It is a hypothetical value of income per capita which is connected with exports of the product. If the product is exported mostly by rich countries, it will have a high value of PRODY; conversely, if it is exported mostly by poor countries, its PRODY will be low. High value of PRODY is a sign that the product has a high level of sophistication (Minondo 2010).

EXPY is a similar concept applied to countries. It is calculated as weighted average of PRODYs of all products the country exports, where weights are products' shares in the country's total exports. As a result, if a country exports mostly products with high PRODY, its EXPY will be high, and vice versa. According to the theory, the indicator captures productivity levels associated with the countries' export baskets (UN and WTO 2012). While the definition is not absolute, higher values of EXPY indicate that the country exports more sophisticated, higher quality goods. Based on this assumption, successful countries are able to increase their values of EXPY in time.

The average global value of EXPY in 2013 was 14,868 USD.[11] South Korea's EXPY was significantly higher at 16,968 USD. From among the Visegrad countries with the average EXPY of 15,476 USD, Hungary had the most sophisticated exports at 16,196 USD followed by the Czech Republic (16,060 USD), Slovakia (15,615 USD) and Poland (14,568 USD). The situation in mutual trade between the two regions is somewhat different. As both trading partners can be considered relatively well-developed economies, it can be expected that their mutual trade is based on more sophisticated goods than their total trade with all regions of the world. This is evidenced by higher values of EXPY in mutual trade (Figure 3) than values of EXPY in total trade. As could be seen in Tables 6 and 7, Korea's exports to the Visegrad region are a bit more sophisticated than Korea's imports from the region, therefore also Korea's EXPY in trade with the Visegrad countries is higher (18,360 USD) than Visegrad's EXPY in trade with Korea (17,190 USD).[12] This is a long-term rule, the only exception being pre-crisis year 2008 when the situation was reversed for a brief period of time. It appears that during times of economic boom the Visegrad countries increase the sophistication of their exports faster than Korea, whereas in times of economic crisis their export sophistication falls faster than Korea's.

---

[11] Own calculations based on UNCTAD (2015) data using real GDP per capita at constant 2005 prices in USD.
[12] Slovakia 17,847 USD, Hungary 17,611 USD, Poland 17,485 USD, Czech Republic 16,476 USD.

Figure 3: Values of EXPY in mutual trade (2004-2013)
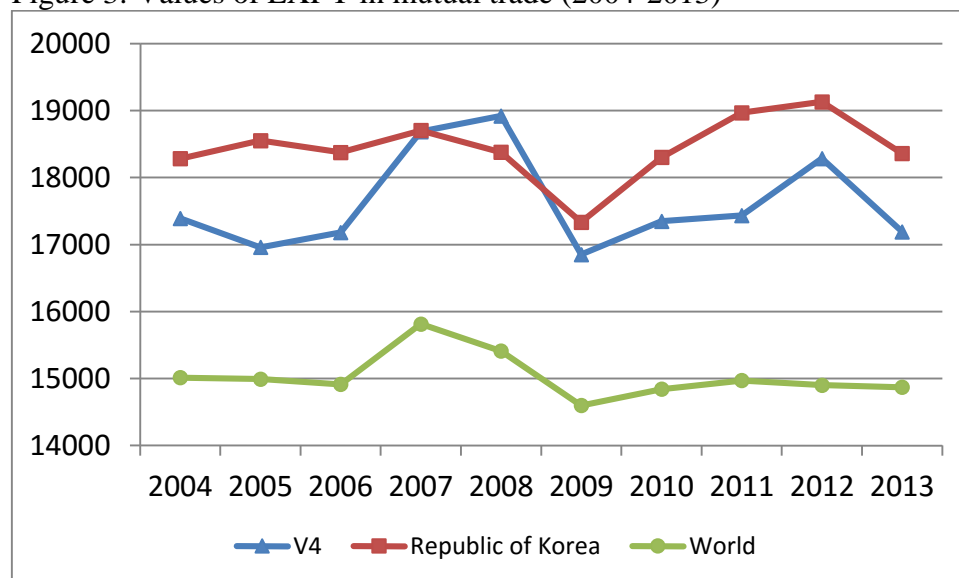
Note: V4 – exports to the RoK. RoK – exports the the V4. World – total exports.
Source: UNCTAD (2015).

4 SELECTED TRADE INDICATORS

To reach a deeper understanding of mutual trade between Korea and the Visegrad region, the analysis has to go beyond trade volume and structure. Numerous trade indicators were developed that enable researchers to evaluate different aspects of trade. These include, among others, concentration indices, similarity indices or trade complementarity indices.

The concentration index shows whether exports or imports of a country are concentrated on few products, or otherwise are diversified and distributed among many products. It obtains values from 0 to 1, where 1 is the maximum concentration. This indicator is connected with the number of products exported and imported. There is normally a high (but not absolute!) negative correlation between concentration index and the number of products. The more products a country exports, the higher the chance that the exports are relatively well diversified.[13]

As Table 8 indicates, the Czech Republic exports the highest number of goods to Korea (123 out of a maximum of 261) and also has the lowest level of export concentration. On the other hand, Slovakia exports the lowest number of products (50). The highest level of export concentration can be seen in Poland. Poland is the only country from the group, which has increased the level of concentration of its exports to Korea since 1995.

---

[13] However, it can still be the case that even though the country exports 200 products, one of them has a disproportionately large share on total exports. In this case, concentration index would be high.

Table 8: Concentration in bilateral trade with the RoK (1995-2012)

Flow	Indicator	Country	1995	2000	2005	2010	2012
Export	Concentration index	CZE	0.306	0.324	0.208	0.127	0.135
		SVK	0.538	0.325	0.247	0.297	0.248
		HUN	0.232	0.469	0.250	0.230	0.187
		POL	0.278	0.278	0.233	0.145	0.285
	Number of products	CZE	36	52	73	108	123
		SVK	12	19	26	46	50
		HUN	38	39	57	75	88
		POL	30	33	57	93	108
Import	Concentration index	CZE	0.242	0.179	0.324	0.281	0.375
		SVK	0.336	0.175	0.331	0.340	0.342
		HUN	0.197	0.462	0.400	0.594	0.535
		POL	0.196	0.213	0.405	0.353	0.336
	Number of products	CZE	55	84	96	114	123
		SVK	32	46	86	109	107
		HUN	62	80	85	90	94
		POL	73	100	117	135	137

Note: Mirroring not used; direct calculations using both export and import data.
Source: UNCTAD (2015).

Even though imports from Korea consist of a higher number of goods than exports, they have a higher level of concentration. This might appear surprising, but Table 5 has already shown that more than a quarter of total imports are telecommunication parts and equipment. The concentration has increased significantly since 1995. We believe this is not necessarily a negative development for Korea, as the trend has mostly been influenced by Korean investment in the Visegrad region leading to high imports of components for further production, such as car parts.

Another important trade indicator is the Grubel-Lloyd index of similarity in trade structures. Values close to 1 indicate high similarity of trade flows; values close to 0 indicate substantial differences. This concept is similar to the concept of intra-industry trade, the main difference being that it separates trade flows into exports and imports and calculates distinct indices for each of them.

Table 9: Grubel-Lloyd index of similarity in merchandise trade structures with the RoK (1995 and 2013)

Flow	CZE		SVK		HUN		POL	
	1995	2013	1995	2013	1995	2013	1995	2013
Export	0.603	0.557	0.618	0.551	0.592	0.540	0.603	0.605
Import	0.474	0.526	0.371	0.522	0.451	0.507	0.407	0.470

Source: UNCTAD (2015).

Exports of Korea and the Visegrad countries show a higher degree of similarity than imports. This has mainly been caused by high prominence of oil in Korean imports – almost 20 % compared to 5-10 % in the Visegrad countries. In general, almost a half of South Korean imports are primary commodities (49 %), whereas in the Visegrad group it is less than a quarter (24 %).

Trade complementarity index measures the extent to which one country's exports are similar to other country's imports (Michaely 1996).[14] Again, values close to 1 indicate high

---

[14] Michaely's original name of the indicator was trade compatibility index.

similarity. Complementarity of the mutual trade between South Korea and the Visegrad countries is in the middle range at 0.4 to 0.5.

5 OPPORTUNITIES FOR THE FUTURE OF MUTUAL TRADE

One of the most important factors influencing trade between the Visegrad region and the Republic of Korea is undoubtedly the EU-South Korea Free Trade Agreement which entered into force in July 2011 and should eliminate all tariffs in mutual trade until July 2016. While the agreement is expected to bring advantages to both sides, economists expect it will be more advantageous for the EU as a result of the high initial level of protection in Korea (Decreux et al. 2010). One of the key sections of the agreement deals with the automotive industry, where the 8 % tariff on EU cars exported to Korea will be removed along with other non-tariff barriers. Cars manufactured in the EU will no longer be required to obtain safety certificates in Korea, and EU standards will be recognized. This is of utmost importance for the Visegrad region as it is one of the most important car producers in the world. Furthermore, Visegrad countries are able to take advantage of high level of protection for numerous commercially important European geographical indications (GIs) at the Korean market (Table 10). From the total of 160 protected GIs, 13 are from the Visegrad region, mostly beer, wine and spirits. All of them have a huge potential on the Korean market.

Table 10: Geographical indications for products from the Visegrad countries protected by the EU-South Korea Free Trade Agreement

Country	Name to be protected	Product
Czech Republic	České pivo	Beer
	Budějovické pivo	Beer
	Budějovický měšťanský var	Beer
	Českobudějovické pivo	Beer
	Žatecký chmel	Hops
Slovak Republic	Tokajský /-á /-é	Wine
Hungary	Szegedi téliszalámi	Salami
	Szegedi szalámi	Salami
	Tokaj	Wine
	Törkölypálinka	Spirit
	Pálinka	Spirit
Poland	Polska Wódka	Spirit
	Wódka ziołowa z Niziny Północno-nopodlaskiej aromatyzowana ekstraktem z trawy żubrowej	Spirit

Source: EU-South Korea Free Trade Agreement (2011).

Several dozens of agricultural products and foodstuffs originating in Korea will receive the same GI protection on the EU market. These include, for example, numerous types of green tea, ginseng, garlic or Gochang black raspberry wine.

The Embassy of Hungary in Seoul (2015) has identified several industries with untapped potential for developing trade relations with the RoK in a short-term perspective. They include "agricultural and food products, medicines – including veterinary drugs – fine chemicals, medical and laboratory equipment, machinery and spare-parts, as well as introducing Hungarian wines and various consumables to the Korean market." From a long-term perspective, the embassies do not go beyond the standard cliché of expanding cooperation in IT sector, bio- and nano-technology, research and development.

Another approach to uncover untapped potential in mutual trade relations consists of analyzing comparative advantages and comparing how they are used in current trade flows.

This was done in a series of steps. First, RCA indices for South Korea and for the Visegrad region were calculated. Second, to identify products with the highest untapped export potential from Visegrad countries to South Korea, all products were sorted in a descending order based on the difference between the Visegrad and Korean RCA. Third, to exclude items with a marginal share in mutual trade of the two regions, only products which have at least a 0.5 % share in Korean imports were retained in the list.[15] Similar approach was taken when identifying untapped export potential from the RoK to the Visegrad region.

The results are reported in Tables 11 and 12. The Visegrad countries should focus more on exporting engines, base metals, equipment for distributing electricity, glass and other items, as shown in Table 11. Obviously, some of the suggested future exports are country-specific. For example, Hungary would be expected to focus more on exports of aluminum and medicaments, while glass would be an export item mostly of Poland and the Czech Republic.

Table 11: Items with the highest unused export potential from Visegrad countries to the RoK

No.	Item	RCA_{V4}	RCA_{ROK}	M_{KOR}
1.	[713] Internal combustion piston engines, parts, n.e.s.	3.11	0.94	0.56%
2.	[699] Manufactures of base metal, n.e.s.	2.47	0.79	0.73%
3.	[773] Equipment for distributing electricity, n.e.s.	2.69	1.04	0.52%
4.	[664] Glass	2.45	0.86	0.54%
5.	[752] Automatic data processing machines, n.e.s.	1.59	0.46	1.09%
6.	[676] Iron &steel bars, rods, angles, shapes & sections	1.79	0.98	0.67%
7.	[542] Medicaments (incl. veterinary medicaments)	0.83	0.07	0.54%
8.	[784] Parts&access. of vehicles of 722, 781, 782, 783	2.86	2.13	0.69%
9.	[743] Pumps (excl. liquid), gas compressors & fans	1.57	0.98	0.71%
10.	[684] Aluminum	0.95	0.58	0.82%

Note: Items with the highest difference between Visegrad and Korean RCA in 2013 and negative balance of trade. Only those items with share on Korea's total imports of more than 0.5 % (last column of the table).
Source: Own calculations based on UNCTAD (2015).

On the other hand, South Korea has untapped export potential in ships and boats.[16]

It needs to be noted, however, that the products we identified in this section of the present paper, do not necessarily have to be the items which will bring the highest benefits from export. Some of the products are connected with higher value added than others. For example, according to the 2013 data, glass had a PRODY 20,985 USD, while equipment for distributing electricity had a PRODY of merely 6,834 USD. Moreover, as we already suggested, export patterns are often determined by foreign investors; given the large volume of Korean investment in the Visegrad region, it can be expected that the Visegrad's exports to Korea will continue to be determined by investors' business needs, not necessarily by RCA margin. Therefore, our suggestions mostly apply to small and medium enterprises.

---

[15] We acknowledge the chosen cut-off limit is arbitrary. To allow for inclusion of other products in our research, results with a cut-off point at 0.1 % of imports are reported in appendix A.
[16] There are no other items where South Korea has higher RCA than Visegrad countries and a negative trade balance with the Visegrad region.

Table 12: Items with the highest unused export potential from the RoK to Visegrad countries

No.	Item	RCA$_{ROK}$	RCA$_{V4}$	M$_{V4}$
1.	[793] Ships, boats & floating structures	8.30	1.28	0.88%

Note: Items with the highest difference between Korean and Visegrad RCA in 2013 and negative balance of trade. Only those items with share on Visegrad's total imports of more than 0.5 % (last column of the table). See also footnote on the previous page.
Source: Own calculations based on UNCTAD (2015).

6 CONCLUSION

In the present paper, we have analyzed trade flows between the Republic of Korea and the Visegrad countries between 1995 and 2013. We have shown how volume and structure of trade developed, identified comparative advantages and how they are used in mutual trade, and discussed other questions of interest, such as trade similarity, trade complementarity or sophistication of exports. Furthermore, we have identified several opportunities for the future of mutual trade:

- The EU-South Korea Free Trade Agreement promises to eliminate all tariffs and the majority of non-tariff barriers in mutual trade until July 2016. This will have an important impact on trade in automotive products. Beer, wine, spirits and salami from the Visegrad countries could gain better market share in South Korea thanks to the protection of geographical indications (13 products in total).
- Items with the highest untapped export potential from the Visegrad region to South Korea include internal combustion piston engines, manufactures of base metal, equipment for distributing electricity, glass and automatic data processing machines.
- Items with the highest untapped export potential from South Korea to the Visegrad countries include ships and boats.

Further research in the field of mutual trade between Korea and the Visegrad region should focus on studying comparative advantages at a higher level of disaggregation (using the UN Comtrade database). More attention should be paid to sophistication of exports using the approach of Minondo (2010). Finally, the importance of business environment for mutual trade should be explored.

REFERENCES:
1. BALASSA, B. (1965): Trade Liberalisation and „Revealed" Comparative Advantage. In: *The Manchester School*, 1965, 33, 2, pp. 99-123.
2. BAUTZOVÁ, L. (2007): Detroit comes to the Czech Republic. In: *The Prague Journal of Central European Affairs*, 2007, 9, 3, pp. 21-23.
3. DAS, D. K. (2012): EU-South Korea FTA: Economic Impact for the EU. In: *Global Economy Journal*, 2012, 12, 1, article 7, pp. 1-11.
4. DECREUX, Y. et al. (2010): The Economic Impact of the Free Trade Agreement (FTA) between the European Union and Korea. Paris: CEPII/ATLASS, 2010.
5. DUDÁŠ, T. (2014): China-V4 FDI relations – a Slovak perspective. In: *Current Trends and Perspectives in Development of China-V4 Trade and Investment*. Bratislava: Vydavateľstvo Ekonóm, 2014. Pp. 128-137. ISBN 978-80-225-3894-7.
6. ÉLTETÖ, A. – VÖLGYI, K. (2013): Integrated in the global value chains – trade developments between Hungary and Asia. In: *Eastern Journal of European Studies*, 2013, 4, 1, pp. 57-79.
7. EMBASSY OF HUNGARY IN SEOUL. (2015): Economic Relations. [Online.] In: *Embassy of Hungary in Seoul, Republic of Korea – Bilateral Affairs, Economic Relations.* [Cited 5.6.2015.] Available online:

<http://www.mfa.gov.hu/kulkepviselet/KR/en/en_Ketoldalu_kapcsolatok/en_bi_gazd.htm>.

8. EMBASSY OF THE SLOVAK REPUBLIC IN SEOUL. (2012): Trade between Republic of Korea and Slovak Republic. [Online.] In: *Ministry of Foreign and European Affairs of the Slovak Republic – Embassy of the Slovak Republic in Seoul.* [Cited 5.6.2015.] Available online: <http://www.mzv.sk/seoul>.

9. GRANČAY, M. (2013): Gravity model of Slovakia´s foreign trade with final goods in 2011. In: *Almanach*, 2013, 8, 1, pp. 21-37.

10. HAUSMANN, R. – HWANG, J. – RODRIK, D. (2007): What you export matters. In: *Journal of Economic Growth*, 2007, 12, 1, pp. 1-25.

11. JACOBY, W. (2014): Different cases, different faces: Chinese investment in Central and Eastern Europe. In: *Asia Europe Journal*, 2014, 12, 1-2, pp. 199-214.

12. JUN, J.-K. – HYUN, J. H. (2014): Anticipation or risk aversion?: The effects of the EU enlargement on Korean trade and FDI activities in Central and Eastern Europe. In: *Journal for East European Management Studies*, 2014, 19, 4, pp. 486-503.

13. LAFAY, G. (1992): The Measurement of Revealed Comparative Advantages. In: DAGENAIS, M. G. – MUET, P. A. (eds.): *International Trade Modelling*. London: Chapman & Hall, 1992. Pp. 209 – 234. ISBN 978-0-412450-00-6.

14. LAURSEN, K. (1998): Revealed Comparative Advantage and the Alternatives as Measures of International Specialisation. [Online.] In: *DRUID Working Paper No. 98-30.* [Cited 7.6.2015.] Available online: <http://www3.druid.dk/wp/19980030.pdf>.

15. MATURA, T. (2012): The pattern of Chinese investment in Central Europe. In: *International Journal of Business Insights & Transformation*, 2012, 5, 3, pp. 104-109.

16. MICHAELY, M. (1996): Trade preferential agreements in Latin America: an ex-ante assessment. [Online.] In: *World Bank Policy Research Working Paper 1583.* [Cited 10.6.2015.] Available online: <http://elibrary. worldbank.org/doi/pdf/10.1596/1813-9450-1583>.

17. MINONDO, A. (2010): Exports' quality-adjusted productivity and economic growth. In: *Journal of International Trade & Economic Development*, 2010, 19, 2, pp. 257-287.

18. PROUDMAN, M. – REDDING, S. (2000): Evolving Patterns of International Trade. In: *Review of International Economics*, 2000, 8, 3, pp. 373-396.

19. SEMOON, C. – GOFUSOVA, K. (2008): Two-way trade products between Korea and Slovakia. In: *International Economics and Finance Journal*, 2008, 3, 1, pp. 65-73.

20. SZIKOROVÁ, N. (2012): Development of the Chinese-Slovak economic relations. In: *Journal of US-China Public Administration*, 2012, 9, 12, pp. 1368-1376.

21. TSENG, S.-M. (2013): Trade flows between Czech Republic and East Asia. In: *Review of Economic Perspectives*, 2013, 13, 3, pp. 146-158.

22. UN – WTO. (2012): *A Practical Guide to Trade Policy Analysis.* Geneva: WTO Publications, 2012. 234 pp. ISBN 978-92-870-3812-8.

23. UNCTAD. (2015): *UNCTADSTAT.* [Online database.] Geneva: UNCTAD, 2015. [Cited 31.5.2015.] Available online: <http://unctadstat.unctad.org/>.

24. YU, R. – CAI, J. – LEUNG, P. (2009): The normalized revealed comparative advantage index. In: *The Annals of Regional Science*, 2009, 43, 1, pp. 267-282.

25. ZUOKUI, L. (2014): The analysis of China's investment in V4. In: *Current Trends and Perspectives in Development of China-V4 Trade and Investment*. Bratislava: Vydavateľstvo Ekonóm, 2014. Pp. 24-36. ISBN 978-80-225-3894-7.

APPENDIX A: Items with the highest unused export potential in mutual trade between the Visegrad countries and the Republic of Korea (additional statistics)

Table A1: Items with the highest unused export potential from Visegrad countries to the RoK

No.	Item	RCA_{V4}	RCA_{ROK}	M_{KOR}
1.	[713] Internal combustion piston engines, parts,...	3.11	0.94	0.56%
2.	[699] Manufactures of base metal, n.e.s.	2.47	0.79	0.73%
3.	[634] Veneers, plywood, and other wood, worked,...	1.71	0.04	0.19%
4.	[773] Equipment for distributing electricity, n.e.s.	2.69	1.04	0.52%
5.	[664] Glass	2.45	0.86	0.54%
6.	[625] Rubber tyres, tyre treads or flaps & inner tubes	3.05	1.63	0.10%
7.	[893] Articles, n.e.s., of plastics	2.03	0.62	0.33%
8.	[775] Household type equipment, electrical or not,....	2.50	1.17	0.20%
9.	[752] Automatic data processing machines, n.e.s.	1.59	0.46	1.09%
10.	[716] Rotating electric plant & parts thereof, n.e.s.	1.68	0.58	0.47%

Note: Items with the highest difference between Visegrad and Korean RCA in 2013 and negative balance of trade. Only those items with share on Korea's total imports of more than 0.1 % (last column of the table).
Source: Own calculations based on UNCTAD (2015).

Table A2: Items with the highest unused export potential from the RoK to Visegrad countries

No.	Item	RCA_{ROK}	RCA_{V4}	M_{V4}
1.	[793] Ships, boats & floating structures	8.30	1.28	0.88%
2.	[723] Civil engineering & contractors' plant & equip.	1.80	0.77	0.26%
3.	[611] Leather	1.26	0.52	0.24%
4.	[516] Other organic chemicals	0.48	0.20	0.14%
5.	[522] Inorg. chem. elements, oxides & halogen salts	1.20	0.93	0.38%
6.	[523] Metallic salts & peroxysalts, of inorganic acids	0.79	0.67	0.14%
7.	[672] Ingots, prim. forms, of iron or steel; semi-finis.	0.67	0.60	0.24%
8.	[792] Aircraft & associated equipment; spacecraft,...	0.32	0.31	0.30%

Note: Items with the highest difference between Korean and Visegrad RCA in 2013 and negative balance of trade. Only those items with share on Visegrad's total imports of more than 0.1 % (last column of the table).
Source: Own calculations based on UNCTAD (2015).

Business Environment

ATTRACTIVENESS OF THE VISEGRÁD REGION FOR TRADE AND INVESTMENT DEVELOPMENT: THE KOREAN PERSPECTIVE -

Sang-Hoon Nam[17]

Visegrád Group is named by four central Europe countries – Poland, Hungary, the Czech Republic and Slovakia. The interest for these countries is growing. Trade relation between South Korea and the Visegrád Group has increased dramatically since the change of regime in 1989 and the EU entry in 2004. The aim of this paper is to analyze and study the investment attractiveness of Visegrád 4 countries from the Korean perspective.

Key words: V4 region, Korea, trade, investment
JEL: F10, F21

1 INTRODUCTION

Visegrád Group is named by four central Europe countries which are consisted of Poland, Hungary, the Czech Republic and Slovakia. The interest for these countries is growing. The reasons for the interest of these countries is received can be largely divided into three. First, the political power of Visegrád Group within the EU may be enhanced through a strong political solidarity. After EU entry, these countries have a common policy like the policy of education, social, culture and science in all directions through the joint action. In particular, the joint response strategy in the course of allocation of European Structural Fund was quite useful. They were able to have their own political power like German, the British through overcoming against the political limitation of only one country within the EU. Second, they have emerged as an important co-workers to South Korea in the relation between South Korea and the EU, furthermore in international relations, because they have a national specificity. Before 1989, they had a friendly relationship with North Korea in the communist political system. After their transition in political system in 1989, they still have a close relationship with North Korea. There are very few countries that can affect North Korea. When Korea is well used to these countries, its relationship with North Korea in a more favorable will be able to evolve. Third, the economic reason is the greatest reason to attend in the global world. Economic growth in these countries for the change of regime in 1989 and the EU entry in 2004 is increasing remarkably. The continued economic growth and potential growth is regarded as one of the drivers of world economic growth. And they have recorded high economic growth rates as compared to other Central and Eastern Europe. Although economic growth slowed in 2009 cause of the European economic crisis, but it will be expected to record sustained economic growth in the future. Visegrád 4 countries are low compared to Western European income levels expressed as per capita GDP, economic structure also does not have it. However, since these countries join the European Union has achieved remarkable economic growth. Through this has been in high phase of these European countries, it was new growth engine of the European Union. The enhanced competitive position is clearly demonstrated in attracting FDI. Although the growth of FDI attraction was slow down cause of the European economy crisis, but FDI attraction of Visegrád from 2007 to 2012 continued to increase in size to attract FDI accounted for more than 10% within the European Union. Hungary and the Czech Republic in attracting FDI gross in 2012 were more than Italy, Germany and Austria, Poland was also more attracting a

---

[17] Pusan National University, EU Center, pnueu@pusan.ac.kr

lot of foreign capital than Greece and Denmark. By 2012, Hungary and the Czech Republic was the seventh and eighth scale of FDI attracted respectively in EU member states of 27 countries. Hungary and Slovakia have attracted the lowest appeared the scale of foreign investment in Visegrád, but the ranking is occupied by the EU member states in the middle.

Trade relation between South Korea and the Visegrád Group has increased dramatically since the change of regime in 1989 and the EU entry in 2004. South Korea's exports for four Central European countries increased about 30 times from 396 million dollars in 1993 to 11.8 billion dollars in 2013. South Korea's imports also increased from 91 million dollars to 1.9 billion dollars in the same period. For Poland, South Korea's exports increased from 240 million dollars in 1993 to 3.6 billion dollars in 2013, the imports increased 44 million dollars to 775 million dollars. In the same period, For Hungary, the exports increased from 83 million dollars to 2.1 billion dollars, the imports increased from 19 million dollars to 467 million dollars. For the Czech Republic, the exports increased from 57 million dollars to 1.7 billion dollars, the imports increased from 26 million dollars to 558 million dollars. For Slovakia, the exports increased from 16 million dollars to 4.4 billion dollars, the imports increased from 2 million dollars to 187 million dollars.

Recently, Visegrád Group countries are promoting the expansion of trade with Asian countries in order to alleviate excessive economic dependence on the EU. In particular, Hungary Orbán Viktor prime minister is pushing forth the 'Opening to the East' policy since his coming to power in 2010. The core of this policy includes the Asian market jointly entry through the opening common trade office and the improving SMEs competitiveness. South Korea is also strengthening mutual cooperation as the frist Korea-Visegrád foreign minister meeting held in July, 2014.

In this study, I want to look at the investments of South Korea to Visegrád countries, want to find the factors that inhibit for FDI and help for FDI. Based on this, I want to prospect for South Korea's investment to Visegrád Through separating the factors to promote the FDI and hinder the FDI. In Furthermore, I want to see the Korean enterprises entry to Visegrád. In addition, I want what factors should evaluate statistically prove how to affect the more impact on investment in Visegrád through an investment included factor analysis.

2 REGIONAL INVESTMENT AND IMPLICATIONS FROM KOREAN PERSPECTIVE
1. POLAND

Poland is one of South Korea's leading investment countries. By 2012, The total amount of South Korea's investment to Poland was 22 million dollars (new investment 4 cases) that it decreased by 59.6% to compare the previous year. By 2013, the new investments were total 6 cases that increased to compare the previous year, but they almost small scale investment and total amount was 21 million dollars. By 2013, the cumulative investment of $ 1.4 billion for Poland became the sixth place investment countries after the UK, the Netherlands, Germany, Ireland and France.

Table 1: Korea FDI for Poland, cases, million dollars

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*Total*
New Incorporation	16	12	1	9	5	4	6	146
Investment Amount	119	94	29	29	56	22	22	1361

Source: Korea Eximbank (2014)
* Total amount is from 1990 to 2013

Poland had carried out the role of the European manufacturing base of Korea after the change of political system from the communist system. Since the transition of political system, Korean investment was in earnest. Daewoo motors and its partners invested in Poland in 1995 and the amount of Korean investment for Poland recorded 440 million dollars from 1996 to 1998. The investment situation was improves in accordance with the EU entry of Poland, the large investment around electronic industry has been increasing steadily. While LG electronics and partners accompany entered in 2006, South Korea's investment recorded 220 million dollars in only 2005. Since 2008, the investments related on auto-parts that they were linked with Hyundai and Kia plant in the Czech Republic and Slovakia were concentrated in southern Poland. In addition, LG Display composed the produce complex in Wroclaw, Samsung Electronics acquired the biggest local electronics company, Amika. South Korea's investment has been actively conducted in recent years. South Korea's investments for Poland were made around a manufacturing facility investment and R&D investments are being actively carried out in recent years. Public investment projects in construction sector are taking place actively discussed.

The attractive business expansion sectors of South Korea's investments for Poland are infrastructure project, machinery automotive business, energy-related business and ICT business.

Infrastructure projects say that participating in a large-scale public projects market that put EU Funds. EU funds allocated five business infrastructure and environmental programs, smart development, knowledge and educational development, the eastern region development, technical support, and digital business in Poland. South Korea's enterprise will be able to enter in the field of broadband network, intelligent transportation systems (ITS), e-government, disaster prevention systems, e-learning, Smart City, power generation, water treatment, incineration plant and transport. Mechanical and automotive business is expected to boom in accordance with the main export target is the euro zone's economic recovery. The vehicle sales that Poland produces in the first quarter of 2014 increased 28.9% compared to the previous year. The global companies like Mercedes, BMW, Audi, Volvo located in Poland will be fierce competition, and the automotive industry will regain vitality. European economic recovery is expected to have a positive impact in recent, the production amount in 2015 will be expected to increase by approximately 3.7% from the previous year. Energy-related businesses can expect a project to replace outdated facilities in accordance with the demand generated carbon emission regulations. Poland have plans to invest about 9.8 billion dollars, In the future, power plant construction project orders and the expansion of transmission and distribution equipment demand will be expected to increase. They bury the current waste generation in Poland more than 73%, it is much higher than the EU average (38%), waste incinerator project is also expected actively. The landfills are operated in 527 places in Poland, the total area of the landfill amounts to 2,197ha in 2012. Waste project for companies is to sell electricity generated during the waste treatment, Price is guaranteed a minimum average electricity prices last year. The ICT industry in Poland is expected to have a share of over 10% of GDP in 2020. Polish government is building an Internet environment for all citizen to use the Internet as a 30MB/s or faster until 2020. ICT market is 15.7 billion euros in 2012, accounting for 7.9% of GDP and is expected to increase to 15% within 10 years. LG has been producing the relevant products from local factories.

There are two kinds of South Korea's point to keep in mind about investing in Poland. First, Poland has a deviation of regional transport infrastructure. In Poland, the proportion of road transport raw materials and finished goods transport accounted for 83.5%, but the country is still in the construction phase for the highway network connecting. Except for the southwest region where FDI is concentrated, mostly one-lane road pavement is in poor condition. It should be considered highway construction plan when selecting an investment

location. Second, the labor cost in Poland is rapidly rising in recently. Though Poland is highlighted as the production base due to the relatively low wages in Europe, but it had recorded a steep wage increase of 12.5% from 2008 to 2011. The determining factor for investment with attractive wages will disappear in the future.

Table 2: South Korea's major company in entry to Poland

Company	Field	Product	TYPE	Entry Time
POSCO (Contruction)	Contruction /Engneering	Plant	Sole Venture	2013
KT	IT	IT Network	Sole Venture	2013
MANDO	Motors	Auto-parts (brake system, steering system)	Sole Venture	2011
SAMSUNG Elctronics	Elctronics	Refrigerator, Washer	Sole Venture	2010
SHINCHANG Electrics	Motors	Auto-parts (Engine)	Sole Venture	2008
Dae Won Kang Up	Motors	Auto-parts (Suspension)	Sole Venture	2008
POSCO	Steel	Sheet metal processing	Joint Venture	2007
HUISEONG Electronics	Electronics	LED module, Panel	Sole Venture	2006
LG Display	Electronics	LCD Panel	Sole Venture	2005
LG Electronics (Wroclaw)	Electronics	LCD TV, Refrigerator	Sole Venture	2005
Humax	Electronics	Set-Top Boxes, Digital TV	Sole Venture	2004
LG Electronics (mlawa)	Electronics	LCD, PDP TV	Sole Venture	1999

Source: KOTRA (Korea Trade-Investment Promotion Agency) (2013)

South Korea will need to approach strategically to increase investment in South Korea's investment for Poland.

First, it should be actively used as an investment policy in Poland. Polish government has implemented tax cuts over the investment program since 2011, and actively attract foreign investment. Poland can receive cash assistance because Poland is the largest recipient of EU fund, it acts as investment attractiveness of Poland. However, complex procedures and slow administrative process is pointed out as an obstacle for foreign investment, high exchange rate volatility of the zloty has been pointed out improvements. Second, it is necessary to build its own brand. South Korea's image has been improved because the companies of South Korea perform a brilliant exploit in Poland. LG, Samsung enhanced the corporate image through social contribution activities, Hyundai and Kia implemented aggressive marketing activities such as a 5-7 years long-term guarantee program and Euro 2012 sponsorship. The consumers in Poland are focused on brand value and purchasing experience in the case of SMEs with low awareness. It will be formed its own brand image while the companies leverage the Korea's

national brand. Third, it must establish a local network for competitiveness. Japan already has 110 companies had entered the local before Poland has joined the EU in 2004, the investment size was more than doubled by 2010. Though China is a second mover, but it is preparing a full-scale expansion based on the rich capital. It has been dominating the low-cost market to deal with local companies focused on cost savings after the financial crisis. Thus it points to obtain the advantage against the active expansion of competitors, it seems to be focused on cooperation and follow-up with local businesses through the branch established.

2. HUNGARY

By 2013, the cumulative amount of South Korea's investment for Hungary was aggregated about 531 million dollars, advancing companies were aggregated about 45. Since 2009, the size of South Korea's investment for Hungary was bigger than Japan's, it recorded a cumulative investment over 1 billion euro in 2012.

Table 3: Korea FDI for Hungary, million dollars

2009	*2010*	*2011*	*2012*	*2013*
780	895	804	863	1,048

Source: THE CENTRAL BANK OF HUNGARY (Magyar Nemzeti Bank), June, 2014
* Based on the stock, Except (Special Purpose Entities)

South Korea's Investment for Hungary was done mainly in manufacturing and financial services. 62% of the cumulative investment is concentrated in the manufacturing industry by 2013, in the case of financial investments, it is identified as the most KDB (Korea Development Bank) Europe. Samsung Electronics accounted the biggest local TV market share in 2000, they had surpassed 50% market share in 2012, it was the second plant expansion in 2007, a third plant was completed in 2014. Hankook Tire holds a 63th rank in the list of the biggest companies in Hungary, it was entering in the local 100 companies, it became the 47th companies in 2012. A trading name of KDB was changed to KDB Europe after the Hungarian corporation founded in 1990, and they made a plan to establish a new branch in Romania, Croatia and Greece until 2018.

The attractive business expansion sectors of South Korea's investments for Hungary are machinery and automobile industry, medical and pharmaceutical business, R & D projects.

The proportion of Hungary's automotive industry accounted for 18% of manufacturing output, 10% of GDP, and 18% of exports. It has grown steadily to compare the previous year by 13.4% in 2013. 116 thousand workers are working in 712 companies. Hungarian major car makers such as Audi, Mercedes, Opel and Suzuki employed 2,600 new workers in only 2013. When the companies of South Korea entered to Hungary, it should be considered to enter into auto parts supplier because Hungarian government is pursuing a policy to foster SMEs supply parts to foreign car makers. HVCC(Halla Visteon Climate Control Corp) Hungarian subsidiary has taken the type of an operating mode of delivery and production of auto parts at the local.

Medical and pharmaceutical industry of South Korea is recognized for excellence in Hungary. It is considered to attract one of FDI three sectors with auto industry and electronic industry. The conformity assessment costs for development of new drugs was the cost of just one-fifth to compare with Western Europe. It can also operate the hospital for foreigners. Pharmaceutical companies in South Korea are expected to expand into Europe through Hungary, such as the case that Celltrion entered the European pharmaceutical market according to the data of Hungarian Investment Promotion Agency.

Finally, it seems that investment in R & D sector is actively done to take advantage of the excellent human resources of basic science and network actively. NST (National Research

council of Science & Technology) was signed research collaboration MOU with HAS(Hungarian Academy of Sciences) in 2009. It is expected to increase scientific and technological capabilities through the joint venture and be available this entry based on joint research practices, because the Hungarian government's policy incentives are granted to the R&D sector.

Table 4: MOU of South Korea – Hungary in R&D

| FIELD | PERIOD | INSTITUTE | |
		KOREA	HUNGARY
Nuclear Power	2012.12 ~ 2015.12	Korea Atomic Energy Research Institute	Hungarian Academy of Science Centre for Energy Research (EK)
Nuclear Fusion	2011.9 ~ 2014.8	National Fusion Research Institute	KFKI Research Institute for Particle and Nuclear Physics of the Hungarian Academy of Sciences
Nanotechnology	2013.12 ~ 2016.12	Korea Research Institute of Standards and Science	The Institute of Technical Physics and Materials Science (MFA)
Biotechnology		Korea Research Institute of Bioscience and Biotechnology	Institute of Enzymology Biological Research Centre of the Hungarian Academy of Sciences (IE)

Source: KOTRA (Korea Trade-Investment Promotion Agency) (2014)

There are two kinds of South Korea's point to keep in mind about investing in Hungary. First, the revision of the tax system is too frequent. The administrative costs of the tax are experiencing excessively cause of frequent revisions of the tax system. It seems to actively use the local workforce in Hungary in order to adequately deal with the tax system revision, it also should be checked frequently through the local accounting firms that the tax system is changed. Another difficulty arises when local company of South Korea hire Korean workers. When the companies of South Korea hire foreign workers in Hungary, they have to submit a "the reasons for they do not hire Hungarian workers" and should be approved by the Hungarian government.

I want to present two kinds of strategies to increase South Korea's investment for Hungary. First, South Korea should take advantage of the Hungarian government's policies for trade diversification to seek to expand cooperation in Asia. Hungary is a European production base for assembly of a multinational company, according to the EU economic situation, the foreign trade structure has to change. In 2012, South Korea has become the fourth largest Asian trading partner of Hungary after China, Japan, Singapore. Hungarian government has focused on cooperation with South Korea, which specifically hopes to expand agricultural trade and networking between SMEs. Prime Minister Orbán in Hungary was visiting Japan in November 2013, China in February 2014, but the summit with South Korea does not yet have been arranged. The second strategy is to participate in the possible large scale project that can be supported financially and associated entry. In the case of Hungary's railway expansion project, the two countries China and Hungary have established a partnership such as a joint venture between national railway companies. In the case of Japan, the association was made by local entered car manufacturers, and Japan has strengthened ties

with Hungary through a strategic cooperation agreement. South Korea's Investment for Hungary should be made of a large joint investment than small sole investment.

3. THE CZECH REPUBLIC

South Korea's entry for the Czech Republic was made in earnest since the mid-2000s. It led the entry accompanied by the relevant manufacturers since the entry of Hyundai Motors and Sungwoo Hitech by 2005. The total investment amount of South Korea's investment for the Czech Republic is 1.1 billion and 70 million dollars, including incentive benefit amount is 1.6 billion dollars and 40 million dollars. Even the investment was dropped since 2009, but it has been rebounded recently. The investment for Czech Republic is a growing trend, for example, Korean Air had acquired a 44% stake of CSA Czech Airlines and GS Caltex had established a factory by 2013.

Table 5: Korea FDI for the Czech Republic, million dollars

2009	*2010*	*2011*	*2012*	*2013*
94	13	12	3	118

Source: Korea Eximbank (2014)

South Korea's investment for the Czech Republic is particularly concentrated in manufacturing. Manufacturing investment is to 1 billion and 90 million dollars accounting for 93.2% of the total investment for the Czech Republic. Recently, this focus has continued. Nexen Tire has invested 1.1 billion and 40 million dollars to the Czech Republic by June, 2014. Nexen Tire Europe new plant which is built on approximately 65 million square meter site of the Czech Žatec area will start the first operation in 2018 after the investment approval and licensing procedures. Nexen Tire invested in the Czech Republic in order to expand tire sales according to increase of European market demand and sustainable tire supply to global automotive manufacturers such as Volkswagen and Skoda.

The attractive business expansion sectors of South Korea's investments for the Czech Republic are auto parts industries, nuclear and relevant equipment industries, and chemical industries.

Growth of the auto parts industry is expected by the economic improvement and increased car production. There are many global auto parts primary vendors and global automotive companies such as Hyundai Motor, Skoda and TCA in the Czech Republic. As well as, about 50 companies of the Global 100 auto parts companies selected by Automotive news hold manufacturing plants or branches in the Czech Republic. The total car production in the first half of 2014 is 637,000. That is increased 10.3% YoY. Sales volume also records 40,000 increased 19.8%. The local sales volume of Hyundai Motor in 2013 was also ranked 2nd ahead of Volkswagen. The expansion of South Korea's auto parts makers is expected because Korean auto parts are very popular in the local.

It is expected that South Korea's companies enter the Czech nuclear power industries. There are total 6 units of Czech nuclear power plant (Dukovany 1 ~ 4 group, Temelin 1,2 group) and the Czech government has announced plans to expand nuclear power generation over the next 50 years the proportion from 80% to 90%. Czech President referred that South Korea would participate in a tender of new nuclear power plant construction after CEZ(the Czech Power Company) canceled Temelin nuclear power plant No. 3,4 bid processing in progress. It seems that participation of South Korea is viable. The accompanying expansion of KEPCO(Korea Electric Power Corporation) and nuclear power-related equipment manufacturing companies is expected as South Korea's ministry of industry and trade signed a comprehensive energy cooperation MOU with the Czech ministry of trade and industry in the Korea-Czech Nuclear Forum by June 2014. The demands for equipment maintenance of 6

nuclear power plants also are expected to be substantial. Most central European countries have been expanding the nuclear power proportion. Since South Korea's investment entered the Czech Republic, the investment is expected to expand to neighboring countries.

The chemical industry is the proportion of 14% of the Czech manufacturers. It is expected to rise vehicle related chemical product demand depending on the vehicle production surged in the first half by 2014. South Korea exported chemical products recorded 140 million dollars for the Czech Republic by 2013. it increased 8.2% YoY and expected continued growth of the main export items of rubber and plastic products demand.

Korea should note that it is opaque administration of public institution in the Czech Republic. Administrative transparency of the Czech Republic is low about 57th country of the 177 countries on the mere in the CPI(Corruption Perceptions Index) that TI(Transparency International) has released by 2013. Public procurement, subsidies related administration is opaque and communication is not smooth. It may act as an investment obstacles when Korea enter into the Czech Republic.

Despite this problem, the Czech investment for Korea is expected as well as Korea's investment for the Czech. The cooperation of the two countries is expected through enable mutual expansion. South Korea is discussed the bidding participant Temelin nuclear power plant in April 2014, Nexen Tire has invested a large scale in the Czech Republic in June and Hyundai Mobis is also considering a second factory established in Mosnov area. In place of meeting with business partners in Korea and officials in Seoul, Candidated Czech prime minister, Bohuslav Sobotka and president of CzechInvest, Karel Kučera announced the establishment of CzechInvest's branch office in Korea by 25th February 2015. Czech Ministry of Trade Industry Minister Jan Mládek said the reason for entering the Czech Republic Investment in Korea, and he said "Due to the successful promotion relationship with South Korea and strong investment potential of this country, we need to establish Czechinvest branch office in South Korea."

4. SLOVAKIA

Slovakia accumulated investment amount is 1.2 billion dollars, corporation establishment has recorded 99 cases in March 2014. The accompanying expansion of the supplier related with the subsidiaries of Samsung Electronics and Kia Motors accounts for the majority. Slovak foreign minister also mentioned that Korea was the most important investor in non-European countries in the foreign ministers meeting of Korea and Slovakia by July 2014. After Kia Motors has built a plant in the northwest Region of Zilina near the Czech Republic border by 2004, major primary vendors such as Dongwon Metal, HCC (Halla Climate Control), Hyundai Mobis and Sungwoo Hitech were advancing in Slovakia. It shows a synergistic effect In conjunction with the Czech Republic for investment of Hyundai Motors in 2006. Czech Nosovice factory established by Hyundai Motors is located in 85 Km distance from Zilina in Slovakia and the factory is possible to cross-product. As following advancing accompanied by the relevant primary and secondary vendors, Hyundai Motors, Kia Motors and its about 100 partners entered and formed a production cluster in Slovakia currently surrounding area.

Table 6: Korea FDI for Slovakia, million dollars

2009	2010	2011	2012	2013
53	22	31	212	16

Source: Korea EXIM BANK (2014)

The attractive business expansion sectors of South Korea's investments for Slovakia are auto parts industries like the Czech Republic. There are three automobile companies like

Kia Motors, PSA(Peugeot-Citroen) and Volkswagen, and a number of global major auto parts primary vendors in Slovakia. Global auto parts companies such as Johnson Controls, Faurecia and Magna entered in the local, and South Korea's auto parts companies such as Hyundai Mobis and Hanil Ewha accompanied by Kia Motors entered in 2004. Car productions in Slovakia were 975,000, and increased 5.4% YoY. However, car sales were 66,000, and decreased 4.7% YoY. Slovakia automotive industry accounts for 23% of total manufacturing and this market is expected to grow in the future. In addition, the Korean auto parts are getting a good reputation in the local, as in the case of the Czech, the investment expansion of the South Korea's auto parts companies is expected.

There are two kinds of South Korea's point to keep in mind about investing in Slovakia. First, the interpreter human resource and translator human resource are lacking in Slovakia. Currently, there is almost no professional Slovak translator unlike the Czech. Because Korean residents who can speak fluent Slovak are also very small, many companies are struggling with the problems about interpreting when they are entering in local businesses to arrange interviews with the Slovak. The other is the opaque public administration by bureaucracy. According to the 2013 CPI (Corruption Perceptions Index) of TI, Slovakia stayed on 61th rank that was lower 4 steps than the Czech Republic. Even after entering the market economy, the unique former communist bureaucracy remains. It has become an obstacle to investment of South Korea's companies and local Korean residents.

Table 7: Status and Implications South Korea's Investment for Visegrád

	POLAND	*HUNGARY*	*CZECH*	*SLOVAKIA*
Existing Korea Investment	Automotive, electronics	Manufacturing and finance	Manufacturing	Manufacturing (Automotive)
Promising investment industry	(1) Infrastructure (2) Mechanical and Automotive (3) Energy	(1) Mechanical and Automotive (2) Medical and pharmaceutical (3) Science and Technology R&D	(1) Automotive Parts (2) Nuclear Power Plant and Equipment (3) Chemistry	(1) Automotive Parts
Investment obstacles	(1) Transport infrastructure deviation (2) rapid wage increase	(1) Frequent revision tax system (2) The foreign worker recruitment difficulty	(1) Public institutions opaque administrative	(1) Lack of translation human resource and interpretation human resource of Slovak (2) Public institutions opaque administrative
Investment Strategy	(1) Investment incentive policy leverage (2) Establishment own brand (3) Building local networks	(1) Government policy leverage for trade diversification (2) Large investment projects with financial support or advance accompanied	(1) Mutual investment	(1) Bridgehead in the European market

However, Slovakia has still greater strategic importance to South Korea. Other Asian

countries (especially Japan and China) did not actively enter in Slovakia. If Korea expand the investment scale and influence over Slovakia, it can be used as a bridgehead for the European market in the future. Slovakia's production level is the highest level of automotive production in Europe. Thus this cooperation to be promising South Korea's investment around the automotive industries is expected.

South Korea's Investment for Visegrád 4 countries is most closely associated with the automotive industry. Because current competitiveness of Visegrád 4 countries is in manufacturing, it is particularly focused on the automotive business. It is a natural phenomenon that South Korea's Investment focused on the automotive industry. I Suggest two strategies to increase investment in South Korea. One is the concentration of the investment. South Korea's investment will be increased by focusing on the existing manufacturing (especially automotive and electronics). It will be able to induce additional investment of existing auto parts manufacturers or new investments in the new auto parts makers. It is expected in the electronics to be also actively attracted the investment of SMEs in South Korea, as well as the investment of large companies. Another one is the diversification of investments. Current South Korea's investment for Visegrád is concentrated in the manufacturing industry. Therefore, diversification of the investment project is directly connected to the investment expansion. The scale of investment is insufficient while it is seeking diversification of the business in the parts of chemical, finance and R&D depending on national circumstances in Visegrád. The competitiveness of Visegrád 4 countries should be identified for investment expansion through diversification. Various factors exist in order to attract investment, and it should be identified the regional competitiveness on the basis of these factors. As a result, it is necessary to connect the investment. I will understand the determinants of investment required in this study, and analyze the determinants.

3 MODEL AND ANALYSIS
3.1 PRECEDENT STUDY FOR THE DETERMINANTS OF INVESTMENT

The most widely utilized theories in relation with FDI are 'Market Imperfection hypothesis'(Hymer, 1976), 'International theory'(Rugman, 1986) and 'Eclectic approach'(Dunning, 1988) to compromise by the two theories. According to this theories, UNCTAD(United Nations Conference on Trade and Development) has the motivation to distinguish between multinational companies seeking to invest directly in other countries largely into five. They are market seeking, efficiency seeking, resource seeking, created asset seeking and technology seeking.

Market seeking investment refers to investment for companies to pursue profit through entering the market which competition is not more severe, and the growth rate is relatively faster than the home country. Multinational companies prefer to invest in this type that the growth rate of economic is fast and the trade barriers of trade are high. This type of the investment is increased when the host country is favorable to FDI. Efficiency seeking investment refers to the company's investments to minimize costs to use the competitive if the companies are held by a relatively competitive in the field of business activities. For example, if some companies specialized in manufacturing, it is efficiency seeking investment that the companies are pursuing a profit through entering the relatively lower cost and minimizing the cost. In this case of investment, the investment decisions of the host country is an important determinant. Created asset seeking investment refers to investment for the acquisition of companies and assets in the local. The companies of home country acquire the companies and assets in the local, after they let the companies rebirth and converted into a high feasibility for high-margin business or assets in to new company, they are pursuing a profit through resale the companies and assets in the local. In this case of investment, development in financial market is an important determinant. Resources seeking investment refers to investment in

order to obtain the natural resources of the host country. In this case of investment, the scale of natural resources, the government's attitude and the government regulations are important determinants. Technical seeking investment refers to investment to expect for the technology improvement and innovation by investing in countries with a more advanced technology than the domestic. This investment appears to acquire the company of developed countries has the high superiority of developed countries.

Various factors such as market size, cost, resource size, skill levels, wage levels, the degree of financial market development, government support and regulation affect the investment in the determine. The report of UNCTAD had introduced these variables, Reiljan(2001) organized these variables in the investment attraction analysis.

Table 8: UNCTAD Investment Incentive Factors

Investment objective	Economic Determinants	Policy Determinants	Other Determinants
Market Seeking	* Nominal GDP * GDP per capita * Economic Growth * The preceding FDI * Real wages * Production costs * Transportation costs * Infrastructure costs and import restrictions	* Ownership Policy * Price controls * Currency convertibility possibilities * standards of FDI performance * Market access restrictions * Other sector controls	* Geographical location * Cultural location * Language differences * Population * Rules of Origin * Country-specific consumer * Preferred structure
Efficiency Seeking	* Inflation * Exchange rate * Real wages * Savings * Domestic investment * Production costs * Infrastructure * Transportation costs * The preceding FDI	* Market access restrictions * Ownership restrictions * Taxes and subsidies * Price controls * FDI Performance Standards * FDI incentives * Trade Agreements * Environmental protection obligations	* Geographical location * Quality of the labor force availability * Parts and materials suppliers
Resource Seeking	* Natural resource prices * Infrastructure * Transportation costs * Domestic investment	* Foreign Investment Incentives * Foreign investment restrictions	* The existence and quality of resources
Technical Seeking	* The presence and quality of infrastructure * R & D scale and quality	* Intellectual Property Protection * FDI incentives and constraints * Investment risk * Innovation Policy	* Patent * Trademark

Gric & Babic (2003) analyzed for the factors that determine the investment attractiveness of Eastern European transition countries. They analyzed to use of the OLI (Ownership, Locational and Internationalization advantage) theory by Dunning. They made a model for the attractiveness of investment flows of 15 transition countries. In this study, they

analyzed the FDI determinants to affect the transition countries. 15 transition countries were classified by very low, medium-low, medium, medium-high, high and very high as depending on the investment attractiveness. The results that Hungary was the most attractive, and Bosnia was the worst attractive among those countries were analyzed.

Maksymiuk (2006) evaluated the FDI attractiveness of the Polish Automotive Industry. In this study, various factors such as the per capita FDI inflows, low transaction cost, low investment risk, the development of capital markets and property ownership recognized, high levels of R&D, the development of infrastructure, freedom of the economy, lower market entry barriers, system to encourage the spirit of enterprise and innovation, huge domestic market, development and political and social stability in Poland attracting foreign investment in Polish automotive industry was analyzed. Some of these factors such as workers in the working attitudes, quality professional workers of scale, participation in the European market, sustainable economic growth, high production levels and the degree of development providers in Poland were analyzed to increase the investment attractiveness of the Polish automotive industry.

Glass & Saggi (2004) analyzed how the wage and labor supply impact on foreign investment incentives. In this study, those countries that the level of wage increased and the level of labor supply per company decreased were analyzed by low attractiveness for incentive FDI.

3.2 RESEARCH METHOD

There are some points to consider while analyzing the regional investment attractiveness.

First, the investment environment and investment attractiveness should be clearly separated. In the paper of the Cho. Young-Gwan et al.(2010), They said the difference between the investment environment and investment attractiveness " Investment environment may include a variety of sectors related to politics, economy, society, and culture of a country. Compared to Investment environment, the investment attractiveness is a bit narrower concept focusing on sectors with more investment is directly related.". Based on this, I want to analyze and study the investment attractiveness of Visegrád 4 countries. Second, the choice of variables or factors may appear different in according to the motivation to cause investment. For example, the selection of the factors in accordance with the market seeking investment should be different from the selection of the factors in accordance with the resource seeking investment. It should be selected the required variables to distinguish investment motivated. Finally, It is necessary to analyze of the distinction the variable to attract investments and the variables to disturb investment.

It should be classified and derived the factors to attract foreign investment in according to the investment motive. It should derive the incentive investment variables in considering all of the variables included in the previous studies. Analysis method of classifying and optimization of these variables will be used the method of the Cho. Young-Gwan et al.(2010) because the most investment incentive variables provided by the research investment motivation is included in the method of that.

Factor analysis shown in Cho. et al (2010) was found to have four types.

The first factor analysis are the economy and policy. There are three significant factors in order to analyze the market seeking investment incentive environment. They are Macro-economic and market factors, industrial structures and elements market factors, and policy factors. In macro-economic and market factors, there are variable factors such as GDP size, per capita GDP, growth and inflation. The FDI will increase as the market size is lager and more rapidly growing in the presence of the existing FDI local. The FDI will increase as the level of the open market is high in industrial structure and elements market. The investment

also increases as a society overall by the increase in spending power as increased the proportion of the emerging middle class. Finally, There are variable factors in Policy factor analysis such as development of the private sector, business activities and business environment. The second factor analysis is the infrastructure. There are various factors to analyze the infrastructure such as transport and logistics infrastructure, communication infrastructure, power and energy infrastructure, and educational infrastructure. Infrastructure can be the investment incentive factor when the infrastructure is well equipped because companies can maximize profits through the reduction of production costs and transport costs. The Third factor analysis is the law and the system such as employment system, tax system and the guarantee of foreign investor rights. The fourth factor analysis is the natural resource.

Economic structure and economic policy factors are basically associated with the market seeking. And it can be analyzed as a factor based on the basis of the stability or reliability that can determine the growth potential. Economic and policy factors can be divided into macro-economic and market factors, industry structure and element market factors, and policy factors.

Table 9: Economic and policy factor analysis

Investment incentive factors	Related variables
Macro-economic and market factors	GDP scale GDP per capita Growth and inflation Amount of investment, Ratio of investment, consumer spending and the emerging middle class Foreign economic sector (including exchange rates) Urban and rural areas Population structure
Industry structure and elements market factors	Industrial and production structure Labour Market and Productivity Financial markets
Policy factors	Economic Development Plan and Vision Trade and Industrial Policy Business Environment Stability and reliability of the policy

Table 10: Infrastructure factor analysis

Investment incentive factors	Related variables
Transportation and logistics factors	Road, Rail, Air, Port
Communication infrastructure factors	Wired communication, Wireless communication, Internet and broadband network
Power and energy infrastructure factors	Production and equipment, Transmission and distribution
Education infrastructure factors	Educational facilities and education level, Professional vocational education

Infrastructure factors are consisted of Transportation and logistics, communication, power and energy, and an educational infrastructure. Transport and logistics infrastructure is composed of factors such as railway, road and air.   Communication infrastructure is

composed of wired communication, wireless communication, internet and broadband network. Power and energy infrastructure is composed of power generation, generation unit, transmission, distribution and so on.

Law and system is the most influential factor in foreign investment. Employment system factor is represented by variables related to the working conditions, Tax system factor is represented by variables related to tax items and tax treaties. Foreign investor rights guarantee factor is represented by variables related to repatriation, legal changes and so on.

Table 11: Law and system factor analysis

Investment incentive factors	*Related variables*
Employment system factors	Probationary period, Wages, Severance pay, Vacation system, Requirements type contract of employment, Working time, etc.
Tax system factors	Tax items, Tax treaties
Foreign investor rights guarantee factor	Repatriation, Legal changes, foreign investment benefits and incentives

Natural resources conditions are factors that can be considered whether any countries have resources to be able to invest and develop. These types of resources are resources such as energy resources, mineral resources, agricultural resources and so on. The government policy for natural resources development is one of important factors.

Table 12: Natural resources factor analysis

Investment incentive factors	*Related variables*
Natural resources conditions factors	Energy resources, The reserves of mineral resources, Resource development policies, Agriculture, etc.
The government policy for natural resources development factors	Resource development participation possibility

Looking at the previous studies, it seems to be best to use variables of Cho et al. (2010) and represented distinctions by UNCTAD such as market seeking, efficiency seeking, resource seeking, created asset seeking and technology seeking. However, the South Korea's investment for Visegrád 4 countries has less relationship with resource seeking and asset seeking as seen other studies. Thus, I will attempt to analyze the investment by focusing on market seeking and efficiency seeking in a macro perspective.

3.3 ANALYSIS MODEL
(1) GRAVITY MODEL

I used the gravity model in this study. The definition of the gravity model in international economics is that the trades between two countries have relationships in proportion to the economic size and inversely proportional to the distance of the two countries. The gravity model was applied to express the gravity equation relating to FDI between the two countries as follows.

$$FDI_{ki,t} = A \frac{Y_k Y_i}{dist_{ki}}$$ …Equation (1)

FDIki,t = Amount of South Korea's investment for I country
Yi,t = Income of I country
Yk,t = Income of Korea
distki = Distance of Korea and I country

$$\ln FDI_{i,t} = \alpha + \beta_1 \ln Y_{k,t} + \beta_2 \ln Y_{i,t} + \beta_3 \ln DIST_i + \varepsilon_{i,t}$$ …Equation (2)

For the purposes of an empirical analysis, this gravity equation is expanded like Equation (2). Although gravity equation is an expression that describes the trade flows between the two countries, in this study the application of the basic gravity equation was applied to the direct investments between the two countries. The gravity equation can be expanded in various ways for the purposes of an empirical analysis. It can be added to other variables which would have an impact on FDI estimated as well as default parameters such as the distance and income.

(2) PANEL MODEL

Regression models in this study used two ways of Fixing Effect and Random Effect. Equation (3) and Equation(4) are Fixed Effect Models, and the Equation(5) and Equation(6) are Random Effects Models.

<FDI Fixed Effect Model>

$$\begin{aligned}
\ln FDI_{ki,t} = &\alpha + \beta_1 \ln GDP_{k,t} + \beta_2 \ln GDP_{i,t} + \beta_3 \ln |GDPDif_{ki,t}| \\
&+ \beta_4 \ln IFR_{k,t} + \beta_5 \ln IFR_{i,t} + \beta_6 \ln |IFRDiff_{ki,t}| \\
&+ \beta_7 \ln WAGE_{k,t} + \beta_8 \ln WAGE_{i,t} + \beta_9 \ln |WAGEDiff_{ki,t}| \\
&+ \upsilon_{ki} + \mu_t + e_{kit}
\end{aligned}$$ …Equation (3)

$$\begin{aligned}
\ln FDI_{ki,t} = &\alpha + \beta_1 \ln \frac{GDP_{k,t}}{POP_{k,t}} + \beta_2 \ln \frac{GDP_{i,t}}{POP_{i,t}} + \beta_3 \ln \left| \frac{GDP_{ki,t}}{POP_{ki,t}} Diff_{ki,t} \right| \\
&+ \beta_4 \ln IFR_{k,t} + \beta_5 \ln IFR_{i,t} + \beta_6 \ln |IFRDiff_{ki,t}| \\
&+ \beta_7 \ln WAGE_{k,t} + \beta_8 \ln WAGE_{i,t} + \beta_9 \ln |WAGEDiff_{ki,t}| \\
&+ \upsilon_{ki} + \mu_t + e_{kit}
\end{aligned}$$ …Equation (4)

<FDI Random Effects Model>

$$\begin{aligned}
\ln FDI_{ki,t} = &\alpha + \beta_1 \ln GDP_{k,t} + \beta_2 \ln GDP_{i,t} + \beta_3 \ln |GDPDif_{ki,t}| \\
&+ \beta_4 \ln IFR_{k,t} + \beta_5 \ln IFR_{i,t} + \beta_6 \ln |IFRDiff_{ki,t}| \\
&+ \beta_7 \ln WAGE_{k,t} + \beta_8 \ln WAGE_{i,t} + \beta_9 \ln |WAGEDiff_{ki,t}| + \beta_{10} \ln Dist_{ki} \\
&+ \upsilon_{ki} + \mu_t + e_{kit}
\end{aligned}$$
…Equation (5)

$$\begin{aligned}
\ln FDI_{ki,t} = &\alpha + \beta_1 \ln \frac{GDP_{k,t}}{POP_{k,t}} + \beta_2 \ln \frac{GDP_{i,t}}{POP_{i,t}} + \beta_3 \ln \left| \frac{GDP_{ki,t}}{POP_{ki,t}} Diff_{ki,t} \right| \\
&+ \beta_4 \ln IFR_{k,t} + \beta_5 \ln IFR_{i,t} + \beta_6 \ln |IFRDiff_{ki,t}| \\
&+ \beta_7 \ln WAGE_{k,t} + \beta_8 \ln WAGE_{i,t} + \beta_9 \ln |WAGEDiff_{ki,t}| + \beta_{10} \ln Dist_{ki} \\
&+ \upsilon_{ki} + \mu_t + e_{kit}
\end{aligned}$$
…Equation (6)

FDIki,t = South Korea's investment for I country by t year
GDPk,t = South Korea's nominal gross domestic product by t year
GDPi,t = I country's nominal gross domestic product by t year
GDPDiffki,t = GDP difference between South Korea and I country by t year
IFRk,t = South Korea's amount related to infrastructure by t year
IFRi,t = I country's amount related to infrastructure by t year
IFRDiffki,t = Infrastructure difference between South Korea and I country by t year
WAGEk,t = Average wage in South Korea by t year
WAGEi,t = Average wage in I country by t year
WAGEDiffki,t = Wage difference between South Korea and I country by t year

Fixed Effect Model is regression analysis model that the error term is regarded as the parameter to be estimated. The Fixed Effects Model used in this study is Two-way Error Component Model to divide the error term into three parts as follows.

$$\epsilon_{ki,t} = \upsilon_{ki} + \mu_t + e_{ki,t}$$

υ_{ki} = country pair fixed effect

μ_t = year fixed effect

υ_{ki} control the properties of the groups which are not observed, μ_t control the properties of time which is not observed. 'Distance' having the same value per year is not estimated because the factors are differentiated in order to control the non-observed factors. Both υ_{ki} and μ_t are estimated as parameter in the Fixed Effect Model, on the other hand, they are assumed the random variables in the Random Effect Model. Two-way Random Effects Model is more efficient estimator since there is no additional loss of the degree of freedom unlike the Fixed Effect Model. In addition, there is an advantage that description variables which do not be changed as the time can also be estimated. But, there is a limit that it is possible to obtain a consistent estimation for β under only the condition that the explanatory variables are exogenous variables in terms of the error term. In this study, I used all the variables taking the natural logarithm (ln, Log of Nature). The estimated parameters can be interpreted as the elasticity.

(3) EMPIRICAL ANALYSIS

The purpose of the South Korea for investment in Visegrád can be largely divided into two kinds. It may look into Market seeking for the purpose of the pursuing European market and Efficiency seeking for the purpose for the cheap labor. The factors that may cause market seeking and efficiency seeking are classified as economic factors, political factors and other factors. In this study, focused on economic factors, I analyzed that Visegrád FDI attraction factors of each country take an impact on certain economic factors by the application of gravity model. It was set up parameters on the basis of the economic factors of the investment incentives of the UNCTAD report in 2006.

The parameters such as GDP, CPI in economic factors of Market Seeking were used, they such as exchange rate, money supply and saving rate in economic factors of Efficiency Seeking were used. Quarterly data of the OECD from 1996 to 2013 were used to the analysis. The model was used for AR(1) model because there is autocorrelation, some parameters are derived because there is multicollinearity.

Table 12: Parameters Explanation

Parameter	Explanation
DIFF(KR_FDI_L,1)	Outbound FDI of South Korea
DIFF(*_GDP_L,1)	GDP of each Visegrád country
DIFF(*_CPI_L,1)	CPI of each Visegrád country
DIFF(CUR_L,1)	Money supply of each Visegrád country
DIFF(PPP_L,1)	PPP of each Visegrád country
DIFF(SAV_R_L,1)	Saving Rate of each Visegrád country
DIFF(SAV_A_L,1)	Amount of Saving of each Visegrád country
DIFF(KR_GDP_L,1)	GDP of South Korea

<Poland>

Coefficient a						
Model		**Non standardized coefficient**		**Standardized coefficient**	**T**	**p-value**
		B	**standard error**	**Beta**		
1	Constant	-.062	.072		-.858	.394
	DIFF(KR_FDI_L,1)	.274	.043	.608	6.372	.000
	DIFF(PL_GDP_L,1)	6.097	9.411	.065	.648	.519
	DIFF(PL_CPI_L,1)	5.431	3.616	.184	1.502	.138
	DIFF(CUR_L,1)	1.608	5.904	.056	.272	.786
	DIFF(PPP_L,1)	-10.117	14.725	-.140	-.687	.495
	DIFF(SAV_R_L,1)	-11.588	3.426	-.360	-3.382	.001
	DIFF(SAV_A_L,1)	-1.358	1.568	-.097	-.866	.390
	DIFF(KR_GDP_L,1)	-1.696	1.420	-.123	-1.195	.237
a. Defendant Variable: DIFF(PL_FDI_L,1)						

<Hungary>

Coefficient a						
Model		**Non standardized coefficient**		**Standardized coefficient**	**T**	**p-value**
		B	**standard error**	**Beta**		
1	Constant	-.081	.089		-.917	.363
	DIFF(KR_KDI_L,1)	.280	.053	.568	5.239	.000
	DIFF(HU_GDP_L,1)	13.542	13.503	.113	1.003	.320
	DIFF(HU_CPI_L,1)	32.233	8.569	.683	3.762	.000
	DIFF(CURR_L,1)	-3.474	3.930	-.132	-.884	.380
	DIFF(EX_L,1)	-1.314	11.141	-.021	-.118	.906
	DIFF(SAV_R_L,1)	3.906	2.850	.199	1.371	.175
	DIFF(SAV_A_L,1)	-11.060	3.538	-.570	-3.126	.003
	DIFF(KR_GDP_L,1)	-.002	.067	-.003	-.030	.976
a. Defendant Variable: DIFF(HU_FDI_L,1)						

\<Czech\>

Coefficient a						
Model		**Non standardized coefficient**		**Standardized coefficient**	**T**	**p-value**
		B	**standard error**	**Beta**		
1	Constant	.103	.101		1.019	.316
	DIFF(KR_FDI_L,1)	.224	.087	.380	2.567	.015
	DIFF(CZ_GDP_L,1)	-27.869	15.997	-.201	-1.742	.091
	DIFF(CZ_CPI_L,1)	-69.182	14.969	-1.174	-4.622	.000
	DIFF(CUR_L,1)	15.347	22.100	.206	.694	.492
	DIFF(PRICE_L,1)	79.468	38.198	.718	2.080	.046
	DIFF(SAV_R_L,1)	28.643	6.702	.714	4.274	.000
	DIFF(SAV_A_L,1)	8.476	3.626	.546	2.338	.026
	DIFF(KR_GDP_L,1)	-14.902	5.100	-.559	-2.922	.006
a. Defendant Variable: DIFF(CZ_FDI_L,1)						

\<Slovakia\>

Coefficient a						
Model		**Non standardized coefficient**		**Standardized coefficient**	**T**	**p-value**
		B	**standard error**	**Beta**		
1	Constant	-.074	.078		-.944	.349
	DIFF(KR_FDI_L,1)	.349	.056	.490	6.185	.000
	DIFF(SK_GDP_L,1)	5.404	7.261	.063	.744	.460
	DIFF(SK_CPI_L,1)	-46.199	7.152	-.766	-6.459	.000
	DIFF(CUR_L,1)	22.709	7.719	.485	2.942	.005
	DIFF(EX_L,1)	-7.407	11.511	-.092	-.643	.522
	DIFF(SAV_R_L,1)	7.526	3.487	.180	2.158	.035
	DIFF(SAV_A_L,1)	11.264	2.107	.501	5.347	.000
	DIFF(KR_GDP_L,1)	-.111	1.776	-.005	-.063	.950
a. Defendant Variable: DIFF(SK_FDI_L,1)						

As the results of the multiple linear regression analysis, the inbound FDI of each Visegrád country does not take affect by the variables such as GDP and exchange rate, it appeared to be affected in the CPI and the savings of each country. However, only Poland was not affected in the CPI of own. In addition, the GDP of South Korea unaffected, the investment (outbound FDI) in Korea has been analyzed to be significant.

The CPI of Poland seems to require a lot of research for the reason that does not affect the attraction Poland FDI. One of the reasons is expected to relevance of the EU funds for Poland, Quantitative analysis is likely to require more. In the next study, it is expected to analysis the investment attractiveness of Visegrád countries in various dimensions by a variety of analytical methods such as panel analysis.

4 CONCLUSION

In this study, the factors observed in most interest are the average wage factor and infrastructure factor. South Korea's investment for Visegrád is most concentrated in manufacturing. Industrial and production structure, labor productivity, manufacturing and infrastructure factors and so on would be most relevant factors. Through the empirical analysis of these factors, we need to check how they affect real investment caused. This study has been set up only model, an empirical test is missing. The more precise analysis made by an empirical analysis using statistical techniques in the future, we need to find out how each factors affect the investment caused in addition to a variety of factors (variables) and data.

There are various factors caused South Korea's investment for Visegrád. We need to find out the entry promising industries of South Korea's companies to use the macro-economic and market factors related to industry structure in economic and policy factors, to make the investment strategy customized in each countries in the future through using the analysis of policy factors, to make a effort to allow continued investment activity since the analysis of the legal and system factors. There are various types of systems such as employment system, tax system, guarantees of foreign investor rights and so on in each country. Therefore these systems must be closely observed before the investment occurred. South Korea's investment for Visegrád will be continuing to expand in the future. However, if South Korea undergo trial and error because of the wrong factor analysis, we will miss the timing of the investment. Other Asian countries such as China and japan as well as Korea have a great interest in Visegrád. Through appropriate factor analysis and appropriate investment by the analysis, South Korea's investment for Visegrád must be going to maintain and expand more sustainably.

REFERENCES:
1. ANDERSON, J. E. – VAN WINCOOP, E. (2003): Gravity with Gravitas: A Solution to the Border Puzzle. In: *American Economic Review*, 2003, 93, pp.170-192.
2. GLASS, A. J. – SAGGI, K. (2004): Coordinating FDI Policies Among Host Countries. In: *REPEC Working Papers*, 2004. Available online: <http://econweb.tamu.edu/aglass/Coo.pdf>.
3. GRIC, B. – BABIC, Z. (2003): The Determinants of FDI: Evaluation of Transition Countries Attractiveness for Foreign Investors. In: *Fifth International Conference Enterprise in Transition*. Split: Faculty of Economics, 2003, pp. 265-269.
4. HYMER, S. H. (1976): *The International Operations of National Firms: A Study of Direct Foreign Investment*. Cambridge: MIT Press, 1976. Available online: <http://teaching.ust.hk/~mgto650p/meyer/readings/1/01_Hymer.pdf>.
5. MAYES, D.G. (1983): EC Trade Effects and Factor Mobility. In: EL-AGRAA, A. M. (ed.): *Britain within the European Community: The way Forward.* London: Macmillan, 1983. ISBN 9780333345238.
6. MAKSYMIUK, A. (2006): The Attractiveness of the Automotive Industry in Poland for Foreign Direct Investments. In: *Working Papers in Management, Finance, and Economics*, 2006, no. 2.
7. MOLLE, W. – MORSINK, R. (1991): Intra-European Direct Investment. In: BÜRGENMEIER, B. – MUCHIELLI, J.L. (eds.): *Multinationals and Europe 1992.* London: Routledge, 1991. Pp. 81-101.
8. DUNNING, J. H. (1988): The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions. In: *Journal of International Business Studies*, 1988, 19, 1, pp. 1-31.
9. UNCTAD. (2006): *World Investment Report 2006: FDI from Developing and Transition Economies: Implications for Development*. New York: UNCTAD, 2006.

10. REILJAN, E. (2002): Analysis of Foreign Direct Investment Determinants in Estonia. In: *Journal of East West Business*, 2002, 8, 3-4, pp. 103-122.

11. EUROSTAT. (2014a): *Eurostat Statistics*. Brussels: EUROSTAT, 2014. Available online: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>.

12. EUROSTAT. (2014b): *Europe in figures - Eurostat Yearbook.* Brussels: EUROSTAT, 2014. Available online: <http://epp.eurostat.ec.europa.eu/statistics_explained/ index.php/Europe_in_figures_-_Eurostat_yearbook>.

13. OECD. (2015): *OECD Stats*. Paris: OECD, 2015. Available online: <http://stats.oecd.org/>.

Business environment in the Visegrad Group 2004 – 2014: A ten-year perspective

Martina Jiránková, Ilya Bolotov[18]

The goal of this paper is to evaluate changes in the business environment of the Visegrad Group (V4), the Czech Republic, the Slovak Republic, Poland and Hungary, in a ten- year perspective, i.e. between 2004, the year of their accession to the European Union (EU), and 2014, and to derive influencing factors of these changes. The paper is divided into four parts and is based on four hypotheses tested on data from official sources with the help of correlations, panel co-integration model, Chow and Granger causality tests. The authors find that export-oriented investment was the most performing aspect of diverging business environment in V4 in 2004–2014, while productivity of an average company stagnated. The indicators of macroenvironment, but not of microenvironment, and the membership in the EU were statistically significant for explaining this trend.

Key words: Visegrad Group, business environment, macro factors, micro factors
JEL: C12, O52, P17

1 Introduction

The Visegrad Group (the Visegrad Four, V4, 1991) is a loose association of four advanced Central and Eastern European (CEE)[19] economies, the Czech Republic (CZ), the Slovak Republic (SK), Hungary (HU) and Poland (PL), which promotes economic, energy and military cooperation as well as strengthening of the European integration among its member states (Hnát, Stuchlíková and Bič, 2006). V4 unites four of the six most advanced CEE economies which account for 2/3 of gross domestic product (GDP), 3/4 of industrial production, 1/2 of foreign direct investment (FDI) inflows and 1/2 of population[20] of the whole CEE region. According to the surveys of the World Economic Forum (WEF), Institute for International Management Development (IMD) and the World Bank for 2006–2014, the V4 countries (listed top 30s–60s in competitiveness rankings) belong among the most competitive economies in the CEE region, which makes them attractive for foreign investors, among other the Hyundai Group, LG Electronics, Samsung and other Korean companies. The sources of the V4 competitiveness, as defined in (Nečadová and Soukup 2013) and (Paličková 2013), are their a) location in the geographical centre of Europe, b) educated labour force, less expensive than the advanced economies' average, c) the ability to adapt to changes in the world economy, as well as d) an important market of ca. 65 million people (2014). Significant improvement in the business environment of V4 took place after their *accession to the EU on May 1, 2004,* which unified the V4 legislation with the Community acquis and EU norms, standards and procedures under the Copenhagen criteria.

The goal of this paper is to evaluate changes in the business environment of V4 in a ten-year perspective, i.e. between 2004, the year of their accession to the EU, and 2014, and to derive influencing factors of these changes both at the macro and micro level of the business environment.

---

[18] University of Economics, Prague, Faculty of International Relations, nám. W. Churchilla 4, 130 00 Praha 3, Czech Republic, martina.jirankova@vse.cz, ilya.bolotov@vse.cz. □

[19] In modern definition, the CEE region consists of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Czech Republic, Hungary, (partly recognized) Kosovo, Latvia, Lithuania, FYR of Macedonia, Montenegro, Poland, Romania, Serbia, Slovak Republic and Slovenia. Belarus, Moldova, Russia and Ukraine are referred to as the Eastern Europe (EE).

[20] Data published by World Bank, 2009–2014.

Four hypotheses are considered:

- **H1:** The business environment in V4 as a whole and in individual countries was steadily improving in 2004–2014;
- **H2:** The business environment in the V4 countries was converging in 2004–2014 due to the same EU rules and regulations in all of the four countries;
- **H3:** Both the macro- and micro-level influencing factors played an equal role in the development of the business environment of V4 in 2004–2014.
- **H4:** Improvement in the business environment of V4 in 2004–2014 was not caused by the EU membership only, but by a variety of factors.

The topic of the V4 business environment was scarcely examined in research papers at the time of elaboration of this study.[21] (Bluhm, Martens and Trappmann 2011) pointed to the role of elites in the early stages of formation of the business environment in Poland and Hungary in the 1990s. (Brewster and Bennett 2010) stressed that the perceptions of business culture in Bulgaria, Romania and in V4 remain mostly negative among both the local managers and expatriate ones. (Hamplová 2011) and (Belas 2014) compared business environment in the Czech Republic and Slovak Republic assessing it as adequate. (Kalowski 2010), (Kinčaková 2013), (Němečková 2013), (Urban 2010), (Kmeť 2014), (Sebestova, Adamek, and Cooney 2014) and (Zuzek 2014) conducted individual studies on each V4 state with country-specific conclusions. (Markowicz 2014) attempted to model the life-cycle of an average Polish company. Finally, (Nečadová and Soukup 2013) and (Paličková 2013) examined □national competitiveness in V4.

For the purpose of this paper, the overall development of the V4 business environment is approximated with the help of five indicators: 1) business density, the total number of business entities per 1 thousand of economically active population; 2) value added per 1 business entity; 3) inward foreign direct investment (FDI) stock per 1 business entity and 4) exports of goods and services per 1 business entity. These indicators were selected to reflect the entrepreneurial climate (1), economic performance of an average business entity (2 and 3), interest of investors in the V4 economies (ad 4) and internationalization of business entities (ad 5). Examination of relationship between the overall business development in V4 and a) macro (economy-level) factors approximated with the help of indicators of competitiveness from the WEF's Global Competitiveness Report (GCR), the IMD's World Competitiveness Yearbook (WCY) and the Heritage Foundation's Index of Economic Freedom (IEF), b) micro (enterprise-level) factors approximated with the help of indicators of the World Bank's Doing Business report (DB) and c) the EU and euro-area membership dummy variables is used to derive conclusions about the influencing factors in the V4 business environment.

In terms of econometric analysis, this paper employs a panel co-integration model (Kao 1999), a modification of the time series co-integration model (Engle and Granger 1989), (Arlt 1997), which may be defined as a regression model with dependent and explanatory variables integrated (non-stationary) of the same degree (at least 1) and with stationary residuals[22]:

$$Proxy\ variable_{it} = \beta_0 + \beta_1 X_{it} + (v_i) + \varepsilon_{it} \qquad (1)$$

where X is the vector of explanatory variables, i and t stand for cross-sections and corresponding time periods, v_i for fixed / random effects and ε_{it} for residuals of the model.

---

[21] A detailed research in the Thomson Reuters' Web of Science and SCImago (Scopus) databases returned less than 200 results for each of the V4 countries and significantly less for V4 as a group, hence the topic is relatively deprived of high-quality scientific publications. The main source of information is the yearbooks of WEF, IMD, Heritage Foundation and of the World Bank. □

[22] In the methodology developed by Engle and Granger, a co-integration relationship is formed if residuals of a regression model are integrated with a lower degree than the dependent and explanatory variables. This paper works with the degrees 0 and 1 as with the simplest case.

Because of the absence of unified approach to panel unit root testing, panel co-integration techniques vary among authors (Kao 1999).This paper employs the Choi meta-analysis (Choi 2001) based on individual time-series ADF tests (Dickey and Fuller 1979) under the assumption of panel datasets being homogeneous, as described in (Evan and Bolotov 2014). Pearson correlation analysis, the Chow test for the presence of structural breaks (Chow 1960) and the Granger causality test (Granger 1969) are employed to gather additional information about the examined time series and their interaction.

The main data sources for this paper are publications of the national statistical offices of the four countries, abbreviated in further text as CZSO, SKSO, PSO and HSO, central banks of V4, Eurostat, the European Central Bank (ECB), WEF, IMD, the Heritage Foundation and the World Bank.

Economic background of V4 as a part of the EU

The four V4 countries are small and medium-sized advanced economies, members of the World Trade Organization (WTO), the EU and the Organisation for Economic Co-operation and Development (OECD), which underwent transition from a centrally planned to market economy in the 1990s. Since then, V4 became an important destination for foreign direct investment outflows (FDI) and outsourcing of the EU in the domain of manufacturing. The V4 economies may be characterized by a) GDP per capita in purchasing power parity of ca. 70– 72% of the EU 28 level, b) economic growth above the EU and euro area average (3.0% compared to 0.6% and 0.4% in 2004–2014[23]), c) relatively high specialization in selected industries (in the Czech Republic, the Slovak Republic and Hungary in the automotive industry, which generates up to 1⁄4 of their gross value added, GVA[24]), d) important dependence on foreign capital, especially in their export industries, e) trade surpluses and f) worsening investment income balance (according to the International Monetary Fund's BPM6), which leads to substantial current account deficits in V4 (Bolotov, Čajka and Gajdušková 2013), (Duréndez and Wach, 2014); see Table 1 for the shares of V4 in the EU.

Table 1: V4 as part of the EU New member states in 2012–2014

Name / Code		Area	Population		GDP		In the EU since	In the Euro Area since
		th. sq. km	thousand	% of EU 28	million EUR	% of EU 28		
Czech Rep.	CZ	77.3	10,512.4	2.07	154,930	1.11	5/1/04	-
Slovak Rep.	SK	49.0	5,415.9	1.07	75,215	0.54	5/1/04	1/1/09
Poland	PL	312.7	38,017.9	7.50	413,134	2.97	5/1/04	x
Hungary	HU	93.0	9,877.4	1.95	103,303	0.74	5/1/04	x
EU NMS		1071.1	1279.5	20.69	1,123,238	8.07	x	x

Note: Rows with the biggest and smallest V4 states are highlighted with colour. Source: Data published by Eurostat, 2015, Europa.eu.

The V4 economies are significantly open with an average share of total trade in GDP exceeding 100% (and 180% in the case of the Slovak Republic and Hungary)[25], which makes

---

[23] Data published by Eurostat, 2015.

[24] Data published by CZSO, 2015. By means of examples, the German, French and Japanese automotive companies Volkswagen, PSA, and Toyota moved their assembling lines to V4.

[25] Data published by Eurostat, 2015.

V4 an important part of regional and global value chains (Bolotov, Čajka, Gajdušková 2013), and also vulnerable in case of a downturn in the economies of their main trade and investment partners, especially in the one of Germany (with a share of more than 30% in the Czech and Slovak trade)[26] and in the EU as a whole (up to 75% of total trade in the Czech Republic). As it was already mentioned, exports and long-term foreign direct investment (FDI) inflows are highly interconnected in V4; see Figure 1 for a graphical representation of this relationship (pooled regression, R2 = 0.9727).

Figure 1: Exports of goods and services and inward foreign direct investment stock in V4, 1995–2014, million EUR
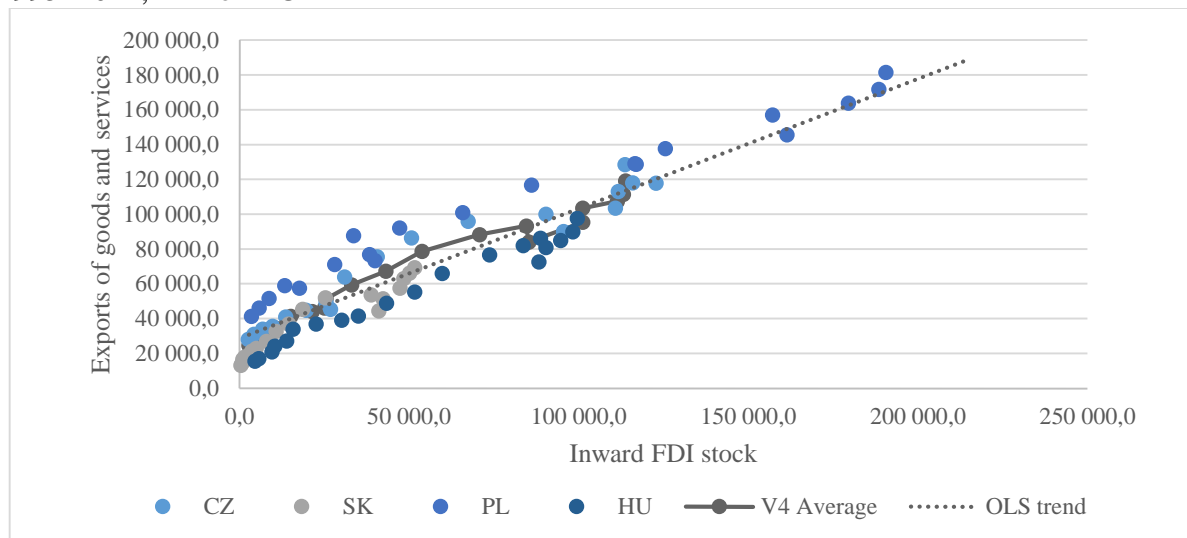
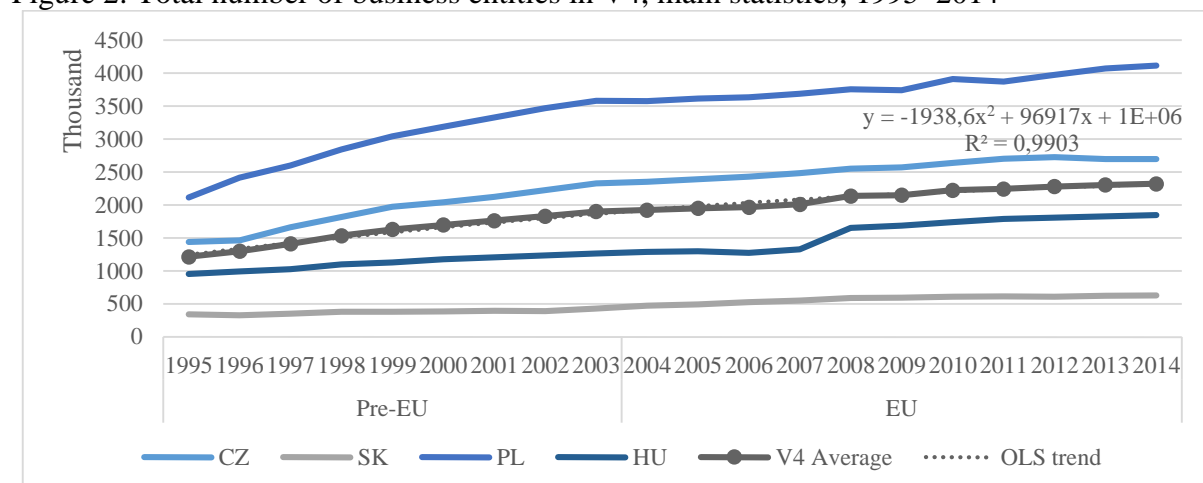Source: Data published by Eurostat, 2015.

2. OVERALL DEVELOPMENT OF THE BUSINESS ENVIRONMENT IN 2004–2014

In the 21st century, the business environment in V4 may be characterized by the continuing growth in the number of business entities, predominantly microenterprises of 0–9 employees (with the Slovak Republic showing the greatest share of business entities with more than 10 employees), which had been started in the 1990s. Since the EU accession in 2004 (a statistically proved breaking point in the time series according to the Chow test on a polynomial time trend, n = 2), the Czech Republic and Poland registered a slowdown in the creation of new business entities, while the Slovak Republic and Hungary retained their positive growth, which lead to a certain divergence inside V4. The biggest increases in the number of business entities were registered in the following industries: financial services, wholesale and retail trade, construction and the real estate (these industries showed the biggest number of business entities in 2004–2014 under the EU NACE 2 classification)[27], which may be considered an aftermath to the economic transformation in V4, and also a part of the overall trend in the advanced EU economies, if innovation activities were to be put aside (Bolotov, Čajka, Gajdušková, 2013). Still, the ratio of active business entities to total registered ones varied among the V4 countries and attained ca. 50–55% in the Czech Republic and in Hungary in 2014. In general, the growing saturation of the V4 markets seemed to slow down the creation of new business entities in the four countries in 2004–2014, which is confirmed by the concave polynomial trend of the time series representing the V4 average; see Figure 2.

---

[26] Data published by CZSO and SKSO, 2015.
[27] Data published by CZSO, SKSO, PO, HSO, 2015.

Figure 2: Total number of business entities in V4, main statistics, 1995–2014

$y = -1938{,}6x^2 + 96917x + 1E+06$
$R^2 = 0{,}9903$

2013–2014	CZ	SK	PL	HU
Employees				
0-9	96.3%↑	90.2%↑	95.6%↑	97.6%
10-49	2.9%	7.7%	3.6%	1.9%
50-249	0.7%	1.7%	0.7%	0.4%
250+	0.1%	0.4%	0.1%	0.1%
Economic activities, NACE 2 (Top 3)	Wholesale and retail trade (19%)↑, Professional, scientific and tech. activities (13%), Construction (12%)↑	Wholesale and retail trade (15%)↑, Construction 11%)↑, Manufacturing (9%)	Wholesale and retail trade (26.0%)↑, Construction (11.6%)↑, Professional, scientific and tech. activities (9.4%)	Agriculture, forestry and fishing (25.2%), Real estate (14.3%)↑, Wholesale and retail trade (11.2%)↑

Note: Important and insignificant shares are highlighted with colour.
Source: Data published by CZSO, SKSO, PSO, HSO, 2015.

Business density (abbreviated as BD)

The growth of the business density in V4 (the growth of the number of business entities per 1000 of economically active population / the labour force) was steady in 2004–2014, the Czech Republic showing the best result among the four countries (ca. 250 business entities per 1000 of economically active population) and Hungary being the second best performer (Hungary's business density underwent major changes in 2007–2008 as a result of liberalization in starting business and registering property in the framework of the Hungarian government's austerity and economic reform program during the crisis of 2008–2009 (World Bank, 2015), and as a result of its offshore-like tax regime, similar to the one of the Netherlands, Cyprus, Malta and Estonia); see Figure 3. This growth was highly correlated with the one of the inward FDI stock per 1 business entity and with the internationalization of the V4 economies measured by exports per 1 business entity (the degree of correlation between these variables was greater than 0.5). Therefore, new business entities were created to adapt to the opportunities abroad rather than to the ones inside V4, a difference from the time period of the unsaturated V4 markets, 1995–2003. The business density, on the contrary, did not show strong positive correlation with the productivity of an average business entity in V4, measured by GDP and gross fixed capital formation per 1 business entity, which points to the growing participation of V4 in regional and global value chains rather than to domestic successes. Moreover, the Chow tests (on polynomial time trend, $n = 2$) stress the importance of the accession to the EU for all V4 countries except Hungary, and in the case of the Slovak Republic, the importance of the euro adoption in 2008–2009. The two selected macroeconomic indicators, the real GDP per capita in PPP and the comparative price level (EU = 100), showed no (Granger) causality with the business density in V4 with the exception

of Hungary, which counters the findings of (Nečadová and Soukup 2013 and (Paličková 2013) about the role of the level of economic development and of the level of prices and wages in the competitiveness of V4 in 2004–2014. To sum up, persisting differences in the business density among the V4 countries may be explained by a higher propensity to entrepreneurship and better business microenvironment in the Czech Republic and Hungary compared with the ones of the Slovak Republic and of Poland. The size of economy is a less important influencing factor, since the Czech Republic showed higher business density than the Slovak Republic whose population and GDP is two times smaller.

Figure 3: Business density in V4, 1995–2014
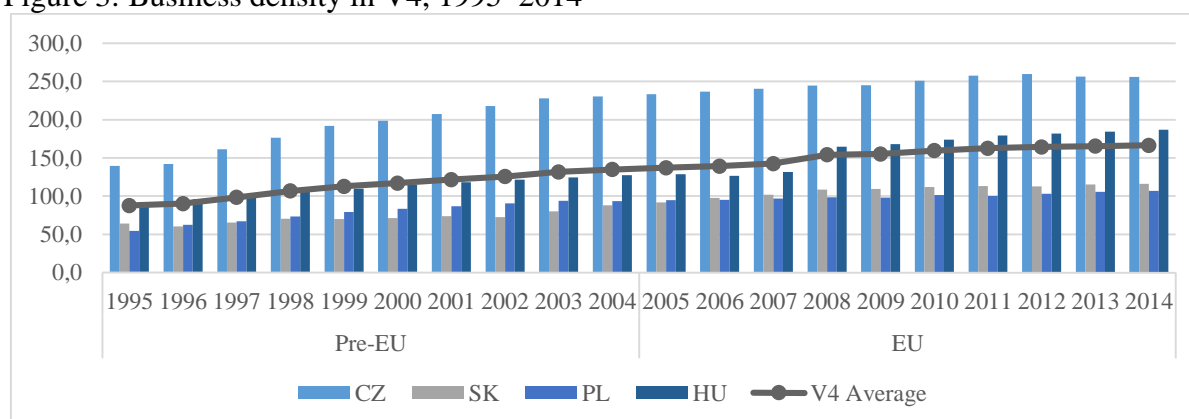
	Correlation					Causality	
	VApB	**GFCFpB**	**FDIpB**	**XpB**	**Structural break**	**RGDPpc**	**CPL**
CZ	-0.59	-0.52	0.87	0.84	2004	-	-
SK	0.37	-0.73	0.98	0.95	2004, 2008	-	-
PL	0.40	0.45	0.85	0.84	2004	-	-
HU	-0.80	-0.79	0.88	0.80	-	yes	-
V4 Average	-0.07	-0.63	0.96	0.94	-	-	-

Note: Strong positive correlation ($r > 0.5$) is highlighted with dark colour. Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

Productivity – value added per 1 business entity (abbreviated as VApB)

Value added (GDP) per 1 business entity showed virtually no changes since 1995 in V4 as a group, but significant divergence may be observed at the country level: the Polish and Slovak business entities improved their productivity while the Czech and Hungarian ones experienced a contraction in the mentioned indicator. The highest GDP per 1 business entity was attained in the Slovak Republic and Poland (ca. 120,000 EUR per 1 business entity and 100,000 EUR per 1 business entity). The development of the productivity largely corresponded with the one of the gross fixed capital formation per 1 business entity but not with the other indicators, with the exception of the Slovak Republic and Poland where the productivity was correlated with the inward FDI stock and internationalization (exports). The Chow tests (on polynomial time trend, n = 2) confirmed the accession to the EU (2004) to be an important breaking point, as well as the Granger tests indicated causality between the comparative price level and productivity in the Czech Republic and V4 as a whole, see Figure 4. In general, V4 did not show any improvement in productivity per 1 business entity in 2004–2014.

Figure 4: Value added per 1 business entity in V4, 1995–2014
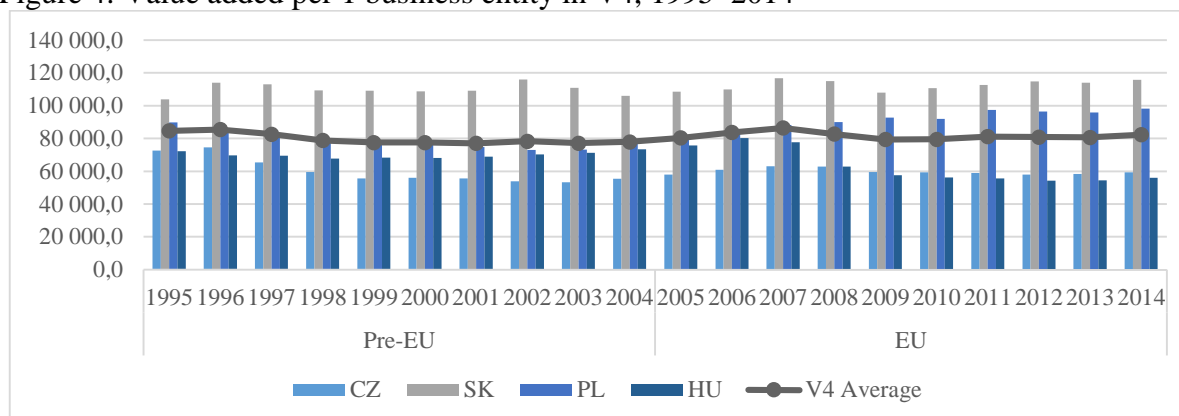
		Correlation				Causality	
	BD	GFCFpB	FDIpB	XpB	Structural break	RGDPpc	CPL
CZ	-0.59	0.90	-0.20	-0.09	2004	-	yes
SK	0.37	-0.02	0.43	0.53	-	-	-
PL	0.40	0.84	0.81	0.82	2004	-	-
HU	-0.80	0.93	-0.44	-0.30	2004	yes	-
V4 Average	-0.07	0.54	0.16	0.24	2004	-	yes

Note: Strong positive correlation ($r > 0.5$) is highlighted with dark colour. Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

Productivity – investment per 1 business entity (abbreviated as GFCFpB)

A similar trend is observed in the case of investment into fixed capital (gross fixed capital formation) per 1 business entity, the domestic investment in relative terms. The stagnation of domestic investment in V4 as a group and the corresponding decline in the Slovak Republic and Hungary may be explained by the growing number of business entities, as well as by the saturation of the V4 markets: the increases in investment were caused mostly by important events such as the EU accession in 2004; see Figure 5. All other findings, such as the results of the statistical tests are de facto same as in the case of the value added per 1 business entity: V4 did not show improvementin investment per 1 business entity in the last ten years, 2004–2014.

Figure 5: Investment in fixed capital per business entity, 1995–2014
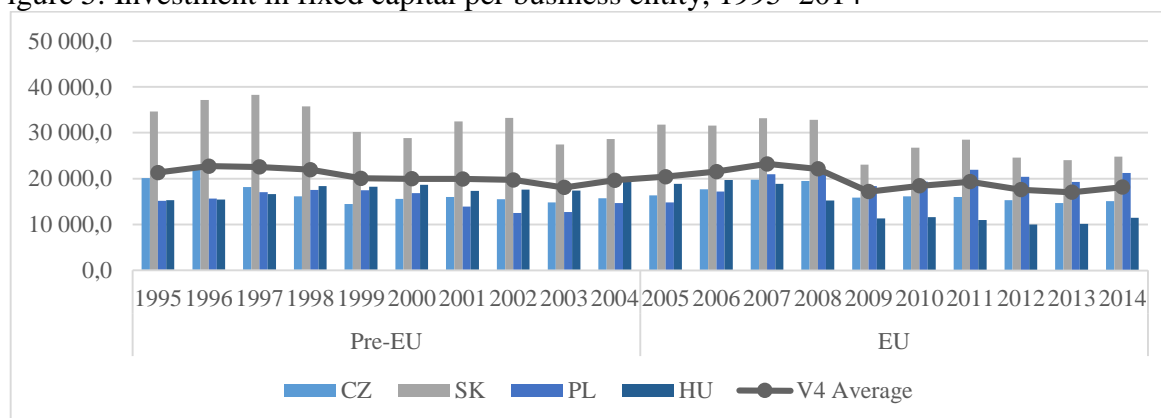
	Correlation					Causality	
	BD	VApB	FDIpB	XpB	Structural break	RGDPpc	CPL
CZ	-0.52	0.90	-0.28	-0.16	2004	yes	yes
SK	-0.73	-0.02	-0.73	-0.65	-	-	-
PL	0.45	0.84	0.76	0.77	2004	-	-
HU	-0.79	0.93	-0.51	-0.35	2004	-	-
V4 Average	-0.63	0.54	-0.54	-0.42	2004, 2008	-	-

Note: Strong positive correlation ($r > 0.5$) is highlighted with dark colour. Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

Investment attractiveness – inward FDI stock (abbreviated as FDIpB)

All V4 economies were experiencing important inflows and subsequently the growth in stock of the foreign direct investment (FDI) per 1 business entity in 2004–2014, the Slovak Republic and Hungary showing the best results (ca. 80,000 EUR per 1 business entity and 50,000 EUR per 1 business entity in 2014), the trend which was slowed down but not reversed by the financial and economic crisis of 2008–2009. The growth of investment stock per 1 business entity was almost homogenous among the V4 countries and was significantly correlated with the business density and internationalization (exports): the FDI was improving the position of the V4 export industries in 2004–2014. The FDI was also supported by the accession of V4 into the EU in 2004, by the Slovak Republic adopting euro in 2008–2009 and in Hungary by the economic development and price level according to the Chow tests (on polynomial time trend, $n = 2$) and the Granger causality tests; see Figure 6. High inflows of the FDI became a sign of strengthening business environment in V4 with little changes throughout 2004–2014 and with stabilization at the end of the period.

Figure 6: Inward foreign direct investment stock per business entity, 1995–2014
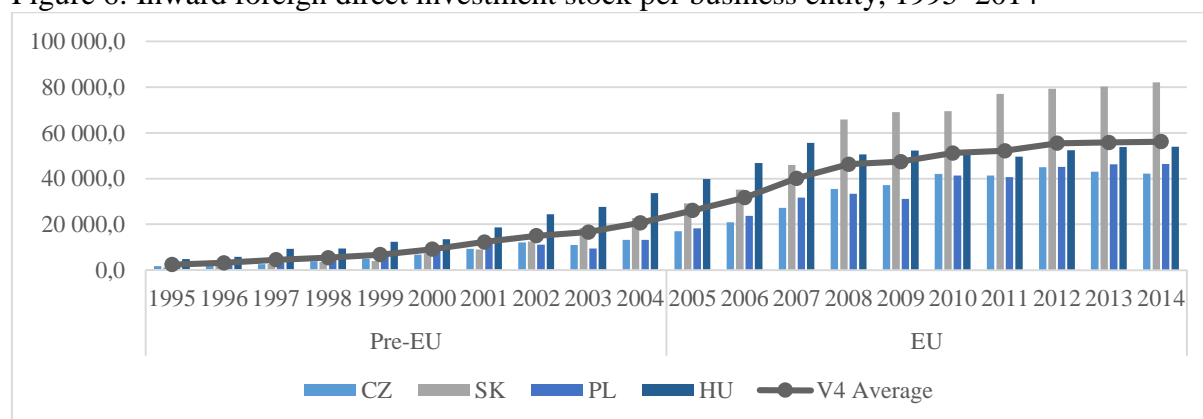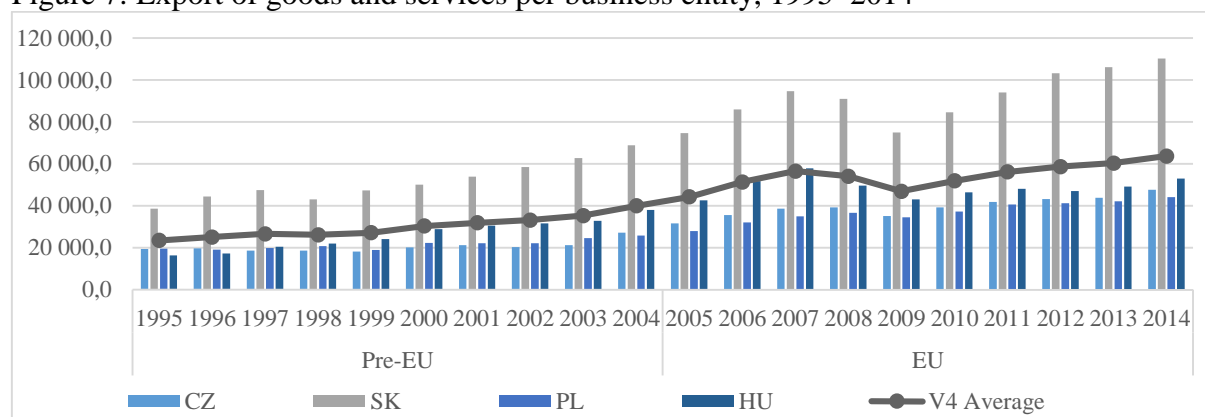

	Correlation					Causality	
	BD	VApB	GFCFpB	XpB	Structural break	RGDPpc	CPL
CZ	0.87	-0.20	-0.28	0.96	2004	-	-
SK	0.98	0.43	-0.73	0.93	2004	-	-
PL	0.85	0.81	0.76	0.99	2004	-	-
HU	0.88	-0.44	-0.51	0.97	2004	yes	yes
V4 Average	0.96	0.16	-0.54	0.97	2004, 2008	-	yes

Note: Strong positive correlation ($r > 0.5$) is highlighted with dark colour. Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

Internationalization – exports (abbreviated as XpB)

The development of exports of goods and services per 1 business entity in 2004–2014 was similar to the one of the inward FDI stock but included a correction for the financial and economic crisis in 2009. The Slovak Republic remained the absolute leader among the V4 countries with ca. 100,000 EUR per 1 business entity, the development inside V4 being close to homogenous. Exports per 1 business entity showed strong correlation with the business density and with the inward FDI stock for V4. The Chow tests (on polynomial time trend, $n = 2$) stressed the mentioned years of the EU accession and of the euro adoption in the Slovak Republic and the Granger tests the causality between the price level and exports of goods and services per 1 business entity for the Czech Republic and for V4 as a group; see Figure 7. Therefore, internationalization (exports) together with the FDI inflows remains the most positive indicators of the overall development of business environment in V4 in 2004–2014.

Figure 7: Export of goods and services per business entity, 1995–2014

	Correlation					Causality	
	VApB	*GFCFpB*	*FDIpB*	*XpB*	*Structural break*	*RGDPpc*	*CPL*
CZ	0.84	-0.09	-0.16	0.96	2004	-	yes
SK	0.95	0.53	-0.65	0.93	2008	-	-
PL	0.84	0.82	0.77	0.99	2004	-	-
HU	0.80	-0.30	-0.35	0.97	-	yes	-
V4 Average	0.94	0.24	-0.42	0.97	2004, 2008	-	yes

Note: Strong positive correlation (r > 0.5) is highlighted with dark colour.
Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

Convergence and divergence of business environment among V4

Correlation between the V4 countries for each of the five indicators of the overall business development and its changes in 2004–2014 against the pre-EU levels is presented in Table 2. Strong correlation (r > 0.5) between countries was registered for the business density, for the gross fixed capital formation per 1 business entity, for the inward FDI stock per 1 business entity and for the exports of goods and services per 1 business entity, out of which convergence was observed in the business density, in the domestic investment and in the exports of goods and services; while the value added per 1 business entity and the inward FDI stock per 1 business entity were subject to divergence. Hence, V4 business environment did not converge for all the five indicators in question in 2004–2014, which leads to *rejection of the hypothesis H2*.

Table 2: Business environment correlation matrix, 1995–2014

	Pre-EU				EU			
	BD-CZ	BD-SK	BD-PL	BD-HU	BD-CZ	BD-SK	BD-PL	BD-HU
BD-CZ		0.90	0.99	1.00		0.93	0.88	0.93
BD-SK	0.90		0.86	0.90	0.93		0.88	0.96
BD-PL	0.99	0.86		0.99	0.88	0.88		0.89
BD-HU	1.00	0.90	0.99		0.93	0.96	0.89	
Average	0.97	0.91	0.96	0.97	0.94	0.94	0.91	0.95
	VApB-CZ	VApB-SK	VApB-PL	VApB-HU	VApB-CZ	VApB-SK	VApB-PL	VApB-HU
VApB-CZ			0.91				-0.25	
VApB-SK								
VApB-PL	0.91			0.21	-0.25			-0.88
VApB-HU			0.21				-0.88	
Average	0.50				0.41			
	GFCFpB-CZ	GFCFpB-SK	GFCFpB-PL	GFCFpB-HU	GFCFpB-CZ	GFCFpB-SK	GFCFpB-PL	GFCFpB-HU
GFCFpB-CZ		0.70		-0.81		0.93		0.83
GFCFpB-SK	0.70			-0.63	0.93			0.85
GFCFpB-PL								
GFCFpB-HU	-0.81	-0.63			0.83	0.85		
Average	0.25	0.35		-0.08	0.72	0.73		0.60
	L_FDIpB-CZ	L_FDIpB-SK	L_FDIpB-PL	L_FDIpB-HU	L_FDIpB-CZ	L_FDIpB-SK	L_FDIpB-PL	L_FDIpB-HU
L_FDIpB-CZ		0.93	0.95	0.97		0.94	0.84	-0.37
L_FDIpB-SK	0.93		0.84	0.98	0.94		0.80	-0.35
L_FDIpB-PL	0.95	0.84		0.90	0.84	0.80		0.04
L_FDIpB-HU	0.97	0.98	0.90		-0.37	-0.35	0.04	
Average	0.96	0.94	0.92	0.96	0.60	0.60	0.67	0.08
	XpB-CZ	XpB-SK	XpB-PL	XpB-HU	XpB-CZ	XpB-SK	XpB-PL	XpB-HU
XpB-CZ		0.81	0.84	0.75		0.97	0.98	0.85
XpB-SK	0.81		0.90	0.94	0.97		0.96	0.82
XpB-PL	0.84	0.90		0.91	0.98	0.96		0.77
XpB-HU	0.75	0.94	0.91		0.85	0.82	0.77	
Average	0.85	0.91	0.91	0.90	0.95	0.94	0.93	0.86

Note: Table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with dark colour and weaker correlation with the light one.
Source: Data published by CZSO, SKSO, PSO, HSO and Eurostat, 2015.

3. MACRO FACTORS IN THE BUSINESS ENVIRONMENT IN V4, 2004–2014

Czech Republic

The changes in the business macro environment in the Czech Republic in 2004–2014 may be a characterized by the overall fluctuations in its national competitiveness, as defined by the WEF and by the IMD. According to the WCY 2014/2015, the Czech Republic lost 3–4 positions in the group "Europe-Middle East-Africa and in "Countries with less than 20 million people". The GCR 2014/2015, on the contrary, registered an improvement by 9 positions and the return of the country in question to the level of 2012. According to the WCY, the main strong points of the Czech economy are its openness to international trade, its price level, its

societal framework, its infrastructure, its education and its health environment. The main weaknesses are its inefficient government bureaucracy, its corruption and policy instability, as defined in the GCR 2015. In the WEF methodology, in 2004–2014, the Czech Republic displayed improvement in the technological readiness and the macroeconomic environment, but largely retained its long-term positions. The Heritage Foundation IEF (longer time series) registered fluctuations in the Czech business macro environment and gaps in business, monetary and financial freedom. Macro factors for the Czech Republic show strong correlation with the business density, with the inward FDI stock and with internationalization; see Table 3.

Table 3: Correlation table A, Czech Republic, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
World Economic Forum methodology										
Global competitiveness index		**-0.85**						**-0.74**		**-0.84**
Basic requirements:										
1st pillar: Institutions		-0.82				0.50		-0.63		-0.74
2nd pillar: Infrastructure		0.76		-0.73		-0.77		0.60		0.61
3rd pillar: Macroeconomic environment								-0.63		
4th pillar: Health and primary education										
Efficiency enhancers:										
5th pillar: Higher education and training										
6th pillar: Goods market efficiency		-0.71				0.53		-0.55		-0.77
7th pillar: Labor market efficiency		-0.56				0.52				-0.73
8th pillar: Financial market development				0.71		0.64				
9th pillar: Technological readiness		0.86		-0.67		-0.82		0.79		0.68
10th pillar: Market size				-0.66		-0.58				
Innovation and sophistication factors:										
11th pillar: Business sophistication		-0.91		0.50		0.61		-0.81		-0.83
12th pillar: Innovation		-0.80				0.63		-0.64		-0.89
Heritage Foundation methodology										
Index of Economic Freedom		**0.91**				**-0.56**		**0.93**		**0.88**
Property rights index (IEF1)										
Freedom from corruption index (IEF2)	-0.77						-0.88	0.68	-0.84	
Fiscal freedom index (IEF3)	0.97	0.92	-0.91	-0.58	-0,80	-0.77	0.94	0.93	0.55	0.70
Government spending index (IEF4)		0.51						0.63		0.57
Business freedom index (IEF5)	-0.95		0.86	-0.66	0,77	-0.62	-0.93		-0.58	
Labor freedom index (IEF6)		0.93		-0.51		-0.72		0.90		0.87
Monetary freedom index (IEF7)	0.94	-0.69	-0.82		-0,68		0.95	-0.85	0.68	-0.53
Trade freedom index (IEF8)		0.78					-0.61	0.86	-0.54	0.78
Investment freedom index (IEF9)										0.60
Financial freedom index (IEF10)		-0.73						-0.85		-0.67

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one.
Source: Data published by WEF, Heritage Foundation, CZSO, SKSO, PSO, HSO, Eurostat, 2015.

Slovak Republic

The changes in the business macro environment in the Slovak Republic in 2004–2014 may be a described by stagnation in the national competitiveness, as defined by the WEF and

by the IMD. According to the WCY 2014/2015, the Slovak Republic gained 1 position in the group "Europe-Middle East-Africa and none in "Countries with less than 20 million people". The GCR 2014/2015, on the contrary, registered worsening by 6 positions in the previous five years. According to the WCY, the main strengths of the Slovak economy were its openness to international trade, its price level, its societal framework, its productivity and efficiency, its infrastructure and its health environment. The main weaknesses were its government bureaucracy, its corruption and its restrictive labour regulations, as defined in the GCR 2015. In the WEF methodology, in 2004–2014, the Slovak Republic showed improved results in the domains of technological readiness, the macroeconomic environment, the labour market efficiency and the infrastructure, but largely remained at its original position. The IEF stressed insufficient freedom from corruption and gaps in business, monetary and financial freedom as problems. Slovak macro factors correlation shows results similar to the ones of the Czech Republic; see Table 4.

Table 4: Correlation table A, Slovak Republic, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
World Economic Forum methodology										
Global competitiveness index		-0.94				0.81		-0.95		-0.69
Basic requirements:										
1st pillar: Institutions		-0.88				0.79		-0.90		-0.71
2nd pillar: Infrastructure		0.77				-0.73		0.78		0.56
3rd pillar: Macroeconomic environment		-0.58		-0.51				-0.59		-0.54
4th pillar: Health and primary education										
Efficiency enhancers:										
5th pillar: Higher education and training										0.62
6th pillar: Goods market efficiency		-0.65				0.61		-0.64		-0.62
7th pillar: Labor market efficiency		-0.68		-0.54		0.58		-0.70		-0.87
8th pillar: Financial market development		-0.77				0.75		-0.79		-0.60
9th pillar: Technological readiness		0.63				-0.59		0.67		
10th pillar: Market size				-0.71						
Innovation and sophistication factors:										
11th pillar: Business sophistication		-0.60				0.57		-0.60		-0.71
12th pillar: Innovation		-0.83				0.72		-0.85		
Heritage Foundation methodology										
Index of Economic Freedom	0.65	0.90			-0.72	-0.58	0,68	0,90	0,72	0,55
Property rights index (IEF1)		-0.64						-0.60		-0.58
Freedom from corruption index (IEF2)					-0.60					-0.51
Fiscal freedom index (IEF3)	0.72	0.67		0.51	-0.71	-0.68	0.73	0.70	0.81	0.83
Government spending index (IEF4)	0.51				-0.65		0.51		0.55	0.57
Business freedom index (IEF5)		0.92	-0.59			-0.89		0.95		0.56
Labor freedom index (IEF6)		-0.56				0.69		-0.56		-0.61
Monetary freedom index (IEF7)	0.69			0.75	-0.60		0.79		0.82	0.58
Trade freedom index (IEF8)	0.71	0.84		0.56	-0.71		0.77	0.77	0.78	0.59
Investment freedom index (IEF9)		0.52						0.52		
Financial freedom index (IEF10)										

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one. Source: Data published by WEF, Heritage Foundation, CZSO, SKSO, PSO, HSO, Eurostat, 2015.

Poland

The main changes in the business macro environment in Poland in 2004– 2014 were a certain divergence in the national competitiveness, as defined by the WEF and by the IMD.

According to the WCY 2014/2015, Poland lost 5 positions in the group "Europe-Middle East-Africa but gained 1 in "Countries with more than 20 million people". The GCR 2014/2015, on the contrary, registered improvement by 2 positions in the five previous years. According to the WCY, the main strong points of the Polish economy were its openness to international trade, its price level, its business legislation, its productivity and efficiency, its institutional framework and its public finance, as well as its education. The main weaknesses were its tax regulations, its restrictive labour regulations and its government bureaucracy, as defined by the GCR 2015, corruption being less important. In the WEF methodology, in 2004–2014, Poland registered improvement in the macroeconomic environment, the technological readiness and the infrastructure, but lost its positions on labour market efficiency and business sophistication. The IEF assessed Poland business environment as free with improvements in most indicators in 2004–2014 with the exception of monetary and financial areas. Poland shows strong correlation between almost all business environment variables and influencing factors; see Table 5.

Table 5: Correlation table A, Poland, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
World Economic Forum methodology										
Global competitiveness index		0.67						0.61		0.55
Basic requirements:										
1st pillar: Institutions		0.73		0.80				0.81		0.72
2nd pillar: Infrastructure		0.80		0.60				0.72		0.72
3rd pillar: Macroeconomic environment		-0.51		-0.69				-0.59		-0.50
4th pillar: Health and primary education				-0.62		-0.69		-0.51		
Efficiency enhancers:										
5th pillar: Higher education and training		0.76		0.69				0.71		0.67
6th pillar: Goods market efficiency		0.77		0.67				0.66		0.66
7th pillar: Labor market efficiency		-0.60								-0.51
8th pillar: Financial market development		0.75		0.90		0.59		0,85		0.77
9th pillar: Technological readiness		0.92		0.90		0.53		0.91		0.90
10th pillar: Market size		0.64								
Innovation and sophistication factors:										
11th pillar: Business sophistication										
12th pillar: Innovation		-0.57		-0.73		-0.87		-0.71		-0.74
Heritage Foundation methodology										
Index of Economic Freedom	0.82	0,95	-0,95	0.80			0.71	0.87		0.87
Property rights index (IEF1)		0.88		0.81		0.51		0.87		0.88
Freedom from corruption index (IEF2)	-076	0.94	0.60	0.86	0.60		-0.81	0.89	-0.72	0.88
Fiscal freedom index (IEF3)	0,92	0.93	-0.78	0.79	-0.76		0.93	0.90	0.88	0.86
Government spending index (IEF4)	0,84		-0.95	0.67	-0.51	0.80	0.73	0.66		0.62
Business freedom index (IEF5)										
Labor freedom index (IEF6)										
Monetary freedom index (IEF7)	0.99	-0.76	-0.88	-0.71	-0.51		0.96	-0.78	0.87	-0.76
Trade freedom index (IEF8)	0,77	0.71	-0.80	0.91		0.90	0.75	0.89		0.86
Investment freedom index (IEF9)		0.91		0.92		0.62		0.89		0.91
Financial freedom index (IEF10)						-0.52				

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one.
Source: Data published by WEF, Heritage Foundation, CZSO, SKSO, PSO, HSO, Eurostat, 2015.

Hungary

The changes in the business macro environment in Hungary in 2004–2014 comprise a decrease in the national competitiveness, as defined by the WEF and by the IMD. According to the WCY 2014/2015, Hungary lost 7 positions in the group "Europe-Middle East-Africa and 4 in "Countries with less than 20 million people". The GCR 2014/2015, on the contrary, registered improvement by 12 positions in the five previous years. According to the WCY, the main strengths of the Hungarian economy were its openness to international trade, its price level, its infrastructure, its health environment and its education. The main weaknesses were its policy instability, its access to finance and its corruption, as defined by the GCR 2015. Poorer performance by Hungary compared to the rest of V4 may be partly explained by the country's economic problems in 2008– 2010. In the WEF methodology, in 2004–2014, Hungary showed improvement in most indicators with the exception of business sophistication. The IEF mentioned the freedom from corruption and the business freedom gaps as two areas requiring attention. In general, Hungary's macro factors show strong correlation with the productivity indicators (GDP and domestic investment per 1 business entity), making the country different from the rest of V4; see Table 6.

Table 6: Correlation table A, Hungary, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
World Economic Forum methodology										
Global competitiveness index		-0.73		0.73		0.69		-0.73		
Basic requirements:										
1st pillar: Institutions		-0.98		0.98		0.98		-0.60		
2nd pillar: Infrastructure		0.85		-0.81		-0.84				
3rd pillar: Macroeconomic environment		0.51		-0.51		-0.57				
4th pillar: Health and primary education		-0.64		0.67		0.64		-0.71		
Efficiency enhancers:										
5th pillar: Higher education and training								-0.59		
6th pillar: Goods market efficiency				0.54				-0.63		
7th pillar: Labor market efficiency		-0.66		0.54		0.51		-0.60		
8th pillar: Financial market development		-0.95		0.93		0.95				
9th pillar: Technological readiness		0.93		-0.96		-0.96				
10th pillar: Market size		-0.76		0.72		0.70		-0.83		
Innovation and sophistication factors:										
11th pillar: Business sophistication		-0.99		0.98		0.98		-0.58		
12th pillar: Innovation		-0.66		0.65		0.59		-0.66		
Heritage Foundation methodology										
Index of Economic Freedom			0.84				0.59			
Property rights index (IEF1)										
Freedom from corruption index (IEF2)	-0.89						-0.85		-0.90	
Fiscal freedom index (IEF3)				0.53		0.54				
Government spending index (IEF4)	0.56	0.54		-0.54	0.51	-0.53	0.56	0.54	0.60	
Business freedom index (IEF5)	-0.54				-0.56					
Labor freedom index (IEF6)		-0.70		0.64		0.65				
Monetary freedom index (IEF7)	0.74	0.53		-0.56	0.95	-0.63	0.67		0.75	
Trade freedom index (IEF8)		0.69		-0.63		-0.64		0.91		
Investment freedom index (IEF9)		0.69		-0.58		-0.60				
Financial freedom index (IEF10)		-0.92		0.93		0.94		-0.71		

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one.
Source: Data published by WEF, Heritage Foundation, CZSO, SKSO, PSO, HSO, Eurostat, 2015.

Elasticity of macro factors

The panel co-integration regression model was employed to estimate the elasticity coefficients of macro influencing factors in the overall development of the business environment in V4. The Breusch-Pagan and Hausman tests were applied to choose the type of panel model for each of the five dependent variables (fixed effects or pooled) and ADF unit root test in the (Choi 2001) framework was applied to exclude spurious regression. To ensure maximum quality of the model, the IEF data were selected as macro factors for two main reasons: 1) longer time series (available since 1995), 2) higher correlation between the IEF data and the overall proxy variables. The panel dataset consisted of 80 observations. All data was retrieved from the official sources: CZSO, SKSO, PSO, HSO, Eurostat, Heritage foundation; see Table 7 for results of calculations.

The only non-spurious relationship was the pooled panel regression between the inward FDI stock and the EIF indicators. This result corresponded with the previous findings, since for almost all V4 countries, inward FDI stock per 1 business showed significant correlation with the individual parts of the IEF index. Based on regression results, it is possible to deduce that macro influencing factors played an important role in the international aspect of the business environment in V4 in 2004–2014 with the biggest elasticity coefficients, the changes in inward FDI stock per 1 business unit caused by 1 point change in the selected indicator, of fiscal freedom (IEF3), trade freedom (IEF8), investment freedom (IEF10) and freedom from corruption (IEF2). Several indicators showed indirect relationship with inward FDI stock, the interpretation of which is not straightforward: property rights (IEF1) and financial freedom (IEF10). The pattern is, however, clear: *the macro influencing factors of investment attraction and internationalization were the most important for the V4 business environment in 2004–2014*. The statistical significance of the *EU and euro-area membership* dummies also proves their role in the development of the business environment in V4 in 2004–2014, which is consistent with the results of the already mentioned Chow tests.

Table 7: Panel co-integration regression model on macro-factors

	Panel effects tests	*Unit-root test of variables*	*Unit-root test of residuals*	*F p-value, within R^2, DW*
Business density	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 3.32e-43 R^2 = 0.8632 DW = 0.9214
Value added per 1 business density	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 2.03e-33 R^2 = 0.4077 DW = 0.9479
Investment in fixed capital per 1 business entity	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 1.04e-24 R^2 = 0.5084 DW = 0.9658
Foreign direct investment inward stock per 1 business entity	BP not OK, Hausman not OK	Homogeneously non-stationary	Homogeneously stationary	p = 3.21e-36 R^2 = 0.9300 DW = 1.3944
Exports of goods and services per 1 business entity	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 6.53e-32 R^2 = 0.8416 DW = 0.9619

Foreign direct investment inward stock per 1 business entity
```
Model: Pooled OLS, using 80 observations
Included 4 cross-sectional units
Time-series length = 20
Dependent variable: FDIpB
Robust (HAC) standard errors

              coefficient    std. error    t-ratio    p-value
  -----------------------------------------------------------
  const       -89560.1       17042.9       -5.255     1.66e-06  ***
  IEF1          -306.850        95.2331    -3.222      0.0020   ***
  IEF2           194.296       113.473      1.712      0.0915   *
  IEF3           597.583       180.687      3.307      0.0015   ***
  IEF4            -7.10196     100.110     -0.07094    0.9437
  IEF5           106.892       139.894      0.7641     0.4475
  IEF6           140.593        57.7209     2.436      0.0175   **
  IEF7            59.3084       95.0505     0.6240     0.5348
  IEF8           430.979        81.3211     5.300      1.40e-06  ***
  IEF9           505.223        89.4072     5.651      3.55e-07  ***
  IEF10         -188.650        89.2884    -2.113      0.0383   **
  EU_Dummy     15193.3        2737.94       5.549      5.29e-07  ***
  EA_Dummy     32275.7        4793.10       6.734      4.52e-09  ***

Mean dependent var   27874.58    S.D. dependent var   22497.00
Sum squared resid    2.37e+09    S.E. of regression   5950.369
R-squared            0.940668    Adjusted R-squared   0.930042
F(12, 67)            88.52047    P-value(F)           3.21e-36
Log-likelihood      -801.7184    Akaike criterion     1629.437
Schwarz criterion    1660.403    Hannan-Quinn         1641.852
rho                  0.273490    Durbin-Watson        1.394356

Excluding the constant, p-value was highest for variable 15 (IEF4)

Residuals:
H0: all groups have unit root
N = 4, Tmin = 18, Tmax = 18
Im-Pesaran-Shin W_tbar = -3.71037 [0.0001]

Choi meta-tests:
   Inverse chi-square(8) = 35.014 [0.0000]
   Inverse normal test = -4.38346 [0.0000]
   Logit test: t(24) = -5.01218 [0.0000]

Unit root: NA
```

Note: Spurious regression is marked with the light colour.
Source: author, Gnu Regression, Econometrics and Time-series Library.

4. MICRO FACTORS IN THE BUSINESS ENVIRONMENT IN V4, 2004–2014

Czech Republic

The changes in the business microenvironment in the Czech Republic in 2004–2014 included improvements in resolving insolvency, registering property and paying taxes, and certain deterioration in getting credits, according to the World Bank's DB methodology. The Czech Republic's micro influencing factors showed strong positive correlation with the inward FDI stock per 1 business entity, with the exports of goods and services per 1 business entity and with the business density in terms of the overall development of the business environment in V4 in 2004–2014; see Table 8.

Table 8: Correlation table B, Czech Republic, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
Doing business (DTF)		**0.82**		**-0.51**		**-0.67**		**0.65**		**0.87**
Starting a Business (DTF)		0.87						0.97		0.74
Dealing with Construction Permits (DTF)		0.84		-0.62		-0.69		0.70		0.73
Getting Electricity (DTF)										
Registering Property (DTF)		0.90		-0.59		-0.73		0.76		0.86
Getting Credit (DTF)		-0.54		0.66		0.79				-0.54
Protecting Minority Investors (DTF)										0.60
Paying Taxes (DTF)		0.90				-0.58		0.87		0.93
Trading Across Borders (DTF)		-0.83		0.64		0.75		-0.84		-0.51
Enforcing Contracts (DTF)		0.91						0.89		0.86
Resolving Insolvency (DTF)		0.85				-0.65		0.69		0.89

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation with the light one. Source: Data published by WEF, World Bank data, 2015.

Slovak Republic

The changes in the business microenvironment in the Slovak Republic in 2004–2014 consisted of improvements in resolving insolvency and paying taxes, and certain deterioration in getting credits, according to the World Bank's DB methodology. The Slovak Republic's micro influencing factors showed strong positive correlation with the inward FDI stock per 1 business entity, with the exports of goods and services per 1 business entity and with the business density in terms of the overall development of the business environment in V4; see Table 9.

Table 9: Correlation table B, Slovak Republic, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
Doing business (DTF)		**0.67**				**-0.59**		**0.68**		**0.84**
Starting a Business (DTF)		0.92				-0.82		0.90		
Dealing with Construction Permits (DTF)						-0.52				
Getting Electricity (DTF)		0.51								0.70
Registering Property (DTF)		0.71						0.63		
Getting Credit (DTF)										
Protecting Minority Investors (DTF)										0.52
Paying Taxes (DTF)		0.75				-0.67		0.74		0.81
Trading Across Borders (DTF)				0.70						0.79
Enforcing Contracts (DTF)		-0.71				0.55		-0.72		-0.53
Resolving Insolvency (DTF)		0.80		0.63		-0.57		0.81		0.83

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one.
Source: Data published by WEF, World Bank data, 2015.

Poland

The changes in the business microenvironment in Poland in 2004–2014 may be described by fluctuations ending in the final improvement in all indicators with the exception of getting credit, according to the World Bank's DB methodology. Poland's micro influencing factors showed strong correlation with all the variables in terms of the overall development of the business environment in V4 in 2004–2014; see Table 10.

Table 10: Correlation table B, Poland, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
Doing business (DTF)		**0.87**		**0.61**				**0.68**		**0.76**
Starting a Business (DTF)		0.92		0.91		0,64		0.96		0.93
Dealing with Construction Permits (DTF)		0.95		0.74				0.82		0.85
Getting Electricity (DTF)		0.57								
Registering Property (DTF)		0.92		0.72				0.77		0.84
Getting Credit (DTF)				0.60				0.67		0.53
Protecting Minority Investors (DTF)		0.78		0.86		0.81		0.83		0.84
Paying Taxes (DTF)		0.90		0.74				0.80		0.86
Trading Across Borders (DTF)		0.76		0.78		0.71		0.75		0.82
Enforcing Contracts (DTF)		0.93		0.75				0.80		0.83
Resolving Insolvency (DTF)		0.78		0.52				0.58		0.66

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one.
Source: Data published by WEF, World Bank data, 2015.

Hungary

The changes in the business microenvironment in Hungary in 2004–2014 are characterized by improvements in all indicators with the exception of getting credits, according to World Bank's DB methodology. The Hungary's micro influencing factors, much like its macro factors, showed strong positive correlation with the inward FDI stock and with the business density in terms of the overall development of the business environment in V4 in 2004–2014; see Table 11.

Elasticity of micro factors

The panel co-integration regression model was also employed to estimate the elasticity coefficients of micro influencing factors in the overall development of the business environment in V4. A panel dataset of 40 observations (the years 2005–2014) was used, in which all data were retrieved from the official sources: CZSO, SKSO, PSO, HSO, Eurostat and the World Bank. However, all regression relationships were proved spurious, i.e. coincidental (caused by 3rd) factors, based on ADF unit root test in the (Choi 2001) framework. Ergo, the estimations of elasticity were proved infeasible and the micro factors were not significant as a group for the overall development of the V4 business environment in 2004– 2014; see Table 12. Therefore, *the hypothesis H3 is rejected.*

Table 11: Correlation table B, Hungary, 1995–2014

	BD		VApB		GFCFpB		FDIpB		XpB	
	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU	Pre-EU	EU
Doing business (DTF)		**0.72**		**-0.65**		**-0.69**				
Starting a Business (DTF)		0.95		-0.96		-0.98		0.59		
Dealing with Construction Permits (DTF)		0.85		-0.81		-0.85				
Getting Electricity (DTF)		0.61		-0.51		-0.54				
Registering Property (DTF)		0.89		-0.84		-0.89				
Getting Credit (DTF)		0.51		-0.55		-0.53		0.68		
Protecting Minority Investors (DTF)										
Paying Taxes (DTF)		0.71		-0.60		-0.64				
Trading Across Borders (DTF)		0.81		-0.72		-0.72		0.51		
Enforcing Contracts (DTF)		-0.81		0.77		0.80				
Resolving Insolvency (DTF)										

Note: table contains only r > 0.5; stronger correlation, compared to the pre-EU level, is highlighted with darker colour and weaker correlation – with light one. Source: Data published by WEF, World Bank data, 2015.

Table 12: Panel co-integration regression model on "micro"-factors

	Panel effects tests	Unit-root test of variables	Unit-root test of residuals	F p-value, within R^2, DW
Business density	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 5.14e-23 R^2 = 0.8406 DW = 1.5995
Value added per 1 business density	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 7.50e-16 R^2 = 0.6182 DW = 1.3109
Investment in fixed capital per 1 business entity	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 1.28e-10 R^2 = 0.6810 DW = 1.3513
Foreign direct investment inward stock per 1 business entity	BP not OK, Hausman not OK	Homogeneously non-stationary	non-homogeneously stationary	p = 7.39e-11 R^2 = 0.8540 DW = 1.5598
Exports of goods and services per 1 business entity	BP OK, Hausman OK	Homogeneously non-stationary	non-homogeneously stationary	p = 1.50e-15 R^2 = 0.6752 DW = 1.4215

Note: Spurious regression is marked with the light colour.
Source: author, Gnu Regression, Econometrics and Time-series Library.

5 CONCLUSION – WHAT HAS CHANGED IN THE LAST TEN YEARS?

The goal of this paper was to evaluate the development of the business environment in the Visegrad Group (V4), the Czech Republic, the Slovak Republic, Poland and Hungary, in the last ten years: between 2004, accession of these countries into the EU, and 2014. The analysis was divided into two parts: into the examination of the overall development of the V4 business environment and into the analysis of its influencing factors. The overall business environment measured by five indicators comprising the business density, productivity of an average business (value added per 1 business entity and gross fixed capital formation per 1 business entity), inward FDI stock per 1 business entity and exports of goods and services per 1 business entity, showed the following trends in 2004–2014: 1) growth in the number of business entities, 2) stagnation in the productivity of an average business and 3) important internationalization, mostly participation in regional and global value chains (GVCs), which became one of the main driving factors of the V4 economies. This constituted a major change over the previous period where domestic markets of the V4 countries were largely unsaturated and FDI was inward-oriented. The role of internationalization in V4 is confirmed by the results of the other Visegrad-supported research projects (Duréndez and Wach, 2014), which concluded that more than 50% of business entities in V4 participate in internationalization activities, out of which small and medium-sized – mostly in the EU and in the neighbouring CEE countries, rarely in Ukraine and Russia (the biggest non-EU neighbours) via less-sophisticated market-entry techniques; and bigger companies – often outside the EU via more sophisticated market-entry techniques; which stresses the degree of integration of V4 in the EU and world economy (Machková and Taušer, 2013). In this paper, the importance of internationalization in V4 is derived from the analysis of the influencing factors, in which the only non-spurious statistically strong relationship was the one between the inward FDI stock and fiscal freedom, trade freedom, investment freedom and freedom from corruption, all other indicators being either statistically insignificant or indirectly related to the overall development of the business environment. Influencing factors of the microenvironment as a group did not form a non-spurious relationship with any of the five indicators of the overall business environment despite the signs of mutual correlation and were interpreted as non-significant. *To sum up, the development of the overall business environment in V4 in the last ten years, 2004–2014, was mostly concentrated on the integration into the European and into the world economy, which required important inflows of FDI leading to growth in the number of business entities but not to improvement in their average productivity, i.e. on concentration on existing comparative advantages and on export specialization* (Sankot and Hnát, 2015). *The indicators of the business macroenvironment favourable for FDI and foreign trade mostly influenced this development, while the microenvironment was less important (in the case of non-export FDI the situation would most-likely be different).* Based on these findings, it is possible to evaluate the hypotheses H1–H4 in the following way:

- The hypothesis **H1** *(the business environment in V4 as a whole and in individual countries was steadily improving in 2004–2014)* is supported, however, not all indicators of the overall business development showed positive dynamics in 2004–2014.

- The hypothesis **H2** *(the business environment in the V4 countries was converging in 2004–2014 due to the same EU rules and regulations in all of the four countries)* is rejected, since the business environment in the V4 countries showed signs of divergence in 2004–2014.

- The hypothesis **H3** *(both the macro- and micro-level influencing factors played an equal role in the development of the business environment of V4 in 2004–2014)* is rejected, since the influencing factors of the business microenvironment were not statistically significant as a group in 2004–2014.

- The hypothesis **H4** *(improvement in the business environment of V4 in 2004–2014 was not caused by the EU membership only, but by a variety of factors)*, although not explicitly examined in the text, is supported, since the EU and the euro area membership was not the only statistically significant variable in the panel co-integration results for 2004–2014.

REFERENCES:
1. ARLT, J. (1997): Regresní analýza nestacionárních ekonomických časových řád. *Politická ekonomie*, 1997-02, vol. 1997, no. 2, pp. 281- 289.
2. BELAS, J. et al. (2014): Significant Attributes of Creationand Development of the Business Environment in the SME Segment. In KNAPKOVÁ, A. et al. (eds.). *Proceedings of the 1st International Conference on Finance and Economics 2014*. 2014, p. 42–56.
3. BLUHM, K. – MARTENS, B. – TRAPPMANN, V. (2011): Business Elites and the Role of Companies in Society: A Comparative Studyof Poland, Hungary and Germany. *Europe-Asia Studies*. 2011, vol. 63, no. 6, p. 1011–1032.
4. BREWSTER, C. – BENNETT, C. (2010): Perceptions of business cultures in eastern Europe and their implications for international HRM. *International Journal of Human Resource Management*. 2010, vol. 21, no. 14, p. 2568–2588.
5. CHOI, I. (2001): Unit root tests for panel data. *Journal of International Money and Finance*. 2001-04, vol. 20, no. 2, p. 249–272.
6. CHOW, G. C. (1960): Tests of Equality Between Sets of Coefficients in Two Linear Regressions. *Econometrica, vol.* 28, no. 3, p. 591–605.
7. DICKEY, D.; FULLER, W. (1979): Distribution of the Estimators for Autoregressive Time-Series with a Unit Root. *Journal of the American Statistical Association*. 1979, vol. 74, no. 366, p. 427–431.
8. DURENDÉZ, A. – WACH, K. (2014): *Patterns of Business Internationalisation in Visegrad Countries - In Serach for Regional Specifics*. Universidad Politécnica de Cartagena, 2014.
9. EVAN, T.; BOLOTOV, I. (2014): The Weak Relation Between Foreign Direct Investment and Corruption: A Theoretical and Econometric Study. *Prague Economic Papers*. 2014-12, vol. 23, no. 4, p. 474–492.
10. GRANGER, C. W. J. (1969): Investigating Causal Relations by Econometric Models and Cross-spectral Methods. Econometrica, 1969, vol. 37, no. 3, p. 424–438.
11. HAMPLOVÁ, E. (2011): Comparison of Business Conditions in the CR and SR from the Perspective of World Bank. MAJTAN, S. (ed.). A*ktualne Pohl'ady Na Konkurencieschopnost' a Podnikanie - Nove Vyzvy*. 2011, p. 147–152.
12. HNÁT, P. – STUCHLÍKOVÁ, Z. – BIČ, J. (2006): *Subregionalismus v rámci Evropské unie: projekt IGA 8/05*. Oeconomica, 2006.
13. KALOWSKI, A. (2010): *Determinants of Investment of Small- and Medium-Sized Enterprises in Poland*. A. M. Rawani, H. Kettani, Z. Lian (eds.). Liverpool : World Acad Union-World Acad Press, 2010. ISBN: 978-1-84626-027-8.
14. KAO, C. (1999): Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 1999-1, vol. 90, pp 1-44.
15. KARSAI, J. (2013): Venture Capital and Private Equity Industry in Hungary. *Acta Oeconomica*. 2013-03, vol. 63, no. 1, p. 23–42.
16. KINČAKOVÁ, M. (2013): Theoretical Aspects of Business Environment and Their Practical Application in The Slovak Republic. *Aktualne Problemy Podnikovej Sfery 2013*. 2013, p. 234–240.

17. KMET', J. (2014): Current Trends in the Business Environment in the Slovak Republic. In MAJTAN, S. (ed.). *Aktualne Problemy Podnikovej Sfery 2014*. 2014, p. 203–207.
18. MACHKOVÁ, H. – TAUŠER, J. (2013): Outsourcing jako kapitálově nenáročná forma mezinárodního podnikání. *Scientia et Societas*, 2013, col IX, no. 1, p. 79–86.
19. MARKOWICZ, I. (2014): Business Demography - Statistical Analysis of Firm Duration. *Transformations in Business & Economics*. 2014, vol. 13, no. 2B, p. 801–817.
20. NEČADOVÁ, M. – SOUKUP, J. (2013): The Controversial Concept of National Competitiveness and the Results of the Visegrad Group in International Rankings of Competitiveness (2007-2012). *Politicka Ekonomie*. 2013, vol. 61, no. 5, p. 583–604.
21. NĚMEČKOVÁ, I. (2013): Úloha mzdy v motivaci a stabilizaci zaměstnanců finančního sektoru v České republice ve vztahu k Herzberově teorii dvou dimenzí motivace k práci. *Politicka ekonomie*. 2013, vol. 61, no. 3, p. 373–392.
22. PALIČKOVÁ, I. (2013): *Classification of the Competitiveness of the Visegrad Group Countries at the Beginning of the 21st century*. In JEDLICKA, P. (ed.). Hradec Kralove : Gaudeamus, 2013. ISBN: 978-80- 7435-250-8.
23. SANKOT, O., HNÁT, P. (2015). Comparative Advantage of V4 Countries: Trends and Changes between 2003 and 2013. *Paper prepared in the framework* project "*V4 KOREA-VISEGRAD TRADE AND INVESTMENT RESEARCH*", 2015. Unpublished.
24. ŠEBESTOVÁ J. –ADÁMEK, P. – COONEY, T. M. (2014): Entrepreneurial Activity as a Driver of Economic Sustainability in the Czech Republic: Lessons from Ireland. In HONOVA, I. et al. (eds.). *Proceedings of the 2nd International Conference on European Integration 2014 (icei 2014)*. 2014, p. 651–659.
25. URBAN, S. (2010): *The Development of Entrepreneurship in Poland in 1995-2007*. In P. Jedlicka (ed.). Hradec Kralove : Gaudeamus, 2010. WOS:000310659400042. ISBN: 978-80-7435-041-2.
26. WORLD BANK (2015). Doing Business Historical Data. [online] [cit. 2015–05–31]. Available at WWW: <http://www.doingbusiness.org/Custom-Query/hungary>
27. ZUZEK, D. K. (2014): Barriers to Development of the Innovation Potential in the Small and Medium-Sized Enterprises in Poland. In MAZURE, G. (ed.). *Economic Science for Rural Development: Marketing and Sustainable Consumption - Rural Development and Entrepreneurship - Home Economics*. Jelgava : Latvia Univ Agriculture, 2014, p. 105–111. WOS:000347133500011. ISBN: 978- 9934-8466-2-5.

Korean Investment in the V4 Countries

KOREAN INVESTMENTS IN V4 COUNTRIES: PAST, PRESENT AND TRENDS FOR THE FUTURE

Tomáš Dudáš[28]

Several South Korean corporations transformed themselves into global corporations in the last two decades. They used foreign direct investments to create new production and service facilities on the global scale and their presence was growing also in Central and Eastern Europe. The goal of this paper is to examine the development of Korean FDI to Višehrad 4 countries (Slovakia, Czech Republic, Poland and Hungary) in the last two decades and to try to anticipate the trends of FDI outflows in the coming years.

Key words: South Korea, foreign direct investment, Vysehrad group, automotive industry, consumer electronics industry
JEL: F21, F23

1 INTRODUCTION

During the last decades Republic of Korea (South Korea for the purposes of this paper) has undergone deep economic and social changes. Decades of export oriented economic development lifted South Korea into the group of most developed countries and made it a top 10 exporter in the global scale. Since the 1970s Korean governments were nurturing giant domestic corporations (so called chaebols) that became dominant forces on the domestic markets and started to enter the global markets in the 1990s. Companies such as Samsung, LG or Hyundai became household names in the USA and Europe since the start of the 21th century and they strengthened their international position with production and service facilities in many countries.

The goal of this paper is to analyze the main trends in the South Korean foreign direct investments (FDI) into the countries of the Višehrad group (V4). Although FDI inflows in Central Europe are dominated by European corporations, South Korea is a strong investor country in all four Višehrad countries – Czech Republic, Hungary, Poland and Slovakia. The first part of the paper describes the internationalization process of the South Korean corporations and the resulting outward FDI flows. The second part describes the first wave of FDI inflows into the V4 countries in the 1990s with a focus on the activities of Daewoo Motors. The third part focuses on the second wave of South Korean FDI in Central Europe, which was dominated by Samsung, LG and the Hyundai/Kia group. Finally, the last part of the paper tries to forecast the future of South Korean FDI inflows into V4 countries.

As for the methodology of the paper, the main part of the analysis is built upon official data sources from South Korea, OECD and the statistical offices of the V4 countries. Moreover, the paper will also draw upon studies and papers published in the topic of outward FDI from South Korea and will use data from newspapers, online news-sites and the South Korean corporations themselves. Analysis of the FDI flows on international level is always complicated by missing or distorted data. Multinational corporations often channel their FDI through foreign subsidiaries that are frequently located in tax havens. The situation is no different in the case of South Korea and the V4, as the data of Asian outward FDI flows are often distorted.

---

[28] University of Economics in Bratislava – Faculty of International Relations, Dolnozemská cesta 1/b, 852 35 Bratislava 5, Slovakia, tomas.dudas@euba.sk.

2 INTERNATIONALIZATION OF SOUTH KOREAN CORPORATIONS

Up until the mid-1980s South Korean corporations focused dominantly on the domestic market. This meant that the outward FDI from South Korea was almost non-existent up until this time period (see figure1). But starting in the early 1990s, leading South Korean corporations such as Samsung, LG or Hyundai transformed themselves from domestic companies to fully international corporations in a very short time period. After dominating the domestic market the managements of these companies decided (with government encouragement) to improve their competitive position with an international expansion.

According to the study published by Hwy-Chang Moon, there were four main motivations for South Korean companies to invest abroad - cheap labor, a saturated market at home, cost disadvantage and competition (Moon, 2007). The domestic market in South Korea became highly saturated in the 1980s and offered limited further growth possibilities. Moreover, the rising wage level in South Korea gradually undermined the competitiveness of Korean corporations, what forced them to think about establishing production facilities in cheaper locations. This type of investments focused mainly on less developed countries in Asia, as these countries offered significantly lower level of labor costs compared with South Korea. For example, LG and Samsung opened more than 10 factories in China since the 1990s in order to radically decrease production costs.

FDI activities of the South Korean companies were also actively supported by the Korean government. Initially (at the start of the economic reforms in the 1970s), investments abroad were not a priority, as the economic reforms focused on the intensive use of capital at home. This meant that the investments of South Korean corporations abroad needed government approval (Kim and Rhe, 2009). Things started to change in the early 1980s, when the Korean government liberalized the law relating to outward FDI in several steps. The government realized the changing needs of the corporations and of the South Korean economy as a whole and since 1986 it has relaxed most of the outward FDI related regulations. Since the 1990s, Korean government institutions provide four main types of outward FDI support mechanisms – financial support, taxation, overseas investment services and institutional services (Moon, 2007).

Figure 1: South Korean outward FDI 1970 – 2014 (millions USD)
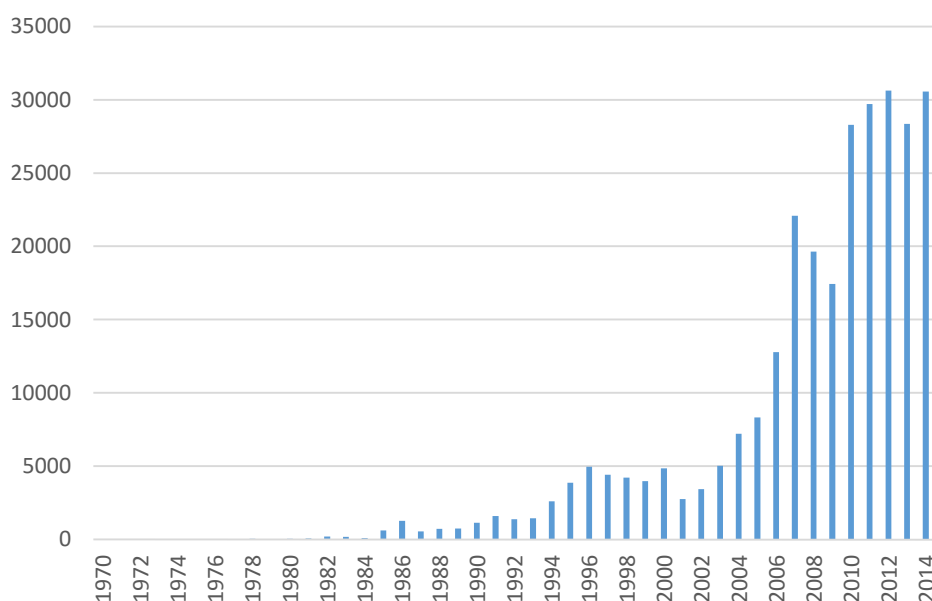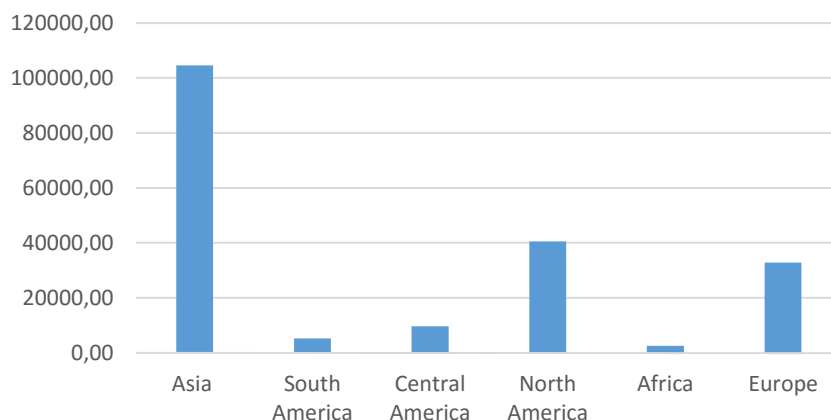

Source: UNCTAD on-line database.

As a result of export success, South Korean corporations started to enter the global markets more and more intensively, what is visible in the trends of Korean outward FDI after 1990. This was the first time in South Korean history, when the levels of outward FDI reached 5 billion USD. But this was just the beginning, the real boom of outward FDI started in the 21st century when South Korean corporations routinely invested more than 20 billion USD yearly abroad in the form of FDI.

According to the Fortune Global 500 list, there were 17 South Korean corporations among the 500 largest transnational corporations in the global economy in 2014. Global companies like Samsung Electronics (13th position), Hyundai Motor (99th position), POSCO (steel production, 162nd position) or LG Electronics (175th position) maintain global corporate networks, so it is not surprising that currently South Korea belongs to the most important investor countries in the world. According to the data of UNCTAD, in 2014 South Korea was the 13th largest investor country in the global economy. In Asia, only companies from Hong Kong/China, Japan and Singapore invested more abroad as companies from South Korea. With strong growth forecasts for the Korean companies, it is likely that these strong outward FDI flows from South Korea will continue also in the near future.

According to the popular gravity model of FDI flows, investor countries tend to invest in the neighboring countries most (close geographical location, common history, languages etc.). This trend is also visible in the case of the Korean outward FDI. East-Asian countries were the first investment targets of Korean corporations and this region has the highest level of Korean FDI stocks even today. According to OECD data[29] the total stock of South Korean FDI in Asia reached 104.5 billion USD at the end of 2012, which was by far the highest level compared to other regions (figure 2). Not surprisingly, most of the FDI is concentrated in Eastern Asia, with China having the dominant amount of Korean FDI stock (50.59 billion USD). Other significant FDI target countries include Hong Kong, Indonesia or India.

Figure 2: Regional distribution of South Korean outward FDI stock at the end of 2012 (millions USD)

Source: OECD.Stat on-line database.

Over the years, South Korean resource seeking FDI (targeting East Asian countries) were complemented with market and efficiency seeking FDI targeting developed economies in Europe and North America. Today, these regions possess the largest Korean FDI stocks after East Asia (figure 2). Large Korean corporations (chaebols) started to invest in their key markets as they wanted to improve the efficiency of their production and logistics systems. The total Korean FDI stocks in Europe reached more than 32 billion USD in 2012.

---

[29] Source: OECD.Stat – FDI positions by partner country.

A more detailed look at the Korean FDI in Europe shows that most of these investments are located in Western Europe. Three countries dominate as host countries of Korean FDI in Europe – the United Kingdom, Netherlands and Germany. These countries received approximately half of the Korean FDI in Europe until 2012. On the other hand, the position of Central Europe is also strong; all V4 countries received more than one billion USD of Korean FDI inflows until the end of 2012. This makes these countries more important for Korean corporations than France, Italy or Spain.

As for the sectoral distribution of the Korean outward FDI, it is dominated by the automotive industry and the high-tech electronics industry. The two hubs of outward FDI are organized around global corporations in these sectors. Companies like Samsung and LG and their subcontractors create most of the outward FDI in the consumer electronics industry. The concentration in the automotive industry is also high; most of the outward FDI is concentrated around the Hyundai/Kia group and its subcontractors.

3 SOUTH KOREAN FDI IN VIŠEHRAD 4 COUNTRIES BETWEEN 1990 AND 2014

The position of South Korea and the four Vyšehrad countries in the global economy is entirely different. South Korea is the synonym for economic success nowadays and it belongs to the top 10 largest exporters in the global economy. Korean corporations belong to global industry leaders, whereas there are a very limited number of V4 companies with real international market position. As it was already mentioned, there were 17 South Korean companies in the Fortune Global 500 list in 2014. In comparison, no company from the V4 countries ever made this list. This reality is also transformed into the FDI flows in these economies. While the V4 countries are typically FDI host countries, South Korea is an important investor country with strong outward FDI flows (see table 1).

Table 1: Position of South Korea and V4 countries in the global economy in 2014 (million USD)

	South Korea	V4 countries
Total export	572 664	587 863
Total import	525 514	559 408
FDI inflows	9 899	24 310
FDI outflows	30 558	7 933

Source: WTO and UNCTAD databases.

On the other hand, the position of South Korea and the V4 countries is similar in international trade. The data in table 1 show that the total export and import levels of these countries are very similar. Moreover, the export structure of these countries is similar. Both the export of South Korea and V4 countries is dominated by cars, electronics and office equipment. But there is an important difference – while the export of South Korea is dominated by domestic corporations, the export of V4 countries is dominated by foreign multinational corporations. Interestingly, large Korean corporations (Samsung, LG and Hyundai) are important exporters also in V4 countries – especially in Slovakia and the Czech Republic. This is obviously the result of strong FDI inflows to these countries from South Korea that reached highly relevant results in the last two decades.

3.1 THE FIRST WAVE OF SOUTH KOREAN FDI INFLOWS TO V4 COUNTRIES

The process of the internationalization of South Korean companies started roughly in the same time period as the economic transformation of Central European countries. South Korean corporations were looking for increased efficiencies and lower production costs in Europe, while post-communist countries were looking for capital, new technologies, know-

how and export possibilities. FDI inflows to Central Europe were dominated by European corporations since the early 1990s and this dominance lasts even today. It is understandable, as corporations from Western Europe were geographically close, possessed knowledge about the region and quickly recognized investment possibilities in Central Europe. In Vyšehrad countries, more than 90 % of the FDI stock originates in European countries (Szunomár and McCaleb, 2015).

Overseas investors from the USA and Asia were slower to react to the investment possibilities in Central Europe. It is understandable, as American, Japanese or South Korean corporations found this region geographically and culturally distant and the first years of economic transition in the 1990s did not help to increase the investment attractiveness of these countries. However, in the second half of the 1990s it was already visible, that most Central European countries will become EU members in the foreseeable future. This development together with improving economic prospects and low wages made the region interesting for non-EU investors. As the Vyšehrad group countries were the frontrunners of European integration and economic reforms, they attracted the largest attention from the group of overseas investors. South Korean corporations invested almost exclusively in these countries.

Daewoo was the first South Korean company to invest significantly in the V4 countries. As the smallest chaebol of the Korean "Big 3" (Samsung, LG and Daewoo) it was ready to take more risks than its competitors and ventured into Central Europe in the area of automotive industry. Daewoo Motors decided to purchase several state owned automotive producers in the region. In the V4 countries, Daewoo purchased a controlling stake in the struggling *Polish* automobile producer Fabryka Samochodów Osobowych (FSO). Daewoo Motors used this factory to start European production of several its models (Tico, Espero, Lanos). In 1995, Daewoo also invested in Fabryka Samochodów Ciężarowych (FSC) focusing on the production of utility vehicles. This meant that Daewoo Motors became the strongest player in the Polish automotive industry.

Besides activities in Romania, Ukraine and Russia, Daewoo Motors also invested in the *Czech Republic*. In a public tender the consortium of Daewoo Motors and Steyr (from Austria) purchased a 50.2 % stake in the Czech Avia automotive company specializing on trucks. Subsequently, the trade name of the company was changed to Daewoo Avia, A.S. In the same year, the company became the exclusive importer and distributor of Daewoo vehicles for the Czech Republic (Hyun, 1998).

Unfortunately, during the Southeast Asian economic crisis of 1997/98 the Daewoo group ran into deep financial troubles. The increasingly strenuous relationship with the Korean government coupled with a huge debt load eventually led to the collapse of Daewoo group, which was the second largest chaebol in South Korea at that time. The company eventually amassed a debt of 84.3 billion USD and collapsed under the weight of this debt. The collapse of the holding group had negative consequences for the investments in Central Europe. General Motors took over the automotive activities of the Daewoo group in 2002, but it was not interested their production capacities in Poland and in the Czech Republic. *Eventually, the companies previously owned by Daewoo Motors became independent and the investments of South Korean automotive companies disappeared from V4 countries for several years.*

The South Korean companies in the consumer electronics industry (Samsung and LG) were not as bold in investment strategies in Central Europe as Daewoo Motors. The situation in this industry was very different compared to the automotive industry in Central Europe. As most of the consumer electronics companies in Central Europe were technologically outdated and on the brink of collapse, there were no possibilities for acquisitions for foreign investors. That meant that essentially all FDI projects had to be Greenfield projects in the region.

Samsung was the first consumer electronics company to invest in the V4 countries, when it built a new factory in the *Hungarian* city of Jászfényszaru to produce TV sets in 1990. This factory became one of the cornerstones of Samsung in Central Europe and it has produced more than 60 million TV sets until today. This factory continued production after the LCD technology transition and has been expanded several times (last time in 2014). In 1991 Samsung invested also in the *Slovak part of Czechoslovakia*, where it created a joint-venture with the local Calex Corporation to produce fridges and freezers. However, this joint-venture proved to be a failure and Samsung withdrew itself from it in the second half of the 1990s.

The automotive industry was not the only industry *Daewoo Group* was active in the V4 countries. Daewoo established a factory for the production of TV sets and other consumer electronics products in *Poland* in 1994. This factory produced TV sets for the Polish market and for export to other European markets and was expanded in 1998. The already mentioned collapse of the Daewoo group meant that Daewoo Electronics sold this factory in the early 2000s.

To make a final assessment of the first wave of Korean FDI in V4 countries in the 1990s, we can state that despite the (geographical and cultural) distance between Central Europe and South Korea, Korean companies invested in this region quite aggressively. To improve its international position, Daewoo Motors heavily invested in Poland and in the Czech Republic and in the consumer electronics sector two from the three leading South Korean companies (Samsung and Daewoo) established production facilities in Poland. The collapse of the Daewoo Group in 1998 complicated the involvement of Korean companies in V4 countries, but the new century brought a further expansion of Korean activities in the region with new players like Hyundai, LG, Hankook Tire or Nexen Tire.

3.2 THE SECOND WAVE OF SOUTH KOREAN FDI INFLOWS TO V4 COUNTRIES – THE GREENFIELD WAVE

After the year 2000 the economic and political development of V4 countries was getting more positive and it was clearly visible that these countries will become EU members in the near future. The Czech Republic, Slovakia, Poland and Hungary became EU members in 2004 and the membership in the single market became an important factor of investment attractiveness for non-EU investors. The powerful combination of EU membership, low wages, good geographical location and interesting investment incentives proved attractive also for South Korean transnational corporations from the automotive and consumer electronics industry.

In the case of the *automotive industry*, there was only one major player left in South Korea after the collapse of the Daewoo Group – the Hyundai Motor/Kia Motors automotive group[30]. Hyundai and Kia started international expansion in the early 1990s and had no foreign production facilities until the early 2000s. The market successes in the USA and Europe led to a decision to establish production facilities in these key markets. In Europe, Hyundai and Kia tried to emulate the behavior of German automotive corporations and decided to establish a production base in the V4 countries. The factory to produce *Kia* models was finished in 2005 in *Slovakia* and currently it produces around 300 thousand cars yearly. The Kia plant near Žilina is one of the most advanced automobile factories in Europe and Kia plans its future expansions. As the automotive industry is a very complex industry, the Kia factory in Slovakia drew other South Korean investors (serving as subcontractors to Kia) to

---

[30]After the Southeast Asian Crisis of 1997/98 Hyundai Motor Company acquired 51% controlling stake of Kia Motors. However in the next years the stake of Hyundai decreased to 33.88%, which makes Hyundai still the largest shareholder of Kia Motors.

the country. These investors include Korean companies such as Mobis, Dongwon Metal, Sewon ECS, Hysco, Donghee and others.

Hyundai Motor decided to build its factory for Hyundai models in *Czech Republic* – near to the plant in Slovakia in 2006. This plant was opened in 2008 in Nošovice and its size is similar to the factory in Slovakia (approx. 300 000 thousand cars a year). The Nošovice factory produces models specially designed for the European markets in Hyundai's design center in Germany. Besides car assembly the factory produces also change gearboxes not only for the Czech plant, but also for the Žilina plant in Slovakia. As in the case of the Kia factory, South Korean subcontractors also followed Hyundai to the Czech Republic and created approximately another 7 000 new workplaces. Companies like Pyeonghwa Automotive, Hyundai Mobis, Hysco, Dymos and others greatly contributed to the economic development of the Czech Republic.

Overall, *Hyundai and Kia* helped to create a strong automotive cluster in Slovakia and the Czech Republic, which is dominated exclusively by global automotive groups (VW, PSA or Toyota among others). But the second wave of Korean FDI inflows to V4 countries is not only about the automotive sector, as consumer electronics giants Samsung and LG also played an important part in the rise of huge Greenfield projects.

We can say that *Samsung* was the first key player in the Greenfield expansion, as it opened its factory in *Slovakia* already in 2002. The factory in Galanta started as a brownfield project with a reconstruction of an abandoned factory to produce Cathode Display Tube computer monitors. However, Samsung eventually decided to move its European production center to Galanta and in 2003 started to produce LCD televisions in the factory. The factory was expanded several times in the last decade and produced more than 50 million units of various consumer electronics products. To improve logistics and production processes Samsung opened a second factory *near Trnava* in 2008. This factory produces LCD modules that are the key component of LCD televisions and monitors. Samsung Electronics Slovakia was the fourth largest company in Slovakia in 2014 and also belongs to the key Slovak exporters.

Although consumer electronics is less complex than the automotive industry, the gradual expansion of the Samsung production base in Slovakia induced further FDI inflows from South Korean subcontracting companies. Even though companies like Dong Jin Precision Slovakia, KIHWA SK, Dongyang Gangchul EU or Jin Young G&T Slovakia invested less than their counterparts in the automotive industry, their contribution to the economic development of the Trnava region is still significant.

LG group, the other consumer electronics giant from South Korea, chose *Poland* as its main European production center. The factory to produce LCD products opened in Kobierzyce near Wroclaw in 2005. It is a single manufacturing system that allows LCD products and components to be produced and assembled at a single location for the European markets. This investment involves several companies of the LG group - LG Chem, LG Innotek and LG Display. Moreover, LG expanded its Polish factory in 2011 to produce other consumer appliances – notably refrigerators and washing machines. As in the case of other giant South Korean Greenfield projects, the LG production cluster created additional FDI inflows from other Korean corporations such as Dong Yang, Dong Seo, Heesung, POSCO or Starion. Today, this production cluster serves as the main European production hub of LG and employs more than 10 thousand employees including the subcontracting companies.

Besides automotive and consumer electronics sectors, there was a new industry for South Korea that began to expand in Vyšehrad countries in the second half of the first decade of the 21st century – tire producers. Big Korean tire producers such as Hankook and Nexen started their international expansion only after the year 2000 and chose to create their European production bases in Central Europe.

126

Hankook Tire (7th largest tire producer on global level) was the first Korean tire producer to invest in V4 countries. The goal of the investment was similar as in the case of other South Korean companies – to reduce delivery times for the European markets. After several rounds of negotiations Hankook chose to set up its European factory in *Hungary*. The deal to build this factory in Dunaújváros was signed in 2007 and it reached its full production potential in 2010. The Dunaújváros factory has been already expanded in 2011 and the second expansion cycle has been finished in 2015. Nowadays, the factory produces 500 different types of tires and employs more than 3 000 employees.

Nexen Tire (the main competitor of Hankook in South Korea) decided to follow the lead of Hankook and created its European production base in the *Czech Republic*. Similarly to Hankook, Nexen had no production facilities in Europe and needed to improve the logistics of the European markets. Nexen Tire signed and investment treaty with the Czech government in 2014 to build a tire manufacturing plant in Žatec (approximately 70 kilometers from Prague). The construction of this plant started in the second half of 2015 and will start production in 2018. The total value of the investment will exceed 800 million euros and the factory will employ more than 2 000 employees.

Czech Republic is also the home of a Greenfield investment of a different type of South Korean company – *GS Caltex*. It is a South Korean oil refiner that also produces various petrochemical products. This company is one of the leaders in its industry in East Asia and wanted to create a presence in Europe. GS Caltex decided to build its factory in Karviná as the first subsidiary of the GS Caltex Company in Europe in 2012. The factory started production of compound polypropylene granules in 2013 and supplies these materials for the the production of automotive components, both interior and exterior parts and also parts for home appliances.

Overall, South Korean companies are an important presence in the V4 countries. As FDI inflows in these countries are dominated by European investors, Korean investors belong to the most important non-European investors in all V4 countries. If we compare the three largest economies in East Asia (China, Japan and South Korea), it is visible that South Korean companies built the strongest presence in V4 countries. The data in table 2 clearly show that South Korea is the largest investor country in three from four Vyšehrad countries – except in Poland. In comparison, the investment position of China was almost insignificant in Central Europe at the end of 2012.

Table 2: FDI Stock from China, Japan and South Korea in the V4 countries in 2012 (million USD)

	China	*Japan*	*South Korea*
Czech Republic	-7.1	1058.1	1228
Hungary	65.4	772.6	1047.7
Slovakia	47.1	92.9	1899.1
Poland	218.5	1093.1	625.8

Source: Szunomár and McCaleb, 2015, p. 9.

4 CONCLUSION

The countries of Vyšehrad group offer a set of very attractive features for foreign investors in the area of industry. Good geographical location, cheap labor costs, relatively good infrastructure, EU membership and generous investment incentives caught also the attention of South Korean industry giants that were in the phase of internationalization and were thinking about establishing a production base in Europe. At the beginning of the 21st century there was no other location in Europe that could be more attractive as countries in Central Europe.

So there was no surprise that all the South Korean industry giants chose to create their production base in the V4 countries. Samsung, LG, Hyundai, Kia, Nexen and Hankook all created major Greenfield projects in these countries in the last fifteen years. The investments were distributed between the V4 countries relatively evenly – Slovakia has Kia and Samsung, Hungary received FDI from Hankook and Samsung, Czech Republic from Hyundai, GS Caltex and Nexen and Poland from LG. As the investment attractiveness of these countries is very similar, the decision of South Korean companies often came down to details – such as offered investment incentives.

As for the future prospects of South Korean FDI inflows to V4 countries, we see a decline of large of Greenfield projects in the region in the last years. This trend is also reflected in the investment activities of the South Korean companies. All the major Korean corporations already established their production base in the V4 countries and in the future we see only limited possibilities for new big Greenfield projects. On the other hand, we can await further expansion of the already existing production bases, as Central Europe still offers the best conditions in the area of manufacturing. This trend is visible in the last years, as Samsung, Hyundai, Hankook and LG all expanded their production facilities in the V4 countries.

If we assess the longevity of the South Korean projects in V4 countries, the automotive industry has the best long term prospects. Automobile production is a complex process and the relocation of production facilities is associated with high costs. Hyundai and Kia spent hundreds of millions of euros to create their production networks in Slovakia and in the Czech Republic in the last decade, so it is not very probable that these corporations will be willing to move these production facilities in the foreseeable future. The same is true for the tire producing companies Hankook and Nexen that were the last Korean companies to invest in Central Europe, so they plan a long term engagement in the region. The consumer electronics business is more vulnerable, as the products are less complex and Asian countries can be seen as interesting alternatives for production facilities in this industry. However, the V4 countries will be competitive also in this industry for at least the next decade.

REFERENCES:
1. FORTUNE. (2015): Fortune Global 500. [Online.] [Cited 20.10.2015] Available online: <http://fortune.com/global500/>.
2. HYUN, Y., S. (1998): Globalization of Daewoo Motor: From joint venture to most aggressive globalization maker in the car industry, between globalization and regionalization. [Cited 16.9.2015.] Available online: <http://gerpisa.org/ancien-gerpisa/actes/22/22-3.pdf>.
3. KIM, J., M. – RHE, D., K. (2009): Trends and determinants of South Korean outward foreign direct investment. In: *The Copenhagen Journal of Asian Studies*, 2009, 27, 1, pp. 126-154.
4. MOON, H., Ch. (2001): Outward foreign direct investment by enterprises from the Republic of Korea. In: *Global players from emerging markets: Strengthening enterprise competitiveness through outward investment.* New York and Geneva: United Nations, 2007. Pp. 92-106. UNCTAD/ITE/TEB/2006/9.
5. OECD. (2015): OECD.Stat. [Online database.] [Cited 19.10.2015.] Available online: <http://stats.oecd.org/>.
6. SZUNOMÁR, A. – McCALEB, A. (2015): Comparing Chinese, Japanese and South Korean FDI in Central and Eastern Europe: macroeconomic versus institutional factors. [Online.] [Cited 20.10.2015] Available online: <https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=WCCE2015&paper_id=205>.

7. UNCTAD. (2015): UNCTAD STAT. [Online database.] [Cited 24.10.2015.] Available online: <http://unctadstat.unctad.org>.
8. WTO. (2015): International trade and market access data. [Online database.] [Cited 24.10.2015.] Available online: <http://www.wto.org/english/res_e/statis_e/statis_e.htm>.

KOREAN INVESTMENTS IN V4 CAR, ELECTRONIC AND BANKING SECTOR

Viktória Endrődi-Kovács, Gábor Kutasi, Tamás Stukovszky[31]

The paper focuses on manufacturing FDI from Korea to V4 region in addition with the banking investments to uncover the supply chains. Since car manufacturing and electronics industry concentrate the Korean FDI in V4 countries these two industries are highlighted in the survey on the V4-Korean supply chain relations. The funding and the financial service supply of these Korean manufacturers is made by Korean commercial banks exclusively that is why the paper supplements an analysis about the behavior of Korean financial companies in V4.

Key words: Korea, V4, car manufacturing, electronic engineering, banking
JEL: F21, F23, G21, L62, L63

1 INTRODUCTION

The Korean investment activity toward V4 countries is strongly related to the V4 competitive and locational advantages. The V4 region is quite efficient in relative wage cost of machinery manufacturing in the European comparison. This characteristic makes the V4 countries attractive for intercontinental FDI to be domestic in the single market of the EU which is one quarter of the global economy. Besides, the Korean multinational sectors are so much concentrated that the Korean FDI in V4 region appears not only in some industries, but the analysis can be reduced to few transnational companies. The following analysis focuses on industrial supply chains and company linkages. The structure of the survey is divided by the main industries which concentrate the Korean corporate presence in the V4 region. Since car manufacturing and electronics industry concentrate the Korean FDI in V4 countries these two industries are highlighted in the survey on the V4-Korean supply chain relations. The funding and the financial service supply of these Korean manufacturers is made by Korean commercial banks exclusively that is why the paper supplements an analysis about the behavior of Korean financial companies in V4. The analysis is based on theories of FDI, market forces and corporate transnationalization.

2 METHODOLOGY

To analyze South Korean investments in V4 car industry and electronic engineering, we make an industrial analysis by the three sectors. First, the companies are introduced which are located in V4 countries/Hungary. Information is mostly based on national investment promotion agencies and an interview made with the Samsung corporate representatives? The methodological background is the Porter's five forces analysis and SWOT analysis to identify the main factors related to the sectors.

The five forces model originated from Michael E. Porter's (1980) book 'Competitive Strategy: Techniques for Analyzing Industries and Competitors.' Since 1980, the book has published in several times and the model has become a frequently used tool in analyses about company's competition environment and strategy. Porter identified five competitive forces that shape every single industry and market. These forces help us to analyze everything from the intensity of competition to the profitability and attractiveness of an industry.

---

[31] Viktória Endrődi-Kovács, Corvinus Universtiy of Budapest, endrodiviki@gmail.com, +36-1/482-5235
Gábor Kutasi, Corvinus Universtiy of Budapest, MTA Bolyai Scholarship and KAAD Osteuropaprogram, gabor.kutasi@uni-corvinus.hu, +36-1/482-5266
Tamás Stukovszky, Corvinus Universtiy of Budapest, stuko@stuko.hu

The first element of the model is **'threat of new entrants'** which shows how easy for new companies to enter into the industry, whether there is a cutthroat competition there will be or not. Barriers to entry can be e.g. economy of scale (which means that the increase in efficiency of production as the number of goods being produced increases. Cost advantages can sometimes be quickly reversed by advances in technology), patents (which give a firm the legal right to stop other firms producing a product for a given period of time), distributor agreements (exclusive agreements with key distributors or retailers can make it difficult for other manufacturers to enter the industry), know how (which is hard to get or government policy).

The second element is **'power of suppliers'**, which means how much pressure suppliers can place on a business. If one supplier has a large enough impact to affect a company's margins and volumes, then it holds substantial power. Some reason why suppliers might have substantial power: existing loyalty to major brands, incentives for using a particular buyer, high fixed costs, scarcity of resources, high costs of switching companies or government legislation.

The next element of the model is **'power of buyers'**, which represents how much pressure costumers can place on a business. Similarly to powers of suppliers, if one customer has a large enough impact to affect a company's margins and volumes, then the costumer hold substantial power. The reasons can be: there are very few suppliers of a particular product, there are no substitutes, switching to another (competitive) product is very costly, the product is extremely important to buyers or the supplying industry has a higher profitability than the buying industry.

The fourth element of the model is **'availability of substitutes'** which answers the question: What is the likelihood that someone will switch to a competitive product or service? If the cost of switching is low, then this poses a serious threat. Here are a few factors that can affect the threat of substitutes: customers are price sensitive, switching to another, competitive product is simple, small number of buyers or the product is not extremely important to buyers.

The final, fifth element of Porter's five forces model is **'competitive rivalry'**, which describes the intensity of competition between existing firms in an industry. Highly competitive industries generally earn low returns because the cost of competition is high. A highly competitive market might origin from the similarity of substitutes (Porter 1980).

Our other tool to analyze South Korean investments is the SWOT analysis, which is a well-known structures planning method to evaluate the industries' **strengths, weaknesses, opportunities and threats** involved in a project or business.

The funding and financial service background of manufacturing by Korean commercial banks are analyzed on the basis of financial FDI theories. Besides, the market factors and circumstances in the V4 region is surveyed. The behavior and market position of Korean banks are concluded from statements, data on presence and assets and SWOT analysis.

3 AUTOMOTIVE INDUSTRY
3.1 HISTORY OF THE AUTOMOTIVE INDUSTRY IN SOUTH KOREA

South Korea realized the importance of the automotive industry - as a main driving force for potential economic development - in the early 1960s. As a result of this the country involved the vehicle producing plans into their actual 5-year economic development plan and were even enacting the "Automobile Industry Protection Law" that prohibited the import of fully assembled passenger cars. The government decided not just to put efforts on research and development but also to buy licensing agreements that could speed up the Korean automotive industry's development. They also hovelled alliances with international carmakers - as Fiat, Ford, Mazda and Toyota - to attract the state of art know how into the country. The

typical example for the processes for this period is the so-called Hyundai model, in 1967 Hyundai set up a new plant cooperating with Ford just in 6 months to be able to assemble passenger cars from the imported parts, while Hyundai was able to gain the technology and knowledge for themselves. (Southerton, 2014)

Despite the early promising and growing tendencies – success of the first Korean developed passenger car, the Hyundai Pony – the production and the external sales plummeted after the second oil crisis in the early years of the 1980s. But as a result of typical Korean hard work and precisely planned R&D with high quality production process Hyundai could penetrate the U.S. car market in 1986 with enormous success of selling more 150k vehicles . After less than a year two other South-Korean companies entered the market: Daewoo and Kia. These three companies doubled the aggregated Korean passenger vehicle sales in the USA for 1987 almost reaching the 350k sold cars. (Green, 1992)

In the next few decades South Korea became from a promising emerging country to one of the 5 biggest motor vehicle manufacturing country in the world. These years of growth and development also contained some general issues. In the early 1990s the Korean car producing companies had to cut costs to be able to compete in the U.S. markets effectively, which turned into quality issues. As a result of this process, some construction defects outcropped in these Korean origin vehicles that led to bad reputation and mistrust. The leading vehicle exporting companies of South Korea realized that they have to invest in quality and they have to be better suited for the U.S. and western European needs. Hyundai even offered warranty for between 7 and 10 years or in another construction, warranty for 100.000 miles, to regain market trust. According to a survey in 2013 Hyundai was the 4th best choice for the USA citizens in terms of value that means people seems to be satisfied what they get from Hyundai for their money. (2014 Car-Brand Perception Survey)

The three biggest vehicle producing companies of South Korea (Daewoo, Hyundai and Kia) were taking part in the international markets with growing sales but the Asian financial crisis hit the industry in 1997 causing financial and structural problems. Even Samsung - the giant of the electronic industry – tried to penetrate the commercial vehicle part of the automotive industry in 1994, but the Asian financial crisis doomed their plans, Samsung had to sell their automotive interests to Renault in 2000. After the Asian crisis and the short consolidating period, the international expansion continued from the point of Korean companies but now focusing for Europe. South Korea quickly realized the importance of the trade possibilities with the European Union and they decided to start negotiations for bilateral trade agreements in 2007. The Free Trade Agreement was finally signed in 2009 and it has an own Automotive Annex that helped a lot to abolish the non-tariff barriers as well, but there are some issues because of some misinterpretations between EU and Korean authorities, but hopefully these issues can be solved in the next few years. The other problem is the current asymmetrical trade flow with massive growth for South Korean passenger car export, while the EU automotive industry gained only in a relatively modest way and just in the luxury car segment. (South Korean passenger car export to EU: 380k – growth of 41%, EU passenger car export to South Korea: 80k – growth of 7%) It would be useful to further analyse why the EU auto market products cannot penetrate the Korean market, because it seems like that there are new, hidden barriers that makes distortions in the current trade relation. As we can see that South Korea became the biggest source for vehicle imports into the EU bumping Japan and the USA in terms of the number of imported vehicles containing 21% of the EU imports. (ACEA 2014)

It is also interesting, while the passenger and commercial car market yet in the EU is strongly stagnating, the internal ratios are changing. We can say that the EU is reaching – or it might have already reached – the approximate amount of passenger and commercial vehicles that serves their needs. According to the current international tendencies in the automotive

industry a lot of companies are investing in China and India, because of their booming demand of cars and buses. It seems even more practical when we realize that the labor force costs significantly less than anywhere else in Europe, so originally European car and commercial vehicle manufacturers are concentrating on the increasing Asian demand focusing on their needs, building production facilities in Asia. During this process, big automotive manufacturers like Opel (GM) in Bochum started to close European locations for cost cutting reasons. As a result of this process, the relative ratio of South Korean vehicles grew in the last few years among the European car shares. (ACEA 2014)

3.2 MAIN SOUTH KOREAN INVESTMENTS IN THE V4 COUNTRIES

Since the establishment of the Visegrad Group in 1991 the members have always claimed their goal to cooperate and act together in economic questions. Unfortunately there were just few cases where the V4 members could really act together from economic point of view with real, perceptible effects. Automotive industry could be the topic, where they really could help each other, and together they may be able to attract significantly bigger foreign direct investments. Table 1 contains investments from South Korea since 1995. It is obvious that there were no possibility before the middle 1990s for the Korean investments, as the V4 countries were just regaining their own freedom, and Korea was mainly active at the American markets, and they have not discovered the potential of the Central European market.

The first attempt was in Poland in Warsaw and in Lubin by Daewoo Motors in 1995. Daewoo Motors was established in 1982 and it quickly became one of the biggest car manufacturers in South Korea. Their success was that all vehicles they produced were based on models from General Motors, what made them attractive. In 1992 the joint venture project came to an end with General Motors, so Daewoo became an individual car manufacturer. Daewoo made its own first European investment project in Poland, and the aim was to penetrate the European market, from the heart of Europe with relatively cheap labour force. Unfortunately the Asian financial crisis hit hard Daewoo, and the company was not able to survive on a long run, in 2001 the assets of the passenger car section was bought by GM, in 2002 the assest of the commercial vehicle section was acquired by Tata Motors. Nowdays the old Daewoo designed cars are available redesigned under the name of Chevrolet GM. Polish subsidy Daewoo Motor Polska went bankrupt, In 2003, the factory was bought by Intrall, a British investment group, and the production of the iconic Lublin van was resumed. Daewoo FSO Warsaw also went bankrupt, but as the overseas Daewoo units were not part of the GM deal, FSO Warsaw became independent and with the help of the Polish government, it could survive until 2007. Officially FSO Warsaw factory was closed in 2011, because it could not develop the vehicles they were producing. Daewoo also started to produce vehicles in the Czech Republic, in 1998, Brno. The company established a joint venture with Avia mainly focusing on commercial vehicles. The project was a success, but after the losses of Daewoo, the company had to sell its shares to a Czech-based investment company called Odien in 2005. With this action we can say that the first Korean period in the V4 countries finished, and in 2007 the second investment period started with other automotive market members.

After the V4 group members reached one of the integrations basic goal – to move and act together towards the direction of the European integration – becoming the member of the European Union, the South Korean investors rediscovered the region and decided to build new producing units. In 2007 Hankook Tire opened a car tire factory in Rácalmás, Hungary where they altogether invested 890 million € in three stages and 3300 people are being employed. Hankook was established in 1941 and for 2014 the company became the 7th biggest tire producing company in the world with 90 million tires per year, suppling companies like Porsche, Audi, BMW, Mercedes-Benz, Ford, Skoda, KIA, Volkswagen and

Hyundai. In 2007 Kia entered Slovakia, and with this, the last V4 member country was reached by one of the Korean major automotive companies. This 1 billion € investment created more than 3700 new workplaces, producing yearly 300.000 new units, most of these are KIA C'eeds, which model was designed specially for European customers. After the 1998 interlocking of KIA and Hyundai – when Kia was rescued from bankruptcy by Hyundai, which took a 50,1% stake in Kia in return for saving it. Since then the two brands have grown steadily alongside each other, especially in Europe – it seemed logical to have a Hyundai factory close to the existing KIA factory just 90 kms away, in the Czech Republic, in Nosovice. As a result of the 1,16 billion € investment from South Korea, 3200 employees and app. 300.000 car units are produced per year in Nosovice. The sizes and the capacity seems to be very similar to the Slovakian KIA plant.

The third wave of the Korean automotive investments started in 2014 and it is still on its way in 2015. Hyundai Mobis – the based module and car components producer for Hyundai Motor Czech Rep. – started to build its factory in 2014 in Ostrava, potentially generating 900 new workplaces in the region. While automotive parts manufacturer Woory Industrial will build a production plant in Komárom in the value of 35 million € generating 250 new workplaces in the city.

Table 1: Main South Korean automotive investments in the V4

Country/ Investment	Company	Year of investment	Main profile of the company
Hungary	Hankook Tire Magyarország Kft.	2007 Rácalmás	Car tire manufacturer
	Woory Industries	2015-2018 Komárom	Car parts manufacturer
Slovakia	KIA Zilina	2007 Zilina	KIA C'eed
Poland	Daewoo - FSO	1995-2004 Warsaw	Daewoo Lanos, Daewoo Matiz
	Daewoo Motor Polska	1995 – 2001 Lubin	Daewoo Nexia, "Lublin" van and the "Honker" military vehicle
Czech Republic	Daewoo - Avia	1998 - 2005 Brno	"Lublin" van and the new Avia D60/90 truck series
	Hyundai Motor Manufacturing Czech	2008 - Nosovice	Hyundai i30, ix20, ix35 series
	MOBIS Automotive Czech	2014 - Ostrava	Based module and car components producer for Hyundai Motor Czech

Source: Edited by the authors based on the literature

3.3 SWOT ANALYSIS OF KOREAN AUTOMOTIVE INVESTMENTS IN V4

With the following SWOT analysis we are about to summarize the Korean automotive investments in V4 countries, why is it or why was it favourable for the Korean companies to invest in the Visegrad countries.

Strengths:
- Traditionally vehicle manufacturing countries (Czech Republic – Skoda ; Hungary – Ikarus, Tatra ; Poland – Polski Fiat, Warszawa)
- The region is full of high quality suppliers for the automotive industry, because of the industrial origins

- Relatively cheaper labour force comparing to the South Korean wages

Weaknesses:
- Relatively expensive labour force comparing to the new automotive centers (China, India)
- Almost saturated European market from the view of passenger and commercial vehicles
- V4 countries inner tensions make the regional integration less effective and less attractive for FDI

Opportunities:
- The V4 countries have cheap and well-qualified working force. These countries support the education of experts of the electronic engineering industry.
- These countries are located in the heart of Europe, structurally, politically, and institutionally open economies.
- These countries are part of the EU market since 2004, which helps to the Korean companies to reach the main European countries easily. Because of this, after the transition, helped by their central geographic location and continued moderate labour costs, Poland, the Czech Republic, Slovakia and Hungary have become low-cost manufacturing powerhouses serving Western Europe. Factories and assembly plants related to electronic engineering also, often run by multinationals, are producing finished goods to be sold right across the EU (FT 2010).
- These countries are also a gateway between Europe and Asia – easy to reach the market of CIS also (Commonwealth of Independant States).
- These countries have built a business friendly environment which is now conforms to EU investment incentives.
- These countries have highly developed logistics, transport and communication infrastructure, which are developing day-by-day.
- To involve national small and medium-sized companies to supply chain and the group of supplier and distributors.
- To develop economic relations among South Korea and V4 countries. To develop the vendor relations.
- Long history of industry-academic cooperation (see e.g dual training between Mercedes or Knorr-Bremse and Kecskemét College ; Audi and Győr Collage). It can be extended to Korean companies also.
- Establishing complex automotive regions where every part of the car is produced and built inside a 100-150 km circle (e.g.: potential Győr, Wien, Bratislava automotive triangle)
- Relatively cheaply gaining R&D advantage. The newly growing regions biggest missing source is the quality knowledge in R&D and the Visegrad countries are currently the best place to gain cheap and quality R&D work.

Threats:
- Hungary, Republic of Slovakia and the Czech Republic have small markets, with relatively weak purchasing power in comparison with other European countries.
- South Korean culture differs from the V4 countries' culture, which has an effect on economic relations.
- Burden of administration.
- Capital is moving out from Europe to BRICS regions in the automotive industry, especially to the Asian region.
- New competitors in the world:

- o China, which has also cheap working force combining with enormous capital possibilities with 300 million new potential car user, 27 million of them with rapidly increasing purchasing power.
  - o India – growing population, less
- The heart of the growth of global automotive industry is China, without their annual vehicle sales increase, the global sales were in an approximately 3% decrease, that means the global trends are depending from China and from the growing vehicle demand of China.
- The Ukrainian - Russian war crisis effects the V4 countries economy

4 ELECTRONIC INDUSTRY
4.1 THE ROLE OF KOREA IN ELECTRONIC ENGINEERING
South Korea over the past four decades has demonstrated incredible growth and global integration to become a high-tech industrialized economy. Until the 1960s the Korean electronics industry was in rudimentary state, the export share of the industry was only about 0,9% of the whole of manufacturing industry in 1965, and the only meaningful export product was transistor radios. The American investments (e.g. Komy or Motorola) helped to boost industry (Kim 1996). Korean electronics companies have been rising since the 1970s and nowadays become to own a significant share of the world electronics market. The Korean government played a big role in it also, supported the electronic industry through different programs, e.g. from 1992 to 2001 through the Highly Advanced National (HAN) – G-7 program, which supported broad-ranging R&D programs focused on strategic technologies and linking many disciplines and technologies together for synergistic advancement (WTEC 1997). The purpose of this project was to create a technological leap to the level of developed countries, to catch up with them and to help the industry from early stage R&D up to commercialization (Schlossstein 2010).

The government programs lower the cost of basic research and plant modernization, and government funding of university and other educational programs improves and maintain the availability of skilled technologists and researchers.

According to the Forbes (2015a) Global 2000 Leading Companies in 2014, among the top 10 Korean businesses in the world there are two main companies in related to electronic engineering: Samsung Electronics and SK Hynks, which ranks (Korean/World) are 1/22 and 9/439. Samsung Electronics Co., Ltd. engages in the manufacture and sale of electronic products. The firm operates through different business divisions: Consumer Electronics (CE), Information Technology & Mobile Communications (IM), and Device Solutions (DS). The CE business division provides cable television, monitor, printer, air-conditioners, refrigerators, washing machines, and medical devices. The IM business division offers handheld products, communication systems, computers, and digital cameras. The DS business division comprises of memory, system large scale integrated circuit, and light emitting diode. The company was established on January 13, 1969. SK Hynix, Inc. manufactures diodes, transistors and similar semi-conductor devices. The company was set up on October 15, 1949 (Forbes 2015a).

4.2 KOREAN ELECTRONICS INVESTMENTS IN V4 COUNTRIES
One part of the South Korean economic development is the internationalisation of the companies. Among the V4 we can observe several investments in related to electronic engineering (mainly in Hungary, Poland and Slovakia) beginning from the 1990s, the transition of V4 countries (see Table 2). Nowadays these countries are competing to attract more South Korean investments in their country, creating favourable investment climate. Similar to car industry, in electronic sector within the last years we can observe a huge

competition among V4 countries. These countries offer attractive financial and regulatory incentives. E.g. in the case of Samsung Electronics LCD, Hungary and Czech Republic also competed to attract that investment, but finally Slovakia managed to win the project. Slovakia offered extremely favourable conditions: flat rate (19%) and gave a 332 million Slovakian koruna contribution to the investment (in a form of five year long loan), which was favourable for suppliers of Samsung also (Parameter 2008).

In the region (mainly in Hungary and Slovakia) the Samsung plays a decisive role in related to electronic production, have realized the most investments. Moreover lots of other Korean companies realize investments in V4 countries after the investments of Samsung, which are strongly related to Samsung and manufacture several components for Samsung.

Table 2: Main South Korean electronic investments in the V4

Country/ Investment	Company	Year of investment	Main profile of the company
Hungary	Samsung Electronics Hungary Zrt.	1989 Jászfényszaru	Production of televisions, led screens and plasma devices
	Samsung SDI Magyarország Gyártó és Értékesítő Zrt.	2001 Göd (closed in 2014)	The plant manufactured colour televisions picture tubes, plasma TV panels and mobile phone displays.
	LG Electronics Kft.	1992 Budapest	Distribution and logistics center for Hungary and 8 Balkan countries
Slovakia	Samsung Electronics Slovakia s.r.o	2002/2006/2012 Galanta	2002: Manufacture of computer, electronic and optical products 2006: distribution and logistics center for Europe
	Samsung Electronics LCD Slovakia s.r.o.	2007 Voderady	Production of LCD and LED TVs, LCD monitors, HDD and Blu-ray players and satellite receivers
	Topaz LGP, s.r.o.,	2011 Piešťany	Manufacture of computer, electronic and optical products
	I Nano Tech Slovakia	2010 Sládkovičovo	Manufacture of computer, electronic and optical products
Poland	LG Electronics Sp. z o. o.	1999 Mława	TV plant
	LG Philips LCD Poland Sp. z o. o.	2007 Kobierzyce	Manufacture LCD products and components
	Samsung Electronics Poland Sp. z o. o.	2000 Warsaw	Samsung Poland Research & Development Center (SPRC), software development for mobile phones and LCD screens
	Daewoo Electronics Polan d Sp. z o. o.	1993 Pruszków	TV-set factory
Czech Republic	Samsung Electronics Czech and Slovak, s.r.o.	2005 Praha	Audiovisual equipment supplier

Source: Edited by the authors based on the literature

Republic of Korea ranks among the most significant foreign investors in Slovak Republic. According to the Embassy of the Slovak Republic of Seul (2015) the total FDI are coming close to 1 billion USD, while the largest part of it has already been invested in years

2005-2008 (with total volume of 755 million USD). According to Korea Eximbank, Republic of Korea invested 94,5 million USD between 2009-2011. There are more than 80 Korean companies, which have already invested and are based in Slovakia, many of which are involved in car or electronic industries. Since 2000 the electronic engineering has become the second strongest pillar of Slovak industry after automobile production, and the second biggest employer and exporter (Sario 2015). Among over 80 Korean companies based in Slovakia, the more significant companies are Samsung Electronics Slovakia s.r.o. in Galanta (assembly of electronic products), which is the second largest Korean company in the country after KIA Motors. The third largest Korean company in Slovakia is Samsung Electronics LCD Slovakia s.r.o., Slovakia in Voderady, which produces electronic components and LCD modules. One significant Korean company in Slovakia is Dong Jin Precision Slovakia Sereď, which products are metal moldings for Samsung Electronics. Another significant Korean company is Woo One s.r.o. in Šurany, which main profile is the production of components for monitors and printers. Finally, we can mention Karam Tech Europe, s.r.o. in Nitra, which produces electronic components (Embassy of the Slovak Republic of Seul 2015). There are lots of Korean companies which are related to Samsung group: e.g. Nuritech Global in Hurbanovo whose subsidiary was established in 2005. The Korean electronics supplier company manufactures electrical equipment, components for the Samsung Electronics. Another example is SeongJi Slovakia, s.r.o. which manufactures electronic components for LCD monitors and televisions for Samsung (Slovakia Trade 2015).

In Hungary, there are 40 Korean companies, which operate in the country in several industries (mainly in tire manufacturing, car industry, electric engineering and banking sector). According to the Hungarian Investment and Promotion Agency (2015a) the cumulative Korean FDI stock is about 1,3 billion USD. The main investor in electronic engineering is Samsung. The Samsung established its first factory in 1989, firstly in the region. The factory of Jászfényszaru has been expanding since the establishment in 1989. The production started in 1990 and the plant started exporting products three years later. The past 25 years has seen the production of over 62 million devices, like televisions and projectors, in the plant. Samsung is employing approximately 3,000 people in Hungary with 2,500 working in Jászfényszaru (Budapest Business Journal 2014). We will write more the role of Samsung (in the region) in the next chapter.

The Republic of Korea was one of the first countries that had decided to invest in Poland after 1990. Currently, according to the National Bank of Poland, the total value of Korean investments in Poland has reached €750m. Currently, about 120 Korean companies operate in the Polish market. Among the biggest Korean investments in Poland there are: LG, Samsung, Daewoo Electronics, SK Chemicals, Mando and Humax. In 2015, the Polish Information and Foreign Investment Agency completed one project in the house appliances sector. Samsung Electronics Poland Manufacturing Wronki worth €92 m and will create 251 jobs (Paiz 2015).

The main electronic company in Poland is LG Group Factories. LG Philips decided to locate their manufacturing site in Kobierzyce worth 429 million Euro in 2005. Similar to the case of Samsung in Slovakia and Hungary the presence of LG Philips attracted many other manufacturers of electronics as well as several subcontractors and suppliers of subcomponents that have decided to establish their production sites in Poland. Out of 12 major investments undertaken by Korea until the end of 2006 the majority was related to electronics (Zagdan 2007).

LG Group factories work as LG Electronics in Mława, NE Poland, and LG Display in Kobierzyce near Wrocław, SW Poland, which is the largest greenfield project realized in Poland to date. Both factories produce hi-tech electronic equipment like plasma TV and home appliances. The estimated capital value of LG investment in Poland amounts to ca. EUR 1 billion with 13,000 employees (Ministry of Treasury Republic of Poland 2013). The synergies

created by LG's leading LCD production technologies and Poland's various advantages will make LG's LCD cluster in Poland a European hub for the digital display production (LG.com 2007).

The Samsung Electronics has a Research & Development Center (SPRC) in Warsaw, which makes software development for mobile phones and LCD screens.

In the case of Czech Republic significant investments in electronic sector were not realized. Between the two countries direct business contacts started on the basis of firms in 1988. However, due to a long distance between both countries and mistrust of Korean firms, bilateral trade and investments were quite low in the first years of cooperation. Daewoo, Samsung, LG Group and Hyundai were the first to run business in the Czech Republic. The relations became more intensive in car industry in the recent years. The biggest South Korean investor in the country is Hyundai Motor (like in Slovakia), which launched car production in a factory in Nošovice, north Moravia, in 2008 (Czech News Agency 2015). The Samsung Electronics entered the Czech market July 1, 2005, when it was inaugurated in Prague representative. Since the early nineties, until 1997, however, the company had Samsung in the Czech Republic has direct representation.

We can state that in the region the Samsung Electronics is the most important South Korean electronics company in the V4 region, so after its presentation, we will analyze its industry structure and corporate strategy and carry out a SWOT analyzes in related to the company and V4 countries, especially in the case of Hungary.

4.3 INDUSTRIAL ANALYSIS – THE SAMSUNG ELECTRONICS IN HUNGARY

The electronic engineering plays a key role in the Hungarian economy; it is associated with other industries (e.g. car industry or retail). In Hungary, this industry has a long history, through production of TV (Orion). At the time of transition in Hungary (the end of 1980s), TV production was declining, so the Samsung could easily invest in Hungary. At that time the Samsung had only plant in the Antilles in Europe. The Samsung invested firstly (in 1989) in Hungary among the Central and Eastern European countries, where the labour was cheap and well-qualified. First, the Samsung bought the share of Orion in the factory of Jászfényszaru, and then bought it all. The company invested more and more through the years. In Jászfényszaru the Samsung continuously expanded the existing factory halls (building V1 and V2), we can observe a continuous upgrade in related to technology. At the beginning (in the 1990s) the plant manufactured 500 000 televisions, nowadays 15 million per year. A new plant (V3) was launched last year, in 2014. It was a 28 million dollars worth investment. (Magasházi et al. 2015).

In Göd, the Samsung replaced the mass production of picture tubes from Germany in 2001. The main reason that the Korean company Samsung SDI chose Hungary as a base in was that Hungary has the advantage of competitiveness in its infrastructure (manpower, local material suppliers). The company built up a plant and manufactured first 20" and 21" picture tubes, then 28", 29" and 32" picture tubes also. In 2007, the manufacturing building was expanded (Hvg.hu 2014). *'The management of the mother company in Korea considered that this strategy would secure a manufacturing site in Europe as SDI Germany lost its manufacturing competitiveness. Under the circumstances, Hungary was chosen – after careful examination – ahead of three other Eastern Central European countries, the Czech Republic, Poland and Slovakia. Moreover, the sister company Samsung Electronics' manufacturing entity had already been located in this country. The town of Göd particularly, was selected for its proximity to Budapest.'* (Diplomacy and Trade 2011). Samsung SDI Hungary produced PDP (plasma display panel) modules from panels supplied by its parent company in Korea in the early 2010s. In 2009, the television assembly line from Samsung Electronics Slovakia was moved to Göd. In 2011 80% of the modules produced here are built

into finished goods on site while the remaining 20% is exported to Samsung Electronics Russia. Most of the finished products are sold in the countries of the European Union. According to the former president of Samsung SDI Hungary, Chang Sun Dong: *'for a time after the Hungarian subsidiary was formed, there were lots of difficulties derived from the cultural differences between Hungarian employees and the Korean management, even though there was an educational program to minimize the barriers.'* But both parts had an intention to learn more about the other's culture. (Diplomacy and Trade 2011). The plant in Göd manufactured plasma TV panels but the demand of plasma TVs declined, so the Samsung closed this plant last year.

We have to mention an another Samsung plant in Hungary: in Szigetszentmiklós, which is also near to Budapest. The Samsung Elektro-Mechanics Co. Ltd. (SEMCO) build its plant in Szigetszentmiklós in 2000 with a 21 million dollar worth investment. Its production began in 2001. This plant is manufacture elements for colour TVs and computers (Szigetszentmiklos.hu 2015).

The Samsung Electronics Hungary Zrt. has a subsidiary in Slovakia (see figure 1), the investment was realized in 2002 in Galanta (Sairo 2015b). In the beginning of 2000, the Samsung's strategy was that the production of lower value added products goes to Slovakia and the higher ones go to Hungary. For nowadays, it has changed: there is a huge competition for production between the two companies; both governments try to establish a business friendly environment and give subsidies. The headquarter of the Samsung decides which production goes to which country instead of that the Slovakian Samsung subsidiary is owned by the Hungarian Samsung Electronics by 51% and the South Korean Samsung by 49%. The Samsung Electronics Hungary also has a share of Czech Samsung Electronics, which main profile is to sell the products of Samsung (Magasházi et al. 2015).

The suppliers' share of the Samsung Electronics in Hungary is 85% (Magasházi et al. 2015), which is quite high. In general in Hungary the small enterprises hardly get contact with multinational companies alone being a supplier and it should be relevant to develop the national suppliers' involvement in the electronic production and increase their share in delivery (HIPA 2015b). The vendor relations are stable, the share of V4 in the vendor relations is low. In Hungary – like Slovakia - there are also Korean supplier companies, like Sangjin Micron Ltd, which's subsidiary was established also in Jászfényszaru. There are other Korean companies also, typically established in the near of Jászfényszaru – e.g. in Petőfibánya (Magasházi et al. 2015).

If we analyze the electronics industry through the example of Samsung Electronics Hungary, we can observe that there is no a cutthroat competition. The Samsung Electronics Hungary has been in Hungary since 1989, more than 25 years. The Samsung could quite easily enter into the market in which diplomatic relations played a big role. The **'threat of new entrants'** is low; because the Samsung is represented in the region quite long and the electronic market is saturated. The V4's governments support the Samsung's new investments creating business friendly environment and giving incentives. Nowadays, these countries are competing with each others to attract more and more investments.

The second element of Porters' five forces is **'power of suppliers'**, which means how much pressure suppliers can place on a business. We have just a few information about this factor. In the case of Samsung Electronics of Hungary, the Hungarian suppliers' share is 85%. The relations between the Samsung and these Hungarian companies are quite good and stable, but of course there are problems, which are usually stemmed from the different (working) cultures.. Moreover, lots of Korean companies, which are related to Samsung in Korea, followed and established subsidiaries in V4 countries.

Related to the **'power of buyers'**, which represents how much pressure costumers can place on a business, we can see that the buyers' have a significant impact on the industry.

(E.g. see the case of plant of Göd in Hungary, which was producing plasma TVs, for which the demand is diminishing, so the plant was closed last year, in 2014.) In the case of electronic engineering, the demand is increasing, but also there is a big competition among electronics companies in the world. There is a significant demand for technological change; the companies have to catch up with technological changes. It is not too easy in Hungary, as Paróczy Péter said in the interview (Magasházi et al. 2015): *'the Hungarian support scheme was not flexible: there was a condition of preserving the productive capacity. If a company would like to replace the production capacity, it is necessary to submit a permission, which can be accepted just in months. So the red tape is a burden of technological development, which makes harder to change the existing technology.'*

Figure 1: The Samsung Electronics in V4
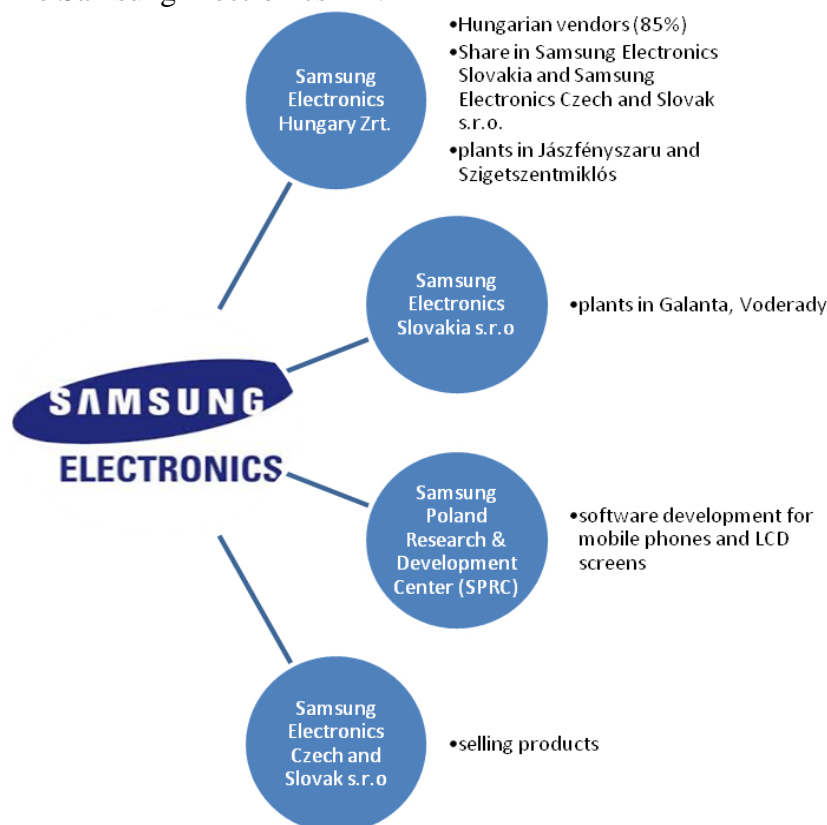
Source: Own graph based on the literature

Related to **'availability of substitutes'** the customers are price sensitive. People like to catch up with the technological trends and they are looking for high quality products at a suitable price, but electronic products can be hardly substituted, these are parts of everyday life. Finally, related to **'competitive rivalry'** in the industry there are quite a lot big manufacturing electronics companies which are competing with each other (e.g. Sony, Dell, Hewlett-Packard, LG Electronics, Huawei). The Samsung Electronics is the 7th most valuable brand in the world (Forbes, 2015b) and the company is one of the most profitable companies in the world. Although the Samsung Electronics makes far more than just phones (e.g. monitors, digital cameras, washing machines), Samsung is the largest smartphone maker in the world for years and the sales of Samsung smartphones accounted for 24,6% of the global market as of the first quarter of 2015. Although, its global share was decreased in the last two years from 31,5% to 30,7% then to 24,6% (International Data Corporation 2015). From the perspective of V4 countries, the emerging Asian countries can be competitors (e.g. Vietnam), because of its cheap workforce and Asian working culture. But the workforce in V4 is more

well-qualified and the infrastructure is more developed. Disadvantages in related to Hungary are the administration and taxation system, which are complicated (e.g. in the case of V3, the administration preparation lasted 9 months) (Magasházi et al. 2015).

4.4 SWOT ANALYSIS OF KOREAN ELECTRONIC INVESTMENTS IN V4

To summarize the Korean investments in V4 countries, in this chapter we will analyze why is/was it favourable for the Korean companies to invest in Hungary or in the V4.

Strengths:
- Samsung and other, mainly South Korean electronics companies invested money in the region right after the transition, so the relations among the countries and companies are well developed by nowadays. In Hungary for example, investors can benefit from the presence of international Electronics Manufacturing Service (EMS) firms (HITA 2012).

Weaknesses:
- New competitors in the world: ASEAN countries (e.g. Vietnam), which have also cheap working force. Moreover, these countries are closer to China, which is the largest economy in the world according to its population and their purchasing power is growing.

Opportunities:
- The V4 countries have cheap and well-qualified working force. These countries support the education of experts of the electronic engineering industry.
- These countries are located in the heart of Europe, structurally, politically, and institutionally open economies.
- These countries are part of the EU market since 2004, which helps to the Korean companies to reach the main European countries easily. Because of this, after the transition, helped by their central geographic location and continued moderate labour costs, Poland, the Czech Republic, Slovakia and Hungary have become low-cost manufacturing powerhouses serving Western Europe. Factories and assembly plants related to electronic engineering also, are often run by multinationals, are producing finished goods to be sold right across the EU (FT 2010).
- These countries are also a gateway between Europe and Asia – easy to reach the market of CIS also (Commonwealth of Independent States).
- These countries have built a business friendly environment which is now conforms to EU investment incentives.
- These countries have highly developed logistics, transport and communication infrastructure, which are developing day-by-day.
- These countries are developed countries with growing income to buy electronic products. Moreover, Poland has a large population (40 million people).
- To involve national small and medium-sized companies to supply chain and the group of supplier and distributors.
- To develop economic relations among South Korea and V4 countries. To develop the vendor relations.
- In the case of other electronics companies, these companies are cooperating and taking advantage of the long history of industry-academic cooperation (Magasházi et al. 2015) (see e.g dual training between Bosch and Kecskemét College). It can be extended to Samsung also.

Threats:
- There is glut in the market, so, it is hard to expand.
- Hungary, Republic of Slovakia and the Czech Republic have small markets, with relatively weak purchasing power in comparison with other European countries.

- South Korean culture differs from the V4 countries' culture, which has an effect on economic relations.
- Burden of administration.

5 FINANCING THE KOREAN MANUFACTURERS: KOREAN BANKS IN V4 BANKING MARKET
5.1 THEORY OF BANKING FDI AND INTERNATIONALIZATION OF KOREAN BANKS

Most of the Korean commercial banks discovered the V4 region for themselves after the global financial crisis of 2008. Lee et al. (2014) connect the internationalization of Korean banks to crisis shocks. The first shock was the Asian financial crisis (1997-1998) which discouraged the Korean banks internationalization, very likely, because the primary extension of Korean banks have been geographically the Asian emerging economies. The second shock, the global financial crisis in 2008 pushed the Korean banks toward going global because they were asymmetrically less affected. It is clear from the study by Sul (2000:209) that Korean banks have been present in foreign markets since 1967. In the end of 1997, there was 105 branches and 61 subsidiaries in 32 countries around the world. After 2008, the U.S. and high developed EU markets had a negative reputation in relation to banking acquisition both because of economic depression and institutional and regulatory barriers. The Korean banks turned toward the emerging economies. In the first wave mostly toward Chinese opportunities. Eastern European became interesting only in 2013.

Although, in the second decade of the 21st century, the Central and Eastern European commercial banking sector (including the V4 region) operates in market economies as usual, the region has a legacy of the command economy last until 1989. Benczes (2008) summarized this impact of past in a relatively not long ago liberalized, privatized banking sector which was shifted towards two-tier system and opened for foreign investors. Latter ones have played a majority owner role in the undercapitalized transition region. Besides, the CEE markets are characterized by small scale, low degree of financial penetration, low degree of product diversification. This process created individual characteristics for the vulnerability and stability of the CEE banking sector. (Benczes 2008: 128-138)

First of all, it should be clarified why do banks invest into Foreign country. Bol et al. (2002) summarized the literature answering this question. Berger et al. (2001) assume a global advantage of multinational banks in comparison to domestic banks as the multinationals have better technology to price and monitor the risk, and better practices to treat moral hazard. Goldberg and Saunders (1981), Bearley and Kaplanis (1996), Konopielko (1999), Buch (2000), Moshirian (2001), Williams (2002) state that banks are following their customers. Also, there is a group of authors (Claessens et al 2000, Hymer 1979) saying that the banks are seeking efficiency, higher profitability what can be achieved by extending the market or number of customers abroad. Lesnik and Haan (2002) measured strong positive correlation between the liberalization of banking market and the banking FDI moving into the developing, transiting countries. E.g. Claessens et al (2001) or Demirgüç-Kunt and Huizinga (2000) modeled the tax advantages seek by foreign banks. Namely, the banking FDI can be classified by reasons to the OLI-paradigm (Dunning 1979) or to the market – efficiency – resource – strategic asset seeking approach (Szentes 2002). Soussa (2004:3) identified the following determinants of banks' FDI into emerging countries, according to Clarke et al. (2001):

"*(i) shifts in regulatory opportunity and environment; (ii) increased economic integration between home and host countries; (iii) information costs; (iv) profit opportunities; (v) factors relevant to specific institutions; and (v) factors relevant to the home markets of acquiring institutions.*"

Papi and Revoltella (1999), Mathieson and Roldos (2001) found about CEE and other post-soviet European countries that the ROE, NPL ratio, attitude of host country authority,

143

liberalization of entry regulation were the significant factors of attractiveness. Naaborg (2007) found confused literature about efficiency and foreign ownership. The existing literature could not measure significant correlation about it.

The global procedures has been typical for the CEE bank sector just like transnationalization of ownership after liberalization of the national banking market. The dominant oligopolies in the CEE banking markets has been backed by such big banks which has been considered to be too big to fail. Stern and Feldman (2009) explains that the too-big-to-fail (TBTF) phenomenon means that the political decision makers bail out the big banks in case of their failure, because they fear from an extended bank crisis and sudden stop of crediting which can launch a general economic depression. The TBTF parent banks have been important factors in the recapitalization of CEE banking sector as the losses were backed by parent banks' home governments which were made through the non-performing CEE loans and other shock factors of the region like FX rates, sector-specific tax etc.

Haan et al. (2010:108-112) made a mix of the corporate transnationalization and the international integration theories. The CEE banking processes can be understood better by using their terms on drivers of financial integration. The market enforces the optimization, the scale efficiency and the technological and product innovation by the competition in the single European market. The collective actions of banks standardize the practices of the sector. (E.g. single standard payment systems in the inter-bank relations.) Meanwhile, the public actions – like FSAP, Banking Union etc. - standardize the regulation. The three drivers together caused measurable convergence in yields, over-night lending rates, retail banking interest rates, for example. (Haan et al 2010:198-119,223)

Contrary to the market-seeking strategy of Western European banks operating in the Central and Eastern European region, the Korean banks activity in the V4 countries is a "following-the-corporate-customers". Lee et al. (2014:1045) explicitly establish that, generally, the customers of Korean banks have been Korean non-financial firms abroad, too. This phenomenon is modeled with the Uppsala internationalization process (Johanson – Vahlne, 1977) which is characterized by lack of knowledge about the foreign economies practices but understanding only the domestic policies and institutional constraints. Namely, entering into new markets abroad would mean taking the plunge into the unknown. To decrease the risk, the internationalizing company (bank) starts to use its networks with other domestic manufacturing firms which already has activity abroad. Very typically, these foreign activities of manufacturers are greenfield investments which need higher volume of financing. Lee et al. (2014:1041) The Bank of Korea declared, too, that the financing demand has been increasing among the Korean firms installing production bases in Eastern Europe. Samsung, LG and POSCO are mentioned by name, and KIA and Hankook can be added to this list, too, as manufacturing buyers of financial services. (BusinessKorea, 2014)

5.2 V4 BANKING MARKET

As Lee et al. (2014) concluded, the global financial crisis pushed the Korean banks toward emerging economies. To understand the V4 market circumstances surrounding the offices, branches, subsidiaries of Korean banks, the characteristics of the CEE banking sector is traced in the following. The CEE banking sector is very much depends on the Western European banks. Árvai et al. (2009) found significant inter-linkages within Europe. In the CEE banking market, the financial risk exposure is concentrated to Austrian, German and Italian banks, and in case of Baltics to Sweden. The post-communist past of CEE region resulted in aggressive banking strategies and fast extension of credits. From the calculation made by Árvai et al. (2009:7), it can be established, that the speed of credit extension was 15.5% in the V4 countries before the crisis, in 2004-2007, as a cumulated change. It is important to recognize generally on CEE countries that the extension of credits were

significantly faster than the growth of deposits. (see Árvai et al. 2009: fig. 4.) This created, finally, a credit/deposit ratio where the credits significantly exceeded the deposits what resulted in interbank contagion risk, too.

According to Raiffeisen (2013), the loans exceeded the deposits significantly before the crisis, what was followed by correction forced by the global markets. From this ratio, it can be foreseen, which countries had to face with serious balance-sheet contagion risk from uncovered credit defaults. This risk was multiplied by the high share of FX loans combined with a two-digit depreciation of domestic currencies in case of Ukraine, Hungary, Croatia, Romania, Belarus, Serbia. The countries with ratio under 100% faced the crisis with less fragile banking sector.

Even though, the global crisis and the domestic debtors' default made the CEE banking sector not attractive for investors, there were some changes in the ownership structure which even altered the foreign/domestic characteristic of the bank. (E.g. in 2013 in Hungary the Korean Hanwha Bank in Hungary was acquired by the Hungarian Evo Pro company, thus, it become a domestic bank, or Banco Popolare sold its affiliate to the domestic MagNet Bank, or the Bayerishe Landesbank sold its Hungarian MKB subsidiary to the Hungarian government, and the same happened with the Hungarian affiliate of DZ Bank, the Takarékbank.)

Small scale, fragmented market structure in CEE is typical not only because of the fragmented country structure of the region, but also because of various national financial-fiscal-monetary policy mixes and strategies. Sovereign risks and interest rate policies affected differently the structure of loans and deposits. Before the global and euro crisis, all CEE countries have had national monetary autonomy. Some of them chose the strategy to pass it to the European Central Bank as soon as possible (Slovenia, Slovakia, Estonia, Latvia), or planning to do it soon (Bulgaria, Romania, Lithuania). Some others have striven to reserve the national currency (Czech Republic, Poland, Hungary). Some monetary authorities applied strict and high interest rates, some did not. Some country had higher foreign reserves, other had lower in the eve of the crisis etc. These policy differences modified, differentiated the credit and deposit structure of the countries. Because of the differences of national risk premium and interest rate policy, in those countries (Hungary, Baltics, Romania, Ukraine) who kept high rates beside giving opportunity for foreign currency loans, the depreciation of emerging market currencies by global panic found their households and firms deeply indebted in euro, Swiss franc and some other foreign currencies. The countries which kept their risk premium close or under the euro zone in market rates had insignificant loan exposure to foreign exchange.

In case of economic crisis, the public finances demand new types of tax base if fiscal balance is enforced by the credit money shortage of capital markets. The banking sector is one of the industries which can be a target of temptation of the government since banks work with money. In the CEE region, the banking tax and tax on financial transfers appeared since 2010. Very typically the new taxes have been introduced as temporary public revenue implied by the crisis, but became sooner or later permanent unit of the public budget. Such kind of tax impact can raise the assumption that the equity restoration particularly connected to losses from tax liabilities. In practice, the European Commission (DG-Taxation) recommends the taxation on financial transfers. Hungary introduced a significant bank tax on turnovers in 2011, but a lower rate already existed since 2009. Slovenia has applied bank tax since August of 2011. Slovakia introduced a onetime tax in 2012, but, not a surprise, it turned to be permanent in 2013 in a modified form. Poland introduced bank tax in 2014. In the rest of CEE countries bank tax is just a plan (Croatia, Romania, Bulgaria) or not part of governments' taxation plans at all (Estonia, Latvia, Lithuania, Czech Republic).

Figure 2: Share of foreign banks in total assets in CEE markets
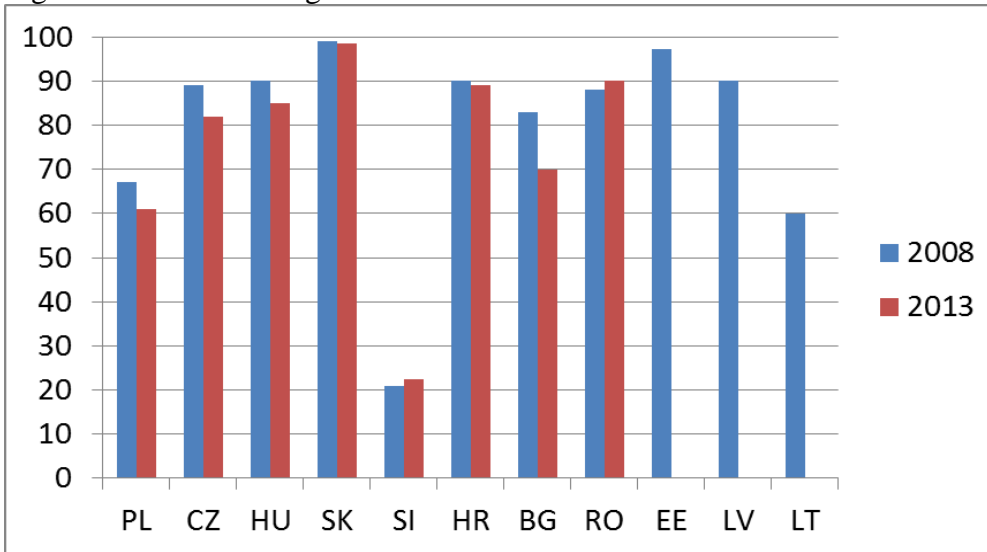
Source: Raiffeisen (2013), EBRD

The non-performing loans (NPL) are significant factor of banks assets and equity. The NPL ratio reduces the bank's lending capacity via provisions. The increasing NPL ratio forces the bank to decide the dilemma whether it wants to keep its lending capacity with capital increase or change the lending strategy and accept the reduced capacity. Fig. 3. shows that the NPL ratio of CEE bank sector increased sharply during the crisis.

Figure 3: Share of Non-performing loans (horizontal axis) and foreign currency loans (vertical axis) from total loans, 2007-11
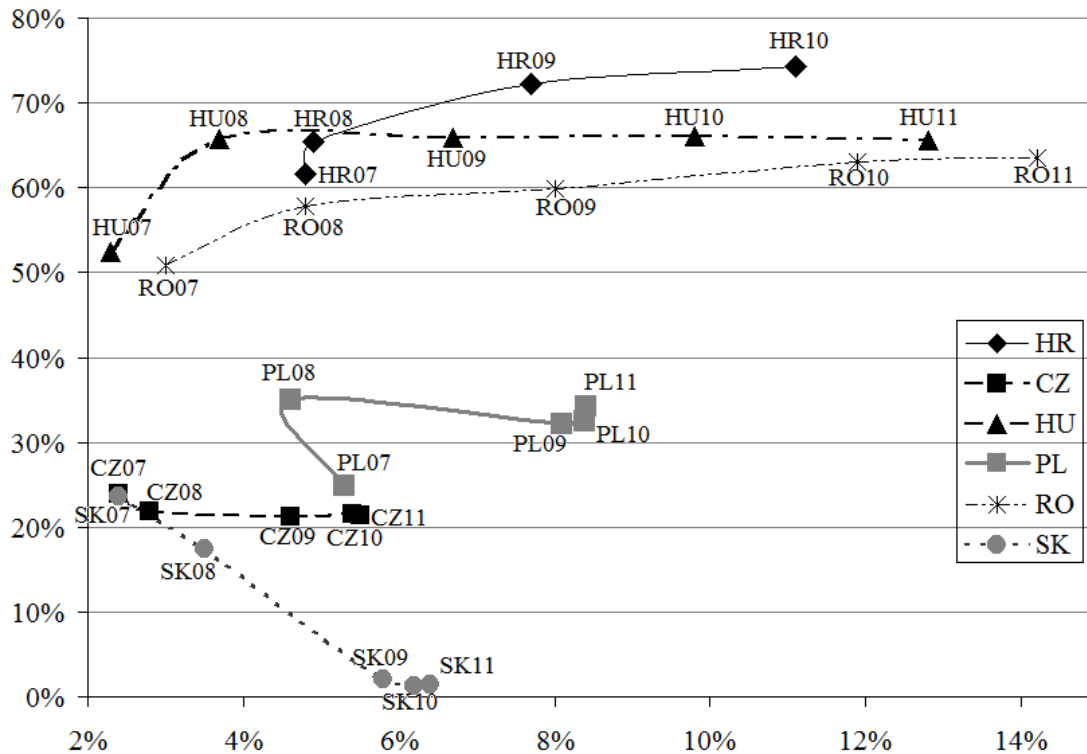
Source: author's composition from Raiffeisen (2013) calculation based on IMF and national bank data (dots = country + year, e.g. HR10= Croatia in 2010)

5.3 THE BIGGEST KOREAN COMMERCIAL BANKS AND THE V4 MARKET

Lee et al. (2014) describe the Korean banking system as a very concentrated market. They mention one central bank, one export-import bank and six big banks (Korea Development Bank (KDB), Hana Bank, Industrial Bank of Korea, Shinhan Bank, Woori Bank, Korean Exchange Bank). The rest of the Korean commercial banks are not concerned in the internationalization. As it was mentioned above in relation to the Uppsala model, the customer-following networking strategy is the reason why Eastern Europe and the V4 countries were not in the lime-light of the Korean banks before 2013. Only two banks appeared in the region. The first was the Daewoo Bank since 1989 which is KDB subsidiary and renamed since 2003. The second was and the Hanwha Bank which entered to Hungary in 1996 and sold its market share, namely exited in 2013 because of unfavourable local regulation and bad economic condition which caused constant deficit. The V4 markets have been so unknown for Korean banks, and they have focused so much only on Korean customers doing business in region that other big Korean banks (Shinhan, Woori, Korea Exim Bank) entered into the V4 market in 2013 and only with representative office and not with branch or subsidiary, or have not appeared at all in the Eastern European region. (see table 3 and box 1) Only the KDB Europe declared retail banking objectives for local firms and households in 2013. (MTI 2013, SME 2013) Before, its strategic purpose was to be the regional financial center of Korean firms in Eastern Europe. (MTI 2007)

Table 3: Presence of biggest Korean banks in V4 countries

	KDB*	HNB	IBK	SHB	WRB**	KEB	Hanwha Group	KExImB
Poland				O (2014)	O (2014)			O (planned)
Czech Republic				O (2014)	O (2014)			
Hungary	S(1989/2003)*			O (2014)	O (2014)		S (1996-2013)	
Slovakia	B (2013)***							O

O = overseas office,, B = overseas branch, S = overseas subsidiary, ( ) = year of start
KDB: Korea Development Bank, HNB: Hana Bank, IBK: Industrial Bank of Korea, SHB: Shinhan Bank, WRB: Woori Bank, KEB: Korean Exchange Bank, KExImB: Korea Exim Bank
* KDB Acquired Daewoo Bank and its branches in the region (Hungary & Romania) in 2003. The Daewoo Bank (Hungary) Co. started its operation in 1989 as a subsidiary.
** Office in this case is space in local banks having contract with Woori Bank
*** Branch of KDB Bank Europe registered in Hungary as a subsidiary of KDB

Table 4: Total asset and equity information, thousand EUR

	2000	2001	2002	2003	2004	2005	2006
KDB Bank Europe, total asset	171 060	179 865	191 431	219 044	322 808	316 676	332 738
KDB Bank Europe, equity	..	..	..	..	..	..	..
Hanwha Bank Hungary, total asset	..	50 084	53 406	45 630	48 377	47 710	53 970
	2007	2008	2009	2010	2011	2012	
KDB Bank Europe, total asset	575 337	556 317	516 159	497 115	517 057	607 840	
KDB Bank Europe, equity	..	91 353	91 407	92 688	84 477	97 128	
Hanwha Bank Hungary, total asset	53 920	..	..	..	..	..	

Source: Bankscope, download 2014. 11.16.

As only KDB and Hanwha had subsidiary in the V4 region, non of the others had financial data on investment. Table … shows the total asset information about them. KDB could multiply its assets beside a stable equity, meanwhile Hanwha stagnated and finally exited from the market.

5.4

> **Box 1.** Korean banks' behavior in V4
>
> […] Woori Bank is establishing a "Korea Desk" in local banks in Eastern Europe including Poland, the Czech Republic, and Hungary. A Korea Desk will perform as an intermediary for the financing demands of Korean customers by renting a certain amount of space in local banks. Their objective is market research and experience before establishing offices. Woori Bank, which had sent global market research professionals to Poland and Turkey in the second half of last year, decided instead to sign an MOU with local banks, as financing demands were not enough in the market just yet. Shinhan Bank is the most active in advancing into the Eastern European market. Shinhan Bank opened Korea's first office in Poland and plans to advance further into the Czech Republic and Slovakia, where numerous domestic companies are present. Shinhan has completed inspection of the Turkish market and is discussing entrance into it. Korea Exchange Bank also opened its office in Turkey last year, and had planned for Poland as well. In addition, KDB Bank and Korea Eximbank run offices in Slovakia and Turkey, respectively. […] Korea Eximbank withdrew its resident employees from Poland, the country with the highest number of domestic companies, based on the judgment that loan demands there were decreasing. […]Hanhwa Group sold its Hanhwa Bank of Hungary, which had been run for 17 years since 1996, to a local manufacturing company. Such a decision came from it being too expensive to stand the constant deficit owing to local regulations and economic conditions. BusinessKorea (2014)

SWOT ANALYSIS OF KOREAN BANKS IN V4
Strengths:
- Stable Korean corporate customers whos demand and need is well known for the Korean banks.
- Strong capitalization of Korean banks.
- The Korean banks very less affected by the global financial crisis and the European debt crisis than the European banks dominating the V4 markets.

Weaknesses:
- The Korean banks have few knowledge about V4 market practices.
- Low market share of Korean banks in V4 markets.

Opportunities:
- Significant level of non-performing loans of rivals dominating the V4 banking sectors
- Increasing volume of FDI by Korean manufacturers.
- V4 countries are member of the EU, thus, the single European banking market.
- Low relative wage of V4 financial sector with well qualified financial professionals and adequate corporate experience on banking.

Threats:

- Relatively weak financial consciousness and education in V4 countries
- Small volume banking markets
- Cultural distance in business and social sense between Korea and V4 countries.
- Increasing tendency to use banking tax in V4 countries.
- Cost of bureaucracy and legislative unpredictability in V4.
- Glut in the V4 banking market by German, Austrian, Italian and French banks.

6 CONCLUSION

From the analysis of supply chains of Korean-V4 corporate relations the following can be concluded. In case of car manufacturing, if South Korean companies would like to increase their market share in the automotive industry of Europe, they cannot choose a better place than the V4 countries for the assembling, producing and future R&D processes. The V4 countries are in the heart of Europe, any potential selling destination of it can be reached easily using the well-structured infrastructure within the countries and in whole Europe. The labour force is significantly cheaper than in South Korea, it is well qualified, and this region is one of the best in Europe in terms of price/quality point of view. It is also a good point for the V4 group, that 3 out of the 4 member countries had serious industrial history in the automotive industry both in the passenger cars section, and both in the commercial vehicles section. These countries are full of diversified, high quality automotive suppliers because of the lot of automotive producing companies who took their assembling or R&D capacities into this region. (Mercedes, Audi, Knorr-Bremse, Skoda, Opel, VW, etc.) South Korea will have to realize, that for them the biggest threat is the massively growing Chinese market, who can produce passenger cars so much cheaper than the other competitors. China is rich in cheap labour force and in capital, the only way; how South Korea (and Europe) could defend their industrial advantage is to focus and to spend on R&D, as knowledge is the source that China and the emerging countries are not possessing. As it is clear, that nor the European countries nor South Korea will take their R&D efforts to China, than it would be a practical and effective idea, if the biggest South Korean companies such as Hyundai, Kia or Hankook could invest into the region not just for the producing but mainly for R&D projects and centres. All the V4 countries are strong and effective in R&D efforts, while for example an engineer in Hungary costs 70% less than an engineer in Germany for the same work with almost the same level of quality. Hyundai has a lot of interests in the region, it would be beneficial for them to open an R&D centre for example in Hungary.

In sum, we can state that the Samsung has deep roots in the electronic sector in V4 countries, especially in Hungary and Slovakia. The first Korean investment was realized in 1989 in Hungary. Since then, the Korean companies and the Samsung Electronics has invested more and more in the region and has built its vendor system and developed cooperation with national companies also.

The main reasons of these investments were that in the region the working force is cheap and well qualified. We can observe problems in related to the cooperation, which are especially stemmed from cultural differences. But both parts are open, taught how to cooperate with each other.

The region's most competitive advantage (besides the cheap and well qualified working force) is its location in Europe: these countries are located in the heart of Europe and easy to reach the Western European countries. Because of these: Poland, the Czech Republic, Slovakia and Hungary have become low-cost manufacturing powerhouses serving Western Europe. Factories and assembly plants related to this sector, often run by multinationals (like Samsung or LG), and are producing finished goods to be sold right across the European

Union. Moreover the V4 countries have quite developed and constantly developing infrastructure and have created business friendly environment.

The emerging Asian countries (e.g. Vietnam) can threaten the role of V4 countries in electronic sector, because its' cheap working force, increasing purchasing power and cultural proximity in related to working culture. The changing/increasing demand for electronic products can also have an influence on production and sales. To compete with these countries, the V4 countries can develop cooperation with Korean countries mainly in the fields of education and vendor system.

About the Korean banks, it was established that they started to discover the V4 markets only in 2013. Earlier only KDB Bank and Hanwha bank has operated subsidiary in the region with affiliate equity. KDB got stronger and bigger, whilst Hanwha failed and had to leave the market and sell its market share. All off the Korean banks moved into the V4 region as the financial service suppliers of Korean manufacturers. Their market entry strategy is perfectly described by the Uppsala model. These banks have had not really locational knowledge about the V4 region that is why they have stuck into an enclave position which demands only representative offices instead of affiliates with individual equity. In case of the V4 banking, the market share is very rigid. Those banks could take and reserve big slice from the V4 banking market cake who managed to enter during the early transition of Central and Eastern Europe and who had known the regional market specialties. The V4 market has been stabilized by these dominant oligopolies as they have been backed by such big banks which has been considered to be too big to fail. However, the FX exposure of V4 region means high risk – except Slovakia – because the exchange rate volatility of HUF, CZK and PLZ can affect the solvency of banking customers. The V4 region is a very various in sense of national financial-fiscal-monetary policy mix and strategy that is why the fragmented V4 market structure increases the lack of understandability. The customer-following networking strategy is the reason why Eastern Europe and the V4 countries were not in the lime-light of the Korean banks. The global financial crisis in 2008 pushed the Korean banks toward going more global. After 2008, the U.S. and high developed EU markets had a negative reputation in relation to banking acquisition both because of economic depression and institutional and regulatory barriers. Thus, the Korean banks turned toward the emerging economies. The Korean banking system as a very concentrated market that is why just a few big financial group could afford the internationalization and even less has appeared in the V4 markets.

REFERENCES:
1. ÁRVAI, ZS. – DRIESSEN, K. – ÖTKER-ROBE, I (2009): Regional Financial Interlinkages and Financial Contagion Within Europe *IMF Working Papers* WP/09/6
2. BEARLEY, R. - KAPLANIS, E. (1996): The Determination of Foreign Banking Location *Journal of International Money and Finance* 1996, 15, , pp 577-597
3. BENCZES, I. (2008): *Trimming the Sails (The Comparative Political Economy of Expansionary Fiscal Consolidation. A Hungarian Perspective)* CEU press, Budapest, New York ISBN 978-963-9776-01-2
4. BOL, H. – LENSINK, R. – HAAN, J.DE (2002): Do Reforms in Transition Economies Affect Foreign Bank Entry? *CCSO Working Paper* No. 05.
5. BUCH, C.M., (2000): Why do Banks go Abroad? - Evidence from German Data, *Financial Markets Institutions and Instruments* 2000, 9, 1, pp.
6. BUDAPEST BUSINESS JOURNAL (2014): Samsung inaugurates new plant in its Hungarian factory. [Online.] In: *The Budapest Business Journal*, 2014. [Cited: 22.5.2015.] Available online: <http://www.bbj.hu/budapest/samsung-inaugurates-new-plant-in-its-hungarian-factory_80765>.

7. BUSINESSKOREA (2014) *South Korea's Banks Target Rising Eastern Europe*, 27 June [Cited 27.06.2014.] Available online: <http://www.businesskorea.co.kr/article/5209/overseas-banking-expansion-south-korea%E2%80%99s-banks-target-rising-eastern-europe>

8. CLAESSENS, S. - DEMIRGÜC-KUNT, A. - HUIZINGA, H. (2000): How Does Foreign Entry Effect the Domestic Banking Market? *Journal of Banking and Finance*, 2000, 25, , pp. 891-911

9. CLARKE, G. - CULL, R. - PERIA, M. - SÀNCHEZ, S., (2001): Foreign Bank Entry: Experience, Implications for Developing Countries, And Agenda for Future Research, *World Bank Policy Research Paper*, no. 2698.

10. CONSUMER REPORTS MAGAZINE (2014): *Car-Brand Perception Survey*, Edition: February 2014

11. CZECH NEWS AGENCY (2015): Major milestones in Czech-Korean relations. [Online.] In: *Prague post*, 2015. [Cited: 22.2.2015.] Available online: <http://www.praguepost.com/world-news/44907-major-milestones-in-czech-korean-relations>.

12. DEMIRGÜC-KUNT, A. - HUIZINGA, H. (2000): Financial Structure and Bank Profitability *World Bank Policy Research Working Paper* No. 2430

13. DIPLOMACY AND TRADE (2011): Samsung SDI Hungary supplying quality products to the EU. [Online.] In: *Diplomacy&Trade online*, 2011. [Cited: 22.05.2015.] Available online: <http://www.dteurope.com/business-sectors/news/samsung-sdi-hungary-supplying-quality-products-to-the-eu.html>.

14. DUNNING, J.H. (1979): Explaining Changing Patterns of International Production: in Defence of the Eclectic Theory *Oxford Bulletin of Economics and Statistics,* 1979, 4, pp. 276.

15. EMBASSY OF THE SLOVAK REPUBLIC OF SEUL (2015): Investment of Korean companies in Slovakia. [Online.] In: *Website of the Embassy of the Slovak Republic of Seul*, 2015. [Cited: 22.05.2015.] Available online: <http://www.mzv.sk/servlet/soulzu?MT=/App/WCM/ZU/SoulZU/main.nsf/vw_ByID/ID_621F5291AE4A5FD4C125715B004FFE51_EN&TG=BlankMaster&URL=/App/WCM/ZU/SoulZU/main.nsf/vw_ByID/ID_61539E5A67BDC2EBC1257A63002F2779_EN&OpenDocument=Y&LANG=EN&HM=30-investmentofkoreancompaniesinslovakia>.

16. FORBES (2015a): Top 10 Korean businesess in the world. [Online.] In: *Forbes*, 2015. [Cited: 20.5.2015.] Available online: <http://www.forbes.com/global2000/#country:South%20Korea>.

17. FORBES (2015b): The world's most valuable brands. [Online.] In: *Forbes*, 2015. [Cited: 30.5.2015.] Available online: <http://www.forbes.com/companies/samsung-electronics/>.

18. FT (2010): Central and Eastern Europe: the region's factory. [Online.] In: *The Financial Times*, 2010. [Cited: 23.5.2015.] Available online: <http://www.ft.com/intl/cms/s/0/44c031be-f967-11df-a4a5-00144feab49a.html#axzz3asN5uX00>

19. GOLDBERG, L. - SAUNDERS, A. (1981): The Determinants of Foreign Banking Activity in the United States *Journal of Banking and Finance* 1981, 5, 1, pp. 17-32

20. GREEN, A.E. (1992): South Korea's Automobile Industry: Development and Prospects *Asian Survey*, Vol. 32, No. 5. pp. 411-428. University of California Press

21. HAAN, J. DE – OOSTERLOO, S. – SCHOENMAKER, D. (2010): *European Financial Markets and Institutions*. Cambridge, Cambridge University Press

22. HIPA (2015b): Beszállítói osztály. [Online.] In: *HIPA's official website*, 2015. [Cited: 22.5.2015.] Available online: <http://hipa.hu/hu/Content.aspx?ContentID=cd0886d4-7298-4bca-9790-01204c036a84>.

23. HITA (2012): *Challenge the crisis by investing in the Hungarian electronic sector*, Published by HITA, Contributors: Laser Consult Kft., ITC Association of Hungary, Flextronics International Kft., NI Hungary Kft., Samsung Electronics Magyar Zrt., Videoton Holding Zrt., pp.19.

24. HVG.HU (2014): Bezár a százmilliárdos Samsung cég. [Online.] In: *HVG online*, 2014. [Cited: 10.5.2015.] Available online: <http://hvg.hu/kkv/20140407_Bezar_a_szazmilliardos_magyarorszagi_Sams>.

25. HYMER, S. (1979): *The Multinational Co rporation: A Radical Approach. Papers by Stephen Herbert Hymer*. Cambridge, Cambridge University Press

26. INTERNATIONAL DATA CORPORATION (2015): Smartphone market vendor share. [Online.] In: IDC, 2015. [Cited: 30.5.2015.] Available online: <http://www.idc.com/prodserv/smartphone-market-share.jsp>.

27. JOHANSON, J. – VAHLNE, J.E. (1977) Internationalization process of firm: Model of knowledge development and increasing foreign market commitments, *Journal of International Business Studies* 1977, 8, 1, pp:23-32

28. KIM, DR. S. RAN (1996): The Korean system of innovation and the semiconductor industry: a governance perspective, *OECD Working Paper*, December 1996.

29. KONOPIELKO L. (1999): Foreign Banks entry into Central and East European Markets: Motives and Activities. *Post-Communist Economies* 1999, 11, 4, pp. 463-485

30. LEE, J.-W. – SONG, H.S. – KWAK, J. (2014) Internationalization of Korean banks during crises: The network view of learning and commitment *International Business Review*, 2014, 23, 6, pp. 1040-1048

31. LENSINK,. R – HAAN, J. DE (2002): Do Reforms in Transition Economies Affect Foreign Bank Entry? *International Review of Finance*, 2002, 3, 3, pp.

32. LG.COM (2007): LG opens European LCD cluster in Poland. [Online.] In: *LG's official website*, 2007. [Cited: 25.5.2015.] Available online: <http://www.lg.com/us/press-release/lg-opens-european-lcd-cluster-in-poland>.

33. MAGASHÁZI, A. - SZIJÁRTÓ, N. - TÉTÉNYI, A. (2015): Interview with Péter Paróczy (the Samsung's lead counsel) on 8th May, 2015.

34. MATHIESON, D. - ROLDÒS, J., (2001): Foreign Banks in Emerging markets, In: LITAN, R. - MASSON, P. - POMERLEANO, M. (eds.): *Open Doors: Foreign Participation in Financial Systems in Developed Countries*, Brookings Institution Press. ISBN: 0-8157-0245-0

35. MINISTRY OF TREASURY REPUBLIC OF POLAND (2013): Poland - South Korea trade relations. [Online.] In: *Ministry of Treasury Republic of Poland's official website*, 2013. [Cited: 22.5.2015.] Available online: <http://msp.gov.pl/en/polish-economy/economic-news/5312,Poland-South-Korea-trade-relations.html>.

36. MOSHIRIAN, F (2001): International Investment in Financial Services. *Journal of Banking and Finance* 2001, 25, 2, pp. 317-337

37. MTI (2007) A koreai cégek pénzügyi központja lesz Magyarország, *Mfor.hu,* [Cited: 27.05.2007.] Available online: <http://www.mfor.hu/cikkek/A_koreai_cegek_penzugyi_kozpontja_lesz_Magyarorszag.html>

38. MTI (2013) A régióban terjeszkedik a koreai KDB Bank, Portfolio.hu, 23. May [Cited: 22.5.2015.] Available online: <http://www.portfolio.hu/vallalatok/penzugy/a_regioban_terjeszkedik_a_koreai_kdb_bank.184328.html>

39. NAABORG, I.J. (2007): *Foreign Bank Entry and Performance: with a Focus on Central and Eastern Europe.* Delft, Eburon Academic Publisher, ISBN 9789059721708

40. PAIZ (2015): Looking on Seoul from Katowice. [Online.] In: *Polish Information and Foreign Investment Agency's official website*, 2015. [Cited: 12.5.2015.] Available online: <http://www.paiz.gov.pl/20150422/looking_on_seoul_from_katowice>.

41. PAPI, L. - REVOLTELLA, D. (2000): Foreign Direct Investment in the Banking Sector: A transitional Economy perspective. In: Claessens, S. - Jansen, M. (eds.) (2000): *The Internationalization of Financial Services – Issues and Lessons for Developing Countries.* Kluwer Academic Press, Boston, MA

42. PARAMETER (2008): Tovább nőtt a szlovákiai Samsung-birodalom. [Online.] In: *Parameter*, 2008. [Cited: 22.5.2015.] Available online: <http://www.parameter.sk/rovat/belfold/2008/10/18/tovabb-nott-szlovakiai-samsung-birodalom>.

43. PORTER, M. E. (1980): *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, The Free Press, New York. pp. 397. ISBN-10: 0684841487.

44. RAIFFEISEN (2013): *CEE Banking Report 2013* Raiffeisen Bank International AG and Raiffeisen Centrobank AG, Vienna,

45. SARIO (2015a): Electrical engineering industry. [Online.] In: *Slovak Investment and Trade Development Agency's official website*, 2015. [Cited: 22.5.2015.] Available online: <http://www.sario.sk/en/invest-slovakia/sector-overview/electrical-engineering-industry>.

46. SARIO (2015b): SARIO Sucess Stories, [Online.] In: *Slovak Investment and Trade Development Agency's official website*, 2015. [Cited: 22.5.2015.] Available online: <http://www.sario.sk/en/invest/fdi-and-success-stories/sario-success-stories>.

47. SCHLOSSSTEIN, D. F. (2010): *Institutional Change in Upstream Innovation Governance: The Case of Korea,* Peter Lang GmbH, Frankfurt Am Main. pp.241. ISBN 978-3-631-60246-1.

48. SLOVAKIA TRADE (2015): Profile of Seong Ji Slovakia, s.r.o. [Online.] In: *Slovakia Trade's official website*, 2015. [Cited: 22.5.2015.] Available online: <http://seong-ji-slovakia.trade.sk/>.

49. SME (2013) Megkezdte szlovákiai működését a KDB Bank, *Paramter.sk* [Cited: 11.08.2013.] Available online: <http://www.parameter.sk/rovat/belfold/2013/08/11/megkezdte-szlovakiai-mukodeset-kdb-bank>

50. SOUSA. F., (2004), *A Note on Banking FDI in Emerging Markets: Literature Review and Evidence from M&A Data*, International Finance Division, Bank of England

51. SOUTHERTON, D. (2012): Early Korean Car Production–Part 1 "*Hyundai Way*" *CreateSpace Independent Publishing Platform* (latest edition March 1, 2014)

52. STERN, G. H. - FELDMAN, R.J. (2009): *To Big to Fail: The Hazards of Bank Bailouts* Washington D.C., Brooking Institution Press ISBN: 978-0815703044

53. SUL, W. (2000) ON THE PERFORMANCE OF THE FOREIGN SUBSIDIARIES OF KOREAN BANKS: ARE SECURITIES INVESTMENTS REALLY PROFITABLE? JOURNAL OF ASIAN ECONOMICS, 2000, VOL. 11, ISSUE 2, PAGES 207-222

54. SZENTES T. (2002): *World Economics: Comparative theories and methods of international and development economics 1.*, Budapest, Akadémiai Kiadó ISBN: 978-9630579841

55. SZIGETSZENTMIKLOS.HU (2015): Gazdaság. [Online.] In: *The official website of Szigetszentmiklós*, 2015. [Cited: 31.5.2015.] Available online: <http://szigetszentmiklos.hu/index.php?mid=121>.

56. TRUETT, L.J. TRUETT, D.B. (2014): The South Korean auto industry's path to maturity *International Review of Economics & Finance Volume 31 pp.86-94*

57. WILLIAMS, B. (2002): The Defensive Expansion approach to Multinational Banking: Evidence to Date. *Financial Markets*, *institutions and instruments*, 2002, 11, 2, pp.127-203.
58. WTEC (1997): WTEC Report on the Korean electronics industry. [Online.] In: World Technologies and Services Papers. [Cited: 20.5.2015.] Available online: <http://www.wtec.org/loyola/kei/welcome.htm>.
59. ZAGDAN, T. (2007): Koreans Moving to Poland. [Online.] In: Frost Growth Consulting's website, 2007. [Cited: 22.5.2015.] Available online: <http://www.growthconsulting.frost.com/web/images.nsf/0/8DB814838037882B652574BB0047AAE9/$File/Koreans%20Moving%20to%20Poland.htm>.

Selected Issues of Mutual Economic Cooperation

INTEGRATED IN GLOBAL VALUE CHAINS BY KOREAN-V4 PARTICIPATION

Anikó Magasházi, Norbert Szijártó, Andras Tétényi[32]

The paper is based on a case study of one of the major chaebols, Samsung, investing in the V4 region for 25 years. Its intensive involvement in the region's electronics industry gives opportunity to study the segmentation of the production involving subsidiaries, domestic and foreign suppliers, their possible impacts on trade developments between Korea and V4 region. The paper investigates, whether intra-firm relations are concentrated on head-office – individual affiliate level, or to what extent the neighbouring V4 countries are considered as a joint production base with drivers for competition or cooperation and elements of upgrading.

Key words: Korea-V4 relations, global value chains, electronics industry in V4, upgrading
JEL: F23, F14, F59

1 INTRODUCTION

After the change of the political system at the turn of the 1990's, by the collapse of COMECON Central European domestic companies lost a major part of their markets, leaving prompt tasks for the governments in job creation, improving efficiency and competitiveness, international market access – altogether in world economic adjustment. Hungary turned first from among the Visegrad countries to invite foreign capital through incentives into privatization, followed in the mid-nineties by Czech Republic and Slovakia, and finally by Poland, with its larger domestic market, expecting not only financial means but modern business and engineering skills as well to develop their economies. The V4 countries became part of the accelerating globalization after the Cold War, thus of the worldwide spread of cross-border networks with fragmented production processes created by transnational corporations

Republic of Korea's (Korea) successful change to government-induced export-oriented development from the 70's, with special emphasis on supporting the large chaebols, has brought in the household and consumer electronics industry large boom till the end of the eighties on domestic and neigbouring export markets. With a management change of milestone significance in the second half of the eighties, one of the biggest chaebols, Samsung started the move to global growth venturing closer to distant continents by relocating production facilities there. Samsung was among the first corporations realizing the potential in Central-Europe's awakening from centrally-planned to newly established market economies.

The research analysis shows the trajectory path of the Korean economy and the V4 region in building up relations even diplomatically from the scratch at the end of the eighties. The aim of the research to identify their growing bilateral or regional interconnectedness after the Millennium within the global value chain of the world's top 20 global company by brand value.

2 LITERATURE REVIEW

According to UNCTAD's World Investment Report (2013) about 60 percent of today's global trade consists of trade in intermediate goods and services which are being

---
[32] Aniko Magashazi, Norbert Szijártó, Aniko Magashazi Corvinus University Budapest, Department of World Economy, H-1093, Fővám tér 8. a.magashazi@gmail.com. (+36-30-383-4306), (norbert.szijarto@gmail.com, andras.tetenyi@uni-corvinus.hu

combined at a later stage to create final products. The fragmentation of production processes have led to transnational and cross-border production systems which are being called global value chains (GVCs). The relevance of GVCs can be characterized by the fact that in developing countries, value added trade contributes nearly 30 per cent to countries' GDP on average, and in developed countries reaches almost 20 per cent.

These value chains and global production networks (GPN) have not only become a major organizational innovation in global operations, but they have acted as a catalyst for international knowledge diffusion (Ernst – Kim, 2001). GVCs can also offer developing countries opportunities to integrate into the world economy at lower costs, however these gains from value chains are not automatic. Ernst – Kim (2001) found three related variables which have allowed global networks to spread both in power and influence. The first was institutional change through liberalization: which occurred in trade, capital flows, FDI policies and privatization. With success of major regional organisations such as the European Union or NAFTA, the demand for a world without barriers in trade, services and capital flows has been growing steadily and has also changed the behaviour of major Transnational Corporations (TNCs). They now have a larger choice of market entry (trade, licensing, subcontracting, franchising etc.) than previously and also have better access to external resources and capabilities. The second reason for the spread of these global networks was information and communication technology (ICT) which allowed the dispersion of firm-specific resources and capabilities over borders and provided greater opportunities for cross-border linkages. The third reason was increased competition in prices and products requiring companies to increase their foothold in their major markets.

GVCs were found important because they "link firms, workers and consumers around the world and often provide a stepping stone for firms and workers in developing countries to integrate into the global economy". (Gereffy and Stark, 2011, 2). Thus it has become a vital part of a given country's competitiveness to integrate into these value chains in order to increase the value added of the production and make increased returns for the entrepreneurs. This way the country can not only gain by having more competitive industries, but by having larger annual economic growth and development. As recent research identified "value chains describe the full range of activities that firms and workers perform to bring a product from its conception to end use and beyond. This may include activities such as design, production, marketing, distribution and support to the final consumer." (Gereffy and Stark 2011, 4). The GVCs are mainly coordinated by major TNCs where the borderless production usually takes place within their system of affiliates, contractual partners and suppliers.

Based on Gereffi (1995) and Gereffi-Stark (2011) we can identify five main layers to GVCs:

a) An input-output structure, which analyses the course during which raw materials become final products;
b) A geographical consideration;
c) A governance structure which details how the GVC is being controlled;
d) An institutional context;
e) Upgrading, which describes how producers move between various stages of the value chain.

Within our article we shall be mainly focusing on layers two, three and five. GVCs can be analysed from two viewpoints: top down and bottom up. The top down approach focuses on the governance of value chains, whereas the bottom up approach focuses on the upgrading a.k.a. the strategies used by countries, regions and other stakeholders to maintain or improve their position in the global economy. Economic upgrading can be defined as "firms, countries or regions moving to higher value activities in GVCs in order to increase the benefits (e.g.

security, profits, value-added, capabilities) from participating in global production" (Gereffi 2005). Humphrey – Schmitz (2004) define upgrading as the movement towards higher value added activities. Upgrading can also be analysed as a series of economic activities and competences associated with the production process. In terms of analysing various parts of the value added chain we can differentiate between:

- Assembly based on imported inputs (usual for export-processing zones);
- Original equipment manufacturing;
- Original brand name manufacturing ;
- Original design manufacturing (Gereffi – Stark 2011).

Later on in the article we are going to be reflecting on where the Samsung Electronics Group can fit in the V4 countries into these production categories and what steps they are making to move upwards in terms of value added. Thus upgrading can occur firstly by process upgrading, where the input-to-output production process is reorganized or by introducing superior technology. Secondly it can occur by product upgrading or moving into the direction of more sophisticated product lines. Thirdly it can occur by functional upgrading which involves the securing of new functions, and fourth by chain or inter-sectoral upgrading, where companies move into related industries (Gereffi – Stark 2011).

In terms of evidence UNCTAD (2013) gives a good overview about the activities of GVCs. For instance developed countries have a higher import dependence at 31 per cent as opposed to the global average (28 per cent), even though the EU distorts this picture somewhat which accounts for 70 per cent of EU-originated exports. Developing countries have a lower share at 25 per cent of foreign value added, where the highest shares are not surprisingly in East and South-East Asia and in Central-America. In Africa, West-Asia and South America and in transition countries the share of foreign value added is lower mainly because of the fact that these countries have specialised in natural resource and commodity exports. Traditionally electronics and the automotive industry have been at the forefront of value chain segmentation, mainly because of the fact that in these industries it is easier to break down the products into separate components, produce them separately and assemble them in low cost locations.

In the following paragraph we are going to reflect upon what factors influence the share of domestic value added in exports based upon UNCTAD (2013). These factors are first the size of the economy, where large economies tend to have significant internal value chains (US and Japan) and thus rely less on imports, however there are also exceptions to this rule namely China, Germany and the UK. Second the composition of exports and position in GVCs. Those countries which have a significant amount of natural resources in their exports such as Russia or Saudi Arabia have a lower share of foreign value added. Third, the economic structure and export model may also determine the percentage of foreign value added. Those countries with special export processing zones or major duty-free ports such as Hong Kong, Singapore or the Netherlands have higher share of foreign value added.

Different phases of the GVCs are innovatively illustrated with the smile diagram (Baldwyn-Evenett 2012, 90) (Figure 1). The first and last phase of the smile curve shows considerably higher value added than the middle phase. For instance in the case of the assembly of a Nokia N95 phone even though the phone is assembled and made whole in Asia most of the value added is realized in Europe. This mainly occurs because in the beginning phase a lot of R&D is needed to develop the phone, and at the end of the value chain a lot of value added is needed to market is and sell it. Whereas the middle phase, the actual production, is relatively simpler with less value added in the process. For us this issue poses the question: when Korean firms are producing in Hungary what part of the smile curve are they actually utilising the Hungarian workforce for? Are they really providing much value-

added and linkages with other firms for the Hungarian economy? Or is it just work opportunities? The evidence on this issue is mixed with recent research results pointing out that in developing countries suppliers into GVC have "*not necessarily lead to the formation of strong linkages between foreign subsidiaries and domestic firms.*" (Pavlinek and Zizalova 2014, 5)

Figure 1: The smile curve
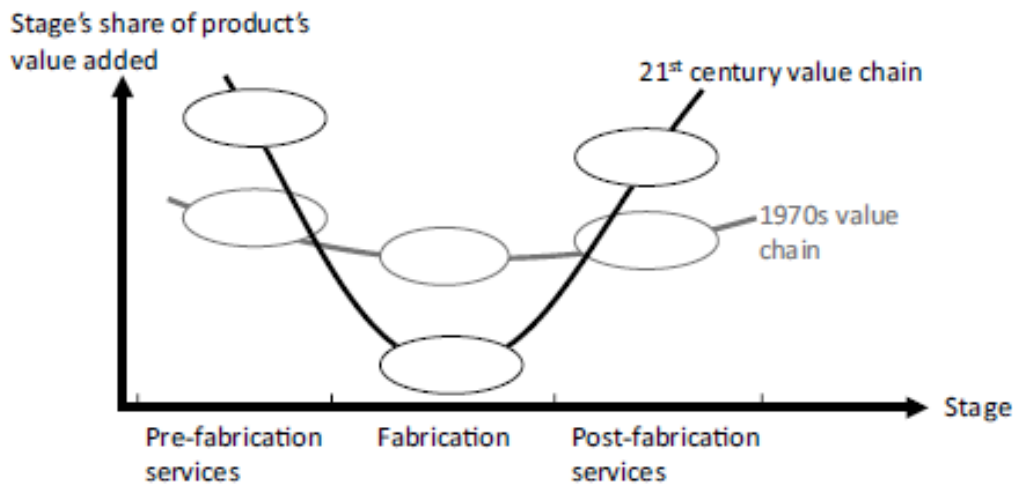
Source: Baldwin – Evenett (2012:90)

However Sass-Szalavetz (2012) show that even though your country may be the one doing the producing on the smile curve, production eventually will pull development activities with it, because the physical presence of the R&D engineers may be required close to the production. Later on we are going to see that Samsung has also brought with itself and established an R&D centre in Poland to reduce the distance between R&D and production. The authors also remark that human capital and the structure and efficiency of the educational service are the factors which draw in FDI into R&D intensive sectors. According to WTO (2014) GVC participation can affect technology and knowledge transfers in two ways: first, production technology can be transferred and secondly technology can also be transferred if the TNC invests into the local economy.

Empirical evidence shows that the CEE region is closely connected to GVCs:

- There is close connection between fast increase of foreign trade turnover, its structural change and FDI (Antalóczy – Sass, 2002)
- The share of Germany's intrafirm imports from Hungary of the total exports amounted to 40,46%, in case of Slovakia 64,98% according to 1996-2000 survey data (Marin 2005, 7)
- 43 %-a of exports from and 30 %-a of imports into free zones are intra-firm (Antalóczy-Sass, 2002)
- Based on input-output tables value added did not expand in the developed countries between 1995-2008, only in emerging economies, which suggests the transfer of production processes toward the emerging economies. „The segmentation of production processes has had major consequences on the factor/income flow both within and among the countries"(Timmer et. l. 2013, 2).
- „Changes in the Hungarian foreign trade in the last 2 decades (quantitative growth, relational and product structure) can be explained by one major factor. The domestic production became part of global value chains " (Antalóczy 2012, 56.).

- The CEE region has increased its share in the global value chain from 4,4% in 1995 to 9,3% in 2008. The Visegrad countries have mainly specialized in three areas: electronics (HU, SK), machinery (CZ, SK) and transport equipment (all countries) (Grodzicki 2014).

3 METHODOLOGICAL ASPECTS OF GLOBAL VALUE CHAINS

Research on vertical specialization of trade goes back to the end of 1990s when Hummels et al. (1999) developed the concept of vertical specialization; the key feature according to the authors is that imported inputs are used to produce a country's export goods. This concept emphasizes that the production sequence of a good involves two or more countries and during the production sequence the good-in-process – intermediate goods – crosses at least two international borders. Due to lack of comprehensive data they use the OECD input-output database covering only 10 OECD countries to define the extension of vertical specialization. They note that the main driving force of intermediate goods was trade barrier reduction resulted in the decreasing cost of producing a good sequentially in several countries.[33] During the 1990s and in 2000s several fundamental problems arose regarding the national accounts architecture and traditional trade statistics. The very essential problem is that these statistics were set up to gather data on gross flows of goods and services across borders and not the locations at which value is added at different states of the production process. As Grossman and Rossi-Hansberg (2007, pp. 66-67) stress the problem:

"The measurement of trade as gross values of imports and exports was perhaps appropriate at a time when trade flows comprised mostly finished goods. But such measures are inadequate to the task of measuring the extent of a country's international integration in a world with global supply chains...we would like to know the sources of the value added embodied in the goods and the uses to which the goods are eventually put."

To tackle this challenge some papers started creating concepts to track value added by country in global trade. Koopman et al. (2010) provide a conceptual framework integrating and generalizing the former attempts tracing value added by country in international trade. According to their concept supply chains can be described as a system of value-added sources and destination within an internationally integrated production network. As intermediate goods cross international borders more than once, official trade statistics double count the value of them. The framework provided by Koopman et al. give a complete decomposition of gross export into its value-added components. Johnson and Noguera (2012) analyze the value added content of trade bringing together time series data on trade, production and input-use. From a methodological point of view they compare the ratio of value added to gross exports. Their framework captures both bilateral production chains and complex multy-country production chains. And they also find that regional trade agreements promote fragmentation of production. Baldwin (2009) argues that fragmentation of production was a consequence of radical decrease in transportation and coordination costs, which resulted in unprecedented specialization of economies.

The widely used concept of deep understanding of the characteristics of GVCs takes into consideration the country of origin of the value added contained in imported inputs used to produce goods and services that are later exported. The computation of these measures requires a global input-output matrix. The global input-output matrix is similar to that of classical input-output matrices but its information content is much larger. The World Input-Output Database (WIOD) is the first public database that contains information about the fragmentation of production among countries and provides opportunity to analyze the consequences of fragmentation.[34] The WIOD provides time-series of world input-output

---

[33] With this contribution Hummels et al. extended the Dornbusch-Fischer-Samuelson Ricardian trade modell.
[34] World Input-Output Database, source: http://www.wiod.org/new_site/home.htm

tables for forty countries and a model for rest of the world, covering the period between 1995 and 2011. Timmer et al. (2015) gives a user guide to the WIOD introducing a case study of global automotive production. Dietzenbacher et al. (2013) illustrates the construction of World Input-Output tables during the project. The WIOD project and the creation of the database gave birth to enormous number of studies and provided an impetus for detailed analysis on trade in value added and GVCs. For instance Stehrer (2012) shows two measures of value added flows between countries: Trade in value added and Value added in trade. The former one accounts for value added of one country directly and indirectly presented in final consumption of another country, and the latter one represents the value added embodied in gross trade flows. Stehrer proves that both measures – Trade in value added and Value added in trade – result in the same overall net trade of a country. Timmer et al. (2013), instead of conventional indicators of competitiveness based on gross export (real effective exchange rate calculations), propose and ex-post accounting framework of the value added and workers that are related to the production of final goods – GVC income and GVC jobs. They trace the value added by all labor and capital that is directly and indirectly used for the production and the price paid for the final product ends up as income for all labor and capital used in its production process – GVC income. And the number of jobs directly and indirectly needed in the production is the concept of GVC jobs. Their paper presents four essential findings:

a) Exports are not domestic incomes. Strong export performance does not eventuate in strong income growth because of these countries often rely on imported intermediates.

b) European comparative advantage is shifting. Timmer et al. recalculated the revealed comparative advantage in terms of GVC income and they find that EU's comparative advantage is high in non-electrical machinery and transport equipment, but declining in the production of non-durables.

c) Europe is specializing in skilled GVC jobs. The find that between 1995 and 2008 the number of high-skilled jobs increased by 4 million but 6 million low-skilled jobs were lost.

d) Service jobs related to manufacturing are increasing in the EU.

Although the WIOD project is the most prevalent in the literature of GVCs and value added trade but some other official international input-output tables are available: Inter-Country Input-Output (ICIO) Database by the OECD (OECD, 2013b); Asian International Input-Output (AIIO) Tables created by IDE-Jetro and Global Trade Analysis Project (GTAP) Model by Purdue University. The OECD and WTO (2013) synthetize the measurement of value added trade and states that the development of new trade statistics is required which needs a coordinated international approach to build a framework and methodology. Therefore the WTO launched the "Made in the World" initiative to support the exchange of projects, experienced and practical approaches in measuring and analyzing trade in value added.

The economic literature has been making progress in the measurement and mapping of GVCs – states the ECB (2015), and the interpretation of trade in value added indicators is sufficiently established, but there is still limited works on the analysis of the results for regional trade blocks or individual countries concerning the time horizon, geographic and sectoral dimensions.

Limited papers related to the Visegrad countries' (V4) participation in GVCs have been carried out during the last few years. Grodzicki (2014) argues that the new trade paradigm brings fundamental consequences for middle-income countries such as the V4 group. According to Grodzicki two different changes take place at the same time. On the one hand, fragmentation of production gives V4 countries possibilities of entering the global production networks, since competition appears on the level of single tasks, therefore it will be easier to develop new type of activities and to attract foreign investors. And on the other hand,

traditional concepts based on gross exports or imports data lose their relevance. Early involvement of V4 countries in GVCs focused mainly on assembly operations, but later more and more tasks of higher complexity executed in the region. Grodzicki notes that the V4 economies specialize particularly in electronics – Hungary and Slovak Republic – machinery – the Czech Republic and Slovakia – and transport equipment – all countries. Sass and Szalavetz (2013) show Hungary's high level of integration into GVCs by analyzing the effects of the global financial crisis on GVC integrated Hungarian automotive and electronic industry. According to their results (interviews) the crisis induced functional upgrading effects and reorganization of multinational corporations. Éltető and Toporowski (2013) analyze trade relations between V4 countries and five Asian regions from 2000 to 2012. The share of Asia in Visegrad countries' trade has been dramatically increasing since 2000. Visegrad countries are integrated into GVCs to a different degree, with different patterns. According to Éltető and Toporowski Poland with large internal market attracts market seeking investments and investments in the three small Visegrad countries can be determined as efficiency seeking, utilizing cheap and well-qualified labor force.

As to the methodology applied to current research, we used WIOD database for the intra-industry trade relations and due to lack of literature and database regarding the V4 – especially the Hungarian – affiliates' and firms' participation in GVCs of South Korean multinationals, we turned to carry out a qualitative research based on case study with interviews.

4 THE BACKGROUND TO PRIVATE BUSINESS ACTIVITY: GENERAL ANALYSIS OF RELATIONS BETWEEN KOREA AND THE V4 COUNTRIES

Korea's reaction to political and economic opening up of the Central-European countries was rapid. Diplomatic ties were established as early as in 1989 first in Hungary. Paralelly major agreements on investment protection, avoidance of double taxation and the intergovernmental agreement on Scientific and Technological Cooperation were signed in 1989. Diplomatic ties were established in the same year by Czechoslovakia, in 1990 by Poland, too. After the separation, Slovakia and Czech Republic established diplomatic ties with Korea in 1993. The 25 years of continuously good relations between Korea and the V4 countries has created a solid background on which private business relations have been built upon.[35]

A further important step in the foreign economic diplomacy between Korea and Hungary was the signing of the Economic Cooperation Agreement in 2005 and establishing a Korean-Hungarian Joint Commission. In 2010 Korean-Hungarian joint research laboratories within the cooperation of the two Academies of Sciences started their operation. Bilateral economic ties between Korea and the V4 countries were amplified by Korea's increasing opening up towards multilateral and regional economic organizations, as well. Korea has been part of WTO GPA since 1997, among other harmonization benefits is the conformity of its procurement system with the WTO system.

New dimensions in the trade and investment relations with the V4 region can be facilitated through the Korea – EU Free Trade Agreement, which came into force in July 2011. Due to the FTA for 95% of the products tariffs were immediately abolished, for the rest (mainly agricultural products) a gradual tariff reduction has been and will be applied. Korea is the first Asian country, which signed together with the FTA also a Partnership and Cooperation Agreement and an Agreement on participation of CSDP conflict-management missions with the European Union. Beside increased bilateral foreign and economic diplomatic activity, business forums with all V4 countries in the recent years, Korea initiated

---

[35] This statement was strongly emphasized by both Korean and Hungarian interview partners.

in 2013 to extend the cooperation towards V4 + Korea format, with the aim to foster issue-driven cooperation. As Korea's position in their home region, East-Asia with the ASEAN+3 format, is a less institutionalized, more informal cooperation, backed by the already existing strong business presence of their companies. Similar approach is foreseen in the V4+Korea cooperation initiative.

Recent developments:

- 1st meeting of political directors on 13th June, 2014 in Seoul
- 1st meeting of ministers of foreign affairs on 17th July, 2014 in Bratislava Agreement signed with IVF regarding Korean support to its West-Balkan programs in the amount of 500.000 EUR
- Korea puts special attention on learning from the transition experience of the V4 countries, a conference is planned in the near future
- Slovakian State Secretary Burian gave on 19th March, 2015 a presentation at the Hankuk University of Foreign Studies on "The Visegrad Group: A Success Story in the Very Heart of Europe" and in the presence of V4 ambassadors festively opened a V4 book corner there.

V4+Korea developments steered further bilateral activities to foster business ties. PM Orban visited Korea with a large business delegation in November 2014, PM Sobotka with business firms and R&D institutions in February, 2015. Plans exist for the first V4+Korea Summit in autumn 2015.

5 POSSIBLE IMPACT OF GLOBAL VALUE CHAINS ON TRADE RELATIONS BETWEEN V4 COUNTRIES

Trade relations between the countries of the V4 region have been determined by external factors for centuries. Empires integrated the region based on their own interests, and after World War II COMECON distorted the formation of trade relations based on real comparative acvantages for four decades. Thus at the start of the transition the tradition of cooperation was very weak. The beginning of nineties were characterized by competing with each other in increasing relations with the Western countries and drastically dropping intra-regional trade turnover. First publications appeared after 2010 about accelerated increase of intra-regional trade turnover in the V4 region following the EU accession, compared to their turnover with the E-15 countries. (Hunya, Richter 2011, Antaloczy 2012).

Table 1. summarizes our calculations showing the sudden increase of the share of the V4 countries in the Hungarian exports by 2005 compared to the 1995 share.

Table 1: Share of V4 countries in Hungarian exports (%)

Countries	1995	2000	2003	2005	2007	2008	2010	2012	2013
Czech R.	1,6	1,7	2,1	3,1	3,8	4	3,5	3,9	3,8
Slovakia	1,7	1	2	2,9	4,2	4,7	5,3	5,9	5,3
Poland	2,6	2,1	2,3	3,2	4,2	4	3,7	3,8	3,9
V4 total	**5,9**	**4,8**	**6,4**	**9,2**	**12,2**	**12,7**	**12,5**	**13,6**	**13**

Source: Eurostat, Central Statistical Office Hungary, author's calculations

Analysis of the role of the V4 countries in the Hungarian imports, illustrated in Table 2. here below, demonstrates similar movements in intra-regional trade from the other three V4 countries, their joint share increased from 6,4 % to 14,6 % by 2013.

As trade liberalization took place among the countries already with the association agreements before the actual EU-accession in 2004, behind the results the direct impact of

global value chains is hypotized. To identify impacts of global value chains further research is concentrated on the intra-industry semi-finished goods trade between the V4 countries, based on the theory, that behind the intra-industry trade mostly intra-firm trade can be observed. (Ng, Kaminski 2001). From the World Input Output Database of Marcel Timmer and his research group[36] four major product categories were selected, where considerable semi-finished product trade-flow can be seen in the figures.

Table 2: Share of V4 countries in Hungarian imports (%)

Countries	1995	2000	2003	2005	2007	2008	2010	2012	2013
Czech R.	2,4	2	2,4	2,8	3,5	3,8	3,2	3,5	4,1
Slovakia	2,4	1,8	1,9	2,2	3	3,5	4,1	5,6	5,7
Poland	1,6	2	2,8	3,8	3,9	3,9	5,2	4,6	4,8
V4 total	**6,4**	**5,8**	**7,1**	**8,8**	**10,4**	**11,2**	**12,5**	**13,7**	**14,6**

Source: Eurostat, Central Statistical Office Hungary, author's calculations

Table 3. presents the change in bilateral trade flows in four categories in 2000 and 2011 between the V4 countries, behind which we assume movements of semi-finished goods between subsidiaries, NEM or arm's length suppliers of transnational corporations.

Table 3: Hungary's intra-industry semi-finished goods exports in 2000-2011 (in mio. USD)

Industries	Czech Rep.		Slovakia		Poland		V4 total	
	2000	2011	2000	2011	2000	2011	2000	2011
Metallurgy	13	120	12	63	10	158	35	397
Machinery	1	28	1	8	1	18	3	54
Electric,	18	339	7	527	28	147	**53**	**1013**
Transport.	39	335	3	74	14	197	56	606

Source: WIOD Database 2000 and 2011

The most significant increase behind the intra-industry trade growth appears between Hungary and Slovakia in the electrical and optical industry,[37] but turnover figures with Czech Republic and Poland show also significant expansion.

Table 4: Hungary's intra-industry semi-finished goods imports in 2000-2011 (in mio. USD)

Industries	Czech. Rep.		Slovakia		Poland		V4 Total	
	2000	2011	2000	2011	2000	2011	2000	2011
Metallurgy	24	122	38	189	42	166	35	477
Machinery	3	37	2	19	1	28	6	74
Electr. ind.	48	193	30	336	29	686	**107**	**1215**
Transport. i.	16	198	21	80	36	265	73	543

Source: WIOD Database 2000 and 2011

The extraordinary role of the electrical and optical industry behind the intra-industry trade expansion can be observed on data of Table 4. regarding the Hungarian imports as well with more than twenty-fold increase of the Polish exports to Hungary and more than tenfold increase of the Slovakian exports to Hungary.

---

[36] WIOD Database is available for the years between 1995-2011 for 27 EU-member countries + 13 important other countries including Korea to help researchers analyse the international fragmentation of production.

[37] In the World Input Output Tables electronics industry is part of the electrical and optical industry category

6 CASE-STUDY: THE EXPANSION OF SAMSUNG ELECTRONICS INTO THE V4 REGION AND ITS IMPACTS

6.1 DEVELOPMENT OF SAMSUNG ELECTRONICS HUNGARY (SEH)

The Hungarian early start in the political and economic diplomacy has become a„symbolic capital" in the first half of the nineties. Due to Hungary's first mover advantage in the privatization process Korea's largest chaebol, Samsung acquired in 1989 through its Electronics Division 50 % ownership of the factory of the major Hungarian television manufacturer Orion, located in the East-Hungarian town, Jászfényszaru. Coloured TVs produced by Samsung Electronics globally reached that year altogether 20 million pieces. The Korean-Hungarian joint venture started its operation in April 1990, and by June 1990 Samsung acquired 100 % ownership in the factory with an annual production of 200.000 pieces of television sets. Exports started in 1993, in 2014 99 % of the manufactured products were already exported. Samsung Electronics is still today a flagship FDI success case in the V4 region, intensively expanding in the meantime in the other three countries, as well. Furthermore it has set a good example for investments of other Samsung divisions into the region.

Adressing the question from the side of Samsung's motivations behind the entry, research on rapid expansion of electronics industry triggered by FDI from the nineties points at labour productivity as one of the major factors, which induced relocation of production from Western-European sites of TNCs as similar value added was reached at considerably lower cost. Hungary's leading role in the electronics industry in the second half of the nineties and its first inclusion into the global value chain of international corporations can also be explained by this factor as Czech labour productivity on PPP exchange rates reached only 58 %, Polish one 39 % and Slovakian one 18 % that time. (Radosevic 2002, 41). The gaps were swiftly narrowed and closed later on, which were reflected in the FDI results of the other V4 countries as well.

Samsung Electronics, which operates the world's largest television factory in the Korean town, Asan, has invested since entering in 1989 approximately 530 million EUR into the Jászfényszaru television factory. Through continuous expansion of the existing factory in the nineties the production capacity was tripled. A major jump in the production figures occured in 1998, when the other European factory in England was closed down and a second production line was installed on the Hungarian site, reaching the 1 million pieces annual production mark. By installing in 1999 the third production line, the factory became Europe's major manufacturing site. Samsung contributed strongly to Hungary's in international comparison exceptionally high growth rate of output and exports in the electronics industry in the second half of the nineties.

6.1.1 Product, functional and process upgrading of SEH

Early and successful reaction of Samsung to technological change in the visual display industry and unprecendented market gain has brought very fast product upgrading after the Millineum in the subsidiary, too. In the end of 1999 SEH started to produce digital TVs, in 2004 flat panel LCD TVs, and in September 2005 as first factory in Europe produced TVs with slim picture tubes, moving then later further to LED, OLED TV production. A new V2[38] building for the SMD service mount division and production of LED liquid crystal moduls (LCMs) was opened in 2007, bringing most advanced technology with the new investment. Mainboards are produced and chips are suface mounted into the mainboards as a new production activity beside the assembly of TV sets. In 2009 thanks to the investment SEH achieved 20 % higher revenue due to substantially increased efficiency, stepping ahead as the

---

[38] The building names V1, V2 are the shortening of Victory1, Victory2… emphasizing by the Korean owners the merit of expansion, thus job creation, technology transer.

6th largest Hungarian company in terms of revenue and 5th largest in terms of exports, exporting 73 % of the products.   Higher value added functions such as sales, marketing, procurement, compliance,   product programming, production process management were concentrated by then on the site of the plant and the factory complex became integrated into the global corporate management SAP system. The newest V3 factory unit was opened in June 2014 with 25 MEUR investment, enabling the production of larger TVs, as well.

The continuous upgrading through transferring most advanced products, highest technology and allowing quite high autonomy in production and business functions gave more opportunity for taking part in the production and business process innovation for the local subsidiary.   Out of the ca. 100 engineers/technicians managing the production process, introducing yearly new products, 5-6 are working fulltime on innovations. Such innovations of the Hungarian team were developing a sensor-steered small automatic tow truck (nicknamed „dog") – which furthers large carts in the factory packed with finished goods from one place to the other without manual assistance. Development of a part of the conveyor line (nicknamed cube) allows quality check of four television sets puzzled into a cube-shaped equipment at the same time, while earlier it was made one by one. Some of the best practices developed are transferred to other factories of the Samsung Group as well. Similar applies for business innovation. Process management systems, such as Kaizen have been adopted globally and locally to increase efficiency. In Hungary 5-6 full-time employees are engaged in the development and monitoring of a tailor-made own corporate system. Classical basic or applied R&D functions, new products or application development have not been transferred to Hungary up to now, thus SEH is not eligible for tax allowances coupled with such acitivies.

Exports sales are managed by a team based in Jászfényszaru in close cooperation with the central Dutch group sales and logistic unit, while domestic sales sits in Budapest, reporting to the factory management. By expansions and steady improvement of the production process itself, Samsung Electronics Hungary produces currently 15 million TVs with 3000-3600 employees according to seasonality. In terms of total revenue SEH advanced to the 5th place among the largest companies in Hungary. The development of the value added production needs further analysis, which obviously will alter the picture, the giant numbers – 178.000 m2 total built-in production space, adding spare part production and consolidating visual display production globally altogether on 6-8 factories worldwide – indicates long term commitment to the location. Samsung Group has taken crucial positions from competitiors and if it   continues the   „fast follower and further developer strategy", bringing the right strategic decisions and strengthens further its global value chain with selected main large subsidiaries and supplier base, its prospects are still promising. Philips lost the battle, moved out of business, Sony lost market share globally to the new market leader Samsung, which is market leader both in TVsets and smart phones in the meantime.

International expansion of SEH as a special functional upgrading element needs a closer examination. Company data shows that SEH has owned 51 % of Samsung Electronics Slovakia and 50 % of the sales subsidiary Samsung Electronics, Czech Republic from their inseption. As the interview revealed, while as trusted local arm of the head office SEH played some mentoring role especially in the beginning, real ownership rights have never been excersized, strategic and managerial governance are assured by the head office and the local management. Direct international activity outside the borders were in Czech Republic between 2007-2010, when SEH opened sales branches in Prague and Bratislava, which network architecture was overwritten by concentrating all European sales and logistics management to the Dutch subsidiary created for that purpose. The branch opened in Oradea, Romania has been integrated as lower cost base for jobwork production into the Global Value Chain through SEH.

6.1.2   The role of global, national and local linkages

Research points at the role of networks elements apart from EU demand as main pulling factor for inclusion of CEE countries in their international production networks. The strongest factor is the relationship between global head office and local subsidiary, which plays a strong network alignment role, but connection to national governments by both head office and subsidiary, relationship to local government by the subsidiary has its special significance, too. (Radosevic 2002‚ 55). In case of head office – subsidiary relations of SEH strategic issues, investments, mid-term planning are handled globally, governance of the local production and sales is run by joint Korean and Hungarian management in the main management functions. 10-15 Korean expatriates are delegated from Korea (called dispatchers) and further 20 Koreans were hired externally in Hungary**.** Some of them speaks in the meantime fluent Hungarian, while Hungarians with Korean language degree are also hired mostly from ELTE University of Humanities to ensure smooth cooperation.

The giant size, 25 years of operation in Hungary, 99 % export, over 60 % Hungarian supplier share, more than 3000 employed are strong arguments in lobbying activities of SEH towards authorities. Continuously special attention is given on the subsidiary level to national and local government relations. SEH's chief legal council and compliance head is at the same time director of government relations. Tax allowances, grants in compliance with EU rules from the national government have had positive contribution to Samsung's decision on new investments according to the interview participant. Such allowances were mostly coupled with employment requirement commitments in return. In case of the latest investment Samsung committed to employ additional 75 more FTEs. On the other hand as the interview revealed, those traditional vehicles to advance economic priorities of the national government in employment and keeping invested technologies in the country causes more and more difficulties to fullfill by the grant beneficiary in the high-tech industries. Rapid increase of productivity with the technological change increases substantially revenues and exports of new investments, while it is hard to estimate the future FTE demand and make medium term commitments. Monitoring of fullfillment of subsidy requirements in several consecutive years after the investment includes among others special approval procedure, if any of the equipment co-financed through the grant needs to be replaced by a new one representing a more advanced technology. Inflexibility in applying the requirements two strictly, time-consuming decision making instead of more pragmatic approach are obstacles faced by the grant beneficiary. Building up good relations with the authorities is needed to reduce disadvantages in pursuing rapid technological upgrading strategies due to above reasons. Infrastructure development projects of national magnitude need consequent lobbying actions as well. After several years of lobbying and 25 years of presence, the road no. 32 connecting Samsung with the highway is currently being upgraded.

Local governments in CEE have equally important role as national governments. They act as trouble-shooters in administrative jungle of rules and regulations of the transition economies to allow rapid and efficient implementation of strategic decision of the flagship company within its international value chain. More than 200 industrial parks were created in Hungary partly with national incentives after 1998. The Jaszfenyszaru local government established among the firsts its wholly owned industrial park to support Samsung's further expansion and attract suppliers to immediate proximity in 1998. Professional expertise in infrastructural questions, structured approach in preparing expansion plots in a proactive way are the areas where a local government directly or through the industrial park vehicle can efficiently contribute to the favourable investment decision. Traditional fields of arguments by international companies are local taxes, and tax burdens on real estates owned. SEH's host municipality applies relatively low local tax rate compared to national average (1,4 %) and

has refrained from levying high real estate tax as a result of regular talks with Samsung management on these issues.

6.1.3 Supplier relations

A comprehensive study on FDI driven development of the CEE electronics industry indicated only modest linkages with local SME supplier base at the end of the nineties, (Radosevic 2002, 55). We believe that the last decade, with increasing role of global value chains has strengthened their role in the network alliance architecture, even in the less knowledge-intensive plastic moulding supplies, requiring in the meantime advanced technology to be competitive, make a reliable and a same time flexible supply partner.

SEH proudly advocates 85 % local supplier share in their Hungarian activity. In case of all production inputs strict procurement procedures are followed by the Hungarian procurement division. Although in the electronics industry supplier can still be replaced easily, the time and effort invested by SEH engineers into on the spot training of their suppliers, tacit knowledge gained through several years of working together on thoroughly negotiated economic, technical and quality assurance terms, the relational aspect with culture-to culture learning are such assets, that has allowed a few major local SMEs of the region to grow together with their major client for several years. The interview participant underlined that SEH prefers at least mid-term main supplier partners, that are regularly proving their competitiveness, are flexible to react immediately even in case of last minute orders.

This strategy is confirmed by researching on one of its main Hungarian suppliers. The company Jász-Plasztik Ltd., established by a mechanic technician in 1990 in proximity of Samsung, Jászberény, started its activity as small entrepreneur in 1986 for the plastic industry on a self-made plastic moulding machine, put together from different used element. From the accumulated capital purchased a site with an old building of an agricultural cooperative, that closed its operation at Hungary's transition. Six further used machines were acquired in the course of the following years, enabling the small firm to become SEH supplier in 1996. They successfully applied for government grants, which allowed for them larger investments in the second half of the nineties. They soon supplied several players of the electronics and automotive industry which included Hungary in their global value chains, among others both Samsung and Sony.[39] Few years later Samsung Electronics offered the possiblity to expand with them to Slovakia. They followed their client and founded a company in 2001   in Galanta with two Slovakian private persons, keeping 50 % ownership share.[40] In 2011 Jász-Plasztik employed 3000 people in Hungary and 1500 people in Galanta, Slovakia.[41] Reacting positively on a further business opportunity, since 2008 Jász-Plasztik have been assembling in jobwork full TVs for SEH in its own TV manufacturing unit. Si Ho Jang, President of SEH told in an interview in 2010, that SEH produced directly 7.500.000 TVs in Jászfényszaru, and Jász-Plasztik additionally 2.500.000 monitors for them in its own factory.[42] Jász-Plasztik followed SEH to Romania as well and established its subsidiary in 2011 for plastic moulding. In spite of very intensive relationship with its main client, Jász-Plasztik puts emphasis on diversification if its segments of activity. It has built up an insulation material production division for the construction industry and opened in November 2014 a car battery production site using a new innovative German technology combined with Italian applications enabling

---

[39] Interviw with Lajos Kasza, founding owner of Jász-Plasztik in local paper Jászkürt, 2011

[40] Supplementary Enclosure to the Company Results for the year 2014. page 5. The Slovakian company's equity amounted to 29 million EUR and 3 million EUR balance sheet profit at the end of 2014. 84 % of Jasz Plasztik Hungary's balance sheet total amountint to o 300 MEUR was financed by own equity.

[41] Interview with Lajos Kasza, Jászkürt, 2011

[42] Interview with Si Ho Jan, Presdient of SEH dated 29.08. 2010, retrieved from the website of Industrial Park of Jászfényszaru

Jász-Plasztik to be direct supplier of the car industry. The recent expansion exceeded 30 MEUR, 30 % of which was provided from EU grant.

Jász-Plasztik is a good case to study the mechanism how TNCs use non equity mode suppliers (NEMs) for governance in their global value chain network. A commonly accepted typology was developed by researchers, defining captive, modular and relational suppliers (Gereffi, Humphrey and Surgeon,2005). Modular suppliers are typical for the electronics industry, where TNCs source customized products from highly competent first-tier suppliers based on their standardized instructions, minimizing cost of orchestrating GVCs, as suppliers can be substituted by other suppliers without greater difficulties. In return TNCs has to accept that suppliers paralelly serve their competitors, too. Suppliers work with several TNCs at the same time to reduce their risk of depending only on one client. Jászplasztik became modular supplier of SEH in the second half of the nineties, with knowledge transfer, close support in building up their competence. After 2000 the governance of Jászpasztik has turned in our opinion to relational mode. The very long term TNC-supplier relationship in Hungary and Slovakia has created the tacit knowledge behind the transaction of collaborating efficiently together. The large quantity of products delivered, including also final products manufactured in Jászplasztik's own production facilities in jobwork, the utmost flexiblity Jászplasztik ensures for its client to react swiftly to changed requirements communicated by the global strategy has created a kind of mutual dependence between the TNC and its supplier, has increased the potential switching cost for the TNC. On the other hand Samsung as client in three countries constitute today such a dominant part in Jászplasztik's product portfolio in spite of the supplier's further diversification efforts into new industrial sectors, that a break in the relationship would impact severely the company.

Good long-term cooperation with local suppliers in Samsung's GVC webbing the Visegrad countries is not exceptional [43], even if we expect that the existence of such relational mode governance is rare. It also explains why Samsung Electronics has not insisted on Korean suppliers to follow them into the region. Samsung's globalization strategy aims to utilize local know how, experience to be competitive and successful on the local markets. A few Korean suppliers came earlier, which later on moved out again. Korean supply comes directly through intra-industry, possibly to a large extent intra-firm imports. According to information provided by Samsung in August 2015 during an interview with the company, roughly 25% of the supplies are coming from Korea and 10 % from Slovakia – indicating Samsung Electronics Hungary's embeddedness in Samsung's global value chain.

6.1.4 Samsung investments in Hungary outside the Samsung Electronic Division

Due to unprecedented growth of Samsung Electronics after 2000 the division plays a major role within the Group, it accounts for 70 % of Samsung Group's total revenue. Asian companies tend to follow good examples and the relational element plays an important role to gain soft knowledge on the quality of a new location. Further Samsung Divisions decided to establish their new factories to Hungary in the 21st century. Samsung Elektro-Mechanikai Kft was established in 2000 and production of electronic spare parts, such as television tuners started with 20 million USD new investment in Szigetszentmiklós in 2001. Another division, Samsung SDI decided to move in 2002 high-tech spare parts production for plasma TVs in a new greenfield subsidiary in Göd. The Göd factory produced two main spare parts for TVs , cathod-ray tubes (CPT) and plasma display panels (PDP). The Hungarian and German Samsung SDI factory jointly provided 25 % of the European production of CPTs and PDPs. The production grew fast in factory space and in revenue reaching 250 MEUR in 2012, predominantly manufactured for exports, still was closed down in July 2014 due to rapidly

---

[43] The development path of another local supplier Ferro Press Ltd. Jászberény shows similar trend since 2002, at a smaller scale and without internationalization

decreasing demand for traditional plasma TVs. German production of those parts was stopped at the same time as well by the head office. The 2008 crisis has brought the life-time of the plasma TVs faster to an end, than envisaged, R&D results did not yield marketable new products in that category by then. LCD and LED TVs were preferred by customers due to lower power demand and technological advancement. CPTs used in previous generation TVs were no longer needed. A further Samsung Division, outside of the electronics industry, Samsung Chemical opened in June 2011 a green-field factory in Tatabánya. The company has a distant connection to the industry, as the produced plastic granulates are among other industries used for the production of LCD screens as well. However it has hardly any direct business relationship to Samsung Electronics in Hungary.

6.2 THE DEVELOPMENT OF SAMSUNG ELECTRONICS SLOVAKIA IN GALANTA

Samsung Electronics's first production site in the V4 region after the Hungarian investment was completed in the Slovakian town of Galanta. Following a decision in 2001, the production in the new factories brought extraordinary expansion in the Slovakian electronics industry. The favourable experience in cost-competitiveness, resulted in further consolidation of Samsung's TV production in Europe moving the production of the Barcelona factory to Samsung Electronics Slovakia as well. Samsung Electronics Slovakia became the largest electronics manufacturer in Slovakia during the years before the 2008 financial crisis. Production between 2002-2007 expanded rapidly. In 2008 revenues have increased by three percent to reaching In Euro terms 3.4 billion Euros, but in SKK terms, due to the currency's appreciation, revenues fell by more than four percent), and reported a net loss of 31 million EUR, while the company achieved in 2006 still net profits of 106 million EUR[44]. As a quick reaction Samsung moved the production of plasma televisions from Galanta to the Hungarian factory in the beginning of 2009, to improve costeffectiveness in the Hungarian economic environment with strongly weakening forints.

Looking at the cooperation between SEH and the new Slovakian factory, it was confirmed in the interview that it was supportive, collaborative in the fist years of starting the operation and ramping up capacities. In the beginning the production of the lower value added products were transferred to Slovakia due to the lower cost base, corporate specific experience, lower skill level of the local employees, compared to more than a decade experience of SEH employees in Hungary. With continuous improvement of the production process, Slovakia has taken part in the rapid product upgrade, skill level improved, production experience was gathered resulting in a technologically balanced, competitive situation between the two large European production sites of Samsung.

The decision on building a new 25.000 m2 logistics and distribution center in Galanta in 2006 was an important step in functionally upgrading of Samsung Slovakia's position within the Samsung Electronics'Group. The 750 million SVK investment created 300 new jobs.[45]   All products sold in Slovakia, Hungary and the Arab region were moved to Galanta to be redistributed from there. The distribution chain recently has been further centralized, goods are directed to and from a sole European distribution point in the Netherlands. Samsung Electronics expanded also after the crisis in Galanta, the most recent large investment with a total amount of 70 million EUR was completed in 2012. As a pre-condition to the tax allowances granted by the state to the investment, Samsung Electronics Slovakia committed to keep the number of its FTEs at the level of that time for 6 years.[46] Today the Hungarian and the Slovakian units supply for Samsung the whole European market and often

---

[44] Based on the study of Electrical Engineering in Slovakia in 2008. A project for the Ministry of Economy of Slovakia, September 2009.
[45] The Slovak Spectator 24th May, 2006
[46] Based on article in Parameter, 1st August, 2013

get in direct competition with each other for new production capacities, offering similar cost-level and investment benefits for the expansion. As they are based in similarly underdeveloped regions within the EU they fall both under the category of 50 % subsidy-intensity, i.e. 50 % of the approved investment value can be used for corporate tax allowances. Steady competition within the global value chain of the lead corporation for new products and investments is a general governance environment of subsidiaries in rapidly expanding industries, such as electronics or automotive.

The favourable business environment in Slovakia attracted before 2008 another Samsung Division, Samsung Display investing in a green-field manufacturing unit in Voderady, near Bratislava, for the high-tech production of LCD panels with an annual production capacity of 10 million pieces. As LCD panels constitute 70 % of the of the value of the final TVs, this new development results in higher value added in the electronics industry, than in the case of the assembly activity. The two Samsung companies are the largest companies in the Slovakian electrical and electronic industry in spite of the presence of several other international investors. In 2007 Korean Chair opened at Comenius University in Bratislava, where Slovakian students can learn the Korean language.

6.3 SAMSUNG ELECTRONICS POLAND

Although Samsung Electronics does not have a TV manufacturing plant in Poland (there is one belonging to the white goods division only), Poland plays an important role in the global value chain of the Samsung Electronics Group ó especially in the ICT business line. Having exceeded the potential of the home market and export markets nearby, the globalization strategy of Samsung stemmed in the eighties from the intention to increase market opportunity globally. Establishing themselves in a distant region included to move manufacturing units, but later R&D and product development as well to respond to the needs of the local markets. In 2000 Samsung Electronics decided to start the Samsung Poland Research and Development Institute in Warsaw. The institute developed at a very fast pace and claims to be the biggest and fastest-growing modern technology R&D Centers in East-Central Europe. The institute expanded geographically in Poland, opened a branch in 2011 in Poznan and two others in 2013 in Lodz and Cracow. At the opening ceremony the president of Samsung Electronics Slovakia emphasized the high level of technical education and the conducive business environment to operate the Institute for 15 years there.[47] The Institute does not connect directly to the manufacturing operations in the region, conducts its activity under the supervision of Samsung Electronics Korea. In fostering creativity in the talented new generation, Samsung LABO class was conducted in the 2014 autumn semester at the University of Szczecin in the ICT development area, as well as a Tec Academy at the university of Poznan. Course material was developed together by Samsung engineers and researchers of Mathematics and Computer Department of the University. The rapidly expanding Institute, which employs more than 1000 engineers in applied research, had in June 2015 68 open positions on the four Polish locations advertised on their website. Samsung Electronics Polska was selected to one of Europe's best working places, receiving the Top Employer Europe 2014 Certificate as certified excellence in employee conditions.

6.4 SAMSUNG ELECTRONICS CZECH REPUBLIC

Although Samsung Electronics has not yet invested in manufacturing plant in the Czech Republic, its sales company Samsung Electronics Czech and Slovak in Prague serves commercially both countries with extensive sales and business development team. Dating back to Samsung's early history in Hungary, this company is technically also 50 % owned by

---

[47] Press release at opening of the Cracow branch by Mr. Daniel Chung, President of Samsung Poland. News from the website of Samsung Poland R&Đ Institute

Samsung Electronics Hungary from its establishment. In 2005, when sales and European sales and distributions functions were not yet concentrated solely in the Netherlands, Samsung Electronics Hungary opened sales offices in Prague and Bratislava. The sales results of its Prague office exceeded the performance of the sales team that time based in Budapest.

7 INTRA-INDUSTRY TRADE DEVELOPMENTS BETWEEN KOREA AND THE V4 COUNTRIES IN THE ELECTRICAL AND OPTICAL INDUSTRY

Chapter 5. outlined the development of the Samsung subsidiaries in the V4 countries. It raises the question, to what extent Korea and the V4 countries became more integrated through inclusion in Samsung Electronics' global value chain?

Figure 1: Korean electrical and optical intra-industry exports to V4
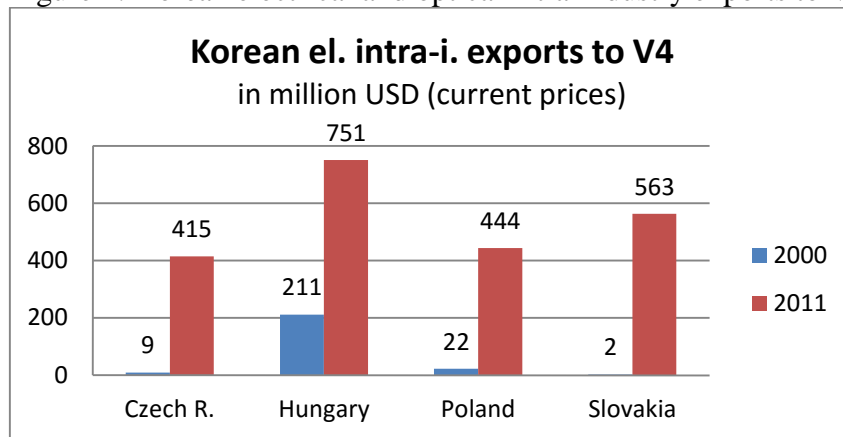
Source: WIOD Database 2000 and 2011

As Figure 1. shows, all countries experienced a huge expansion in imports of intra-industry semi-finished products from Korea generated by extensive investments into the region after the Milleneum with outstanding role of Samsung Electronics in Hungary and Slovakia. The interview partner in KOTRA Hungary estimates currently 70 % of the annual Korean exports turnover to Hungary generated by the needs of Samsung Electronics. This extra-regional (outside V4 or EU) turnover is managed within Samsung Electronics' global value chain. Although direct access to intrafirm data was not possible, 25 % Korean supply to SEH indicated by the interview partner confirms a part of the turnover growth in case of Hungary. It requires further research however to what extent intra-firm turnover of the lead company or its suppliers play a role in the other V4 subsidiaries, especially in Slovakia.

As Figure 2. indicates, the intra-industry exports of the V4 countries in the electrical and optical industry into Korea expanded as well in the first decade after the Millennium, however still with very modest figures, showing still a huge negative saldo in case of all the countries. This negative impact in the V4 region however is offset by the high export revenues of the end products achieved on EU markets. The export revenues of Samsung Electronics Hungary exceeded 2 billion EUR in 2011.

Figure 2: Korean electrical and optical intra-industry imports from V4
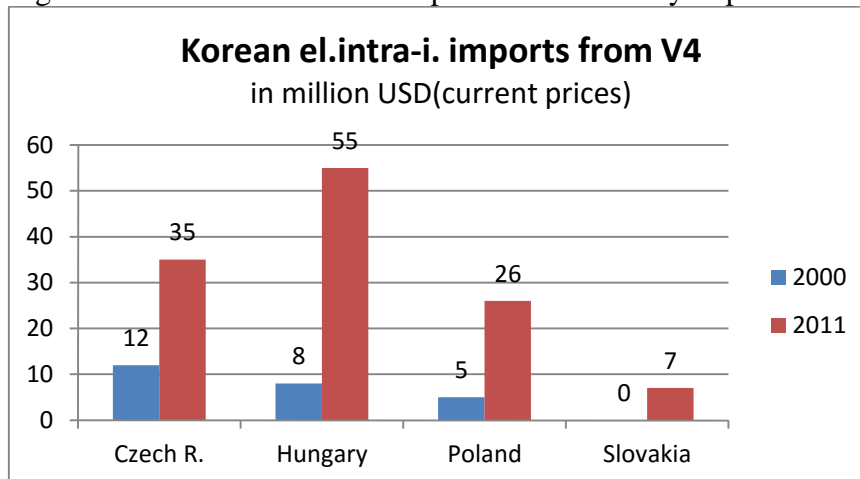
Source: WIOD Database. 2000 and 2011.

8 CONCLUSION

The research of Samsung's GVC involving the V4 region provided findings from the following aspects:

- The background what Korean-V4 relations ensure for the functioning of such GVC
- The collaboration – competition of the individual V4 countries within GVC and to what extent the V4 region constitute a joint production base
- Potential of trade expansion between the countries within the Visegrad region among the member countries and Korea-V4 respectively
- The chances of upgrading, internationalization of local SMEs in Korea and the V4 countries within a GVC

Access to primary sources through interviews, detailed company statements in Hungarian, was possible only in Hungary, thus conclusions are based more on the Hungarian experience, which is vaguely expanded to the region on the basis of secondary sources and are aimed to produce conceptual findings.

Setting up relations with Korea, creating the base to safeguard investment, institutional framework, scientific and technological cooperation in the very early days after the transition, is an important asset on which development driven by private and public actors has been built upon. Korea belongs to the circle of the highly developed countries. Their chaebols are among the world largest TNCs and the country's efforts to put even in international comparison high resources into R&D suggests that their leading role will be sustained on the mid-term, as well. We expect that Korea's initiative to bring the cooperation on Korea - V4 level instead of bilateral relations will reach in the coming years the scientific-technological and economic sphere as well – providing further comfort for GVCs led by Korean TNCs.

Governance, activities within GVCs are micro-level processes, the matter of private actors and are strongly influenced by the markets or other external macroeconomic factors. Our research concluded that in order to win the battle for local and world market shares, cost-competitiveness and innovation both play a role on global and local level as well in the sphere of subsidiaries, but suppliers, too. The fierce competition within the value chain between the two large manufacturing units in Hungary and Slovakia are drivers for productivity, efficiency increase of their local affiliates and for the way, how they make the most benefit of their supplier network.

The lead firm of the GVC considers however the V4 region as a joint production base, when macroeconomic disadvantages occur in one country compared to the other. In a tightly competitive environment Samsung immediately transferred production of plasma TVs in the

beginning of 2009 from Slovakia to Hungary to offset the increased local cost level through the appreciation. As the plasma TV segment did not recover fully after the crisis, it made harsh steps and closed down entirely a modern greenfield site of 33.000 m2 built-in surface area in Hungary five years later.

Common interests of the five countries to support the GVC to be successful on the long run can lie in more efforts into scientific and technological cooperation within the relevant institutions of the five countries and avoiding or rapidly correcting negative changes in the business environment, monitor the expansion of skilled labour competence and productivity. As figures indicate there are possibilities to big jumps in trade figures among the 5 countries as the first decade of the 21st century showed and dominantly large TNCs are behind those developments. However, the potential is far not utilized by the V4 countries.

All affiliates of Samsung Electronics in the V4 countries show an exemplary upgrading in all the three aspects, product, process and functional upgrading and being part of the GVC contributed largely to growth of the electronics industry, export revenue, export restructuring towards high-technological products. Public authorities both on national and local level should sustain and develop a supportive framework to assist their competiveness. Bureaucratic hindernisses should be eliminated, support to R&D, innovation, skill development depending in what stage what is most relevant needs to be swiftly addressed.

The high share of local suppliers (over 60 %) of SEH, stated in the interview, while the rest is mainly assumed to come from Korea suggests, that in spite of relative geographical proximity even within the V4 region cross border supplies are less relevant, except for Slovakia, where the share represents 10 % of SEH's revenue. It is contradictory to the large expansion of bilateral intra-industry trade data within the V4 countries between 2000-2011. Deeper analysis with more GVC case studies within the electrical and optical sector studying firm-level input-output data would be needed in this field.

As the SEH – Jaszplasztik TNC-supplier relationship demonstrates, successful SMEs can internationalize using the chance provided by the GVC firstly within the V4 – which contributes to the success of the GVC, too. On the other hand being part of international GVCs could enable ambitious, well managed suppliers to access grants and subsidies from EU sources to develop further.

The big distances between Korea and the region up to now limits cross regional activities of SME suppliers.

The lack of detailed micro-level data on SEH – V4 subsidiaries and, SEH- head office cooperation is an important limitation of the research to date. One case study has obvious bias of exceptional factors. Therefore we suggest for further research benchmarking the findings with another Korean chaebol from the same industry that includes the V4 region in its GVC (e.g. LG). Furthermore we suggest the extension of the research to the development of value added creation in the local subsidiaries.

REFERENCES:

1. ANTALÓCZI, K. (2012): Beágyazódás a globális értékláncokba –két évtized külkereskedelmi folyamatai Magyarországon. In: Külgazdaság, 56, 2012,11-12. pp. 29–61

2. ANTALÓCZI, K. – SASS, M. (2002): Működőtőke-befektetések és a külkereskedelem modernizációja – nemzetközi kitekintés. In: *Külgazdaság*, 2002, 47,12, pp. 4-36.

3. BALDWYN, R.E. (2009*): Integration of the North American Economy and Newparadigm Globalization*, CEPR Discussion Paper no. 7523.

4. BALDWYN, R. E. – EVENETT, S. J. (2012): Value Creation and Trade in 21st Century Manufacturing: What Policies for UK Manufacturing? In: Greenaway, David

(Ed.), *The UK in a Global World, How can the UK focus on steps in global value chains that really add value?* London: Centre for Economic Policy Research.

5. DIETZENBACHER, E., LOS, B., STEHRWR, R., TIMMER, M. and DE VRIES, G. (2013): The Construction of World Input-Output Tables in the WIOD Project. *Economic Systems Research* Vol. 25. No. 1. pp. 71-98.

6. ECB (2015): Global value chains: a view from the euro area. ECB Working Paper No. 1761. European Central Bank.

7. ÉLTETŐ, A.-TOPOROWSKI, P. (2013) Effects of the international crisis – development of four Central European countries' trade with Asia.

8. ERNST, D. – Kim, L. (2001): *Global production networks, knowledge diffusion, and local capability formation – A conceptual framework.* Paper presented at the Nelson & Winter Conference in Aalborg, Denmark, June 12-15, 2001, organized by DRUID.

9. GEREFFI, G. (1995): Global Production Systems and Third World Development. In Barbara Stallings (Ed.), *Global Change, Regional Response: The New International Context of Development.* Cambridge; New York and Melbourne: Cambridge University Press.

10. GEREFFI, G. (2005): The Global Economy: Organization, Governance, and Development. In: Neil J. Smelser & Richard Swedberg (Eds.), *The Handbook of Economic Sociology.* Second edition. Princeton and Oxford: Princeton University Press; New York: Russell Sage Foundation.

11. GEREFFI, G. – HUMPHREY, J. – STURGEON, T.J. (2005): The governance of global value chains. *Review of International Political Economy.* 12. 78-104.

12. GEREFFI, G. – FERNANDEZ-STARK, K. (2011): *Global Value Chain Analysis: A Primer. Center on Globalization, Governance & Competitiveness* (CGGC), Duke University, Durham, North Carolina, USA

13. GRODZICKI, M. J. (2014): Global Value chain and Competitiveness of V4 Economies. In: Kiendl-Wendner, Doris - Wach, Krzysztof (Eds.): *International Competitiveness in Visegrad Countries: Macro and Micro Perspectives.* Graz: Fachhochschule Joanneum, pp. 13-31.

14. GROSSMAN,G. –ROSSEI-HANSBERG, E. (2007): The Rise of Offshoring: It's Not Wine for Cloth Anymore. In: *The New Economic Geography: Effects and Policy Implications.* pp. 59-102. Federal Reserve Bank of Kansas City.

15. HUMMELS, D., ISHII, J. and YI, K.-M. (1999): *The nature and growth of vertical specialization in world trade.* Federal Reserve Bank of New York, staff report No.: 72. .

16. HUNYA, G. – RICHTER, S. (2011). Mutual trade and investment of the Visegrad countries before and after their EU accession. *Eastern Journal of European Studies,* Centre for European Studies, Alexandru Ioan Cuza University, vol. 2, pages 77-91, December

17. HUMPREY, J. – SCHMITZ, H. (2004). How does insertion in global value chains affect upgrading in industrial clusters? *Regional Studies*, 36(9), pp. 1017–1027.

18. IMF (2013): *Trade Interconnectedness: The World with Global Value Chains.* external paper.

19. JOHNSON, R.C. and NOGUERA, G. (2012): *Fragmentation and trade in value added over four decades*, NBER Working Paper No. 18186. National Bureau of Economics Research.

20. KOOPMAN, R., POWERS, W., WANG, Z. and WEI, S.-J. (2010): *Give credit where credit is due: Tracing value added in global production chains*, NBER Working Paper No. 16426. National Bureau of Economic Research.

21. MARIN, D. (2005): *A New International Division of Labour in Europe: Outsourcing and Offshoring to Eastern Europe.* September 2005. Available online: http//epub.ub.uni-muenchen.de

22. OECD (2013a): Interconnected Economies: Benefits from Global Value Chains. Synthesis Report.

23. OECD (2013b): Mapping Global Value Chains

24. OECD and WTO (2013): Trade in value-added: concepts, methodologies and challenges (Joint OECD-WTO note).

25. PAVLINEK, P. – ZIZALOVA, P. (2014): Linkages and spillovers in global production networks: firm-level analysis of the Czech automotive industry. *Journal of Economic Geography* (2014) pp. 1-33.

26. RADOSEVIC S. (2002): *The electronics industry in Central and Eastern Europe: An emerging production location in the alignment of networks perspective.* Working paper 21. Center for the Study of Economic and Social Change in Europe. School of Slavonic and East European Studies. University College London.March 2002. ISSN 1476-1734

27. SASS, M. and SZALAVETZ, A. (2013): Crisis and upgrading: The case of Hungarian automotive and electronics sectors. *Europe-Asia Studies* Vol. 65. No. 3. pp. 489-507.

28. SASS, M. – SZALAVETZ, A. (2012): *Industrial policy options for catching-up GVC actors: the Visegrad countries in the post-crisis GVC environment.* Working paper, Hungarian Academy of Sciences.

29. STEHRER, R. (2012) Trade in value added and value added in trade, WIIW Working Paper 81. The Vienna Institute for International Economic Studies

30. TIMMER, M. – ERUMBAN, A. – LOS, B. – STEHRER, R. – VRIES, G. (2013): *Slicing Up Global Value Chains*, Groningen: Growth and Development Research Memorandum 135, May 2013.

31. TIMMER, M., LOS, B., STEHRER, R. and DE VRIES, G. (2013): Fragmentation, incomes and jobs: An analysis of European competitiveness

32. TIMMER, M., DIETZENBACHER, E., LOS, B., STEHRER, R. and DE VRIES, G. (2015): An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production. Review of International Economics.

33. TrendAnalysis. Electrical Engineering in Slovakia in 2008. A project for the Ministry of Economy of Slovakia, September 2009.

34. UNCTAD (2013): *World Investment Report*. Geneva: UNCTAD.

35. WTO (2014): *World Trade Report 2014. Trade and development: recent trends and the role of the WTO*. Geneva: WTO.

ENCLOSURE 1.

Interview participants:

1 dr. Peter Paroczi   Legal Counsel, Director   Samsung Electronics Zrt.

2. Tibor Mezei   Key Account Manager, Asia –Pacific Division of the Ministry of Foreign Trade and Foreign Affairs

3. Yang HyoJun   Manager, Korea Trade Centre, Budapest KOTRA, Commercial Section, Embassy of the Republic of Korea

4. Kristóf Végvári   Area Manager, Hungarian Chamber of Commerce and Industry

5. Miklós Győr		International Key Account Manager, Department for
			International Relations, National Research,
			Development and Innovation Bureau

Secondary source interview, self-composed article used:

1. Gwan-Pyo Nam, Ambassador of Republic of Korea, Diplomacy & Trade, 16th December, 2013.
2. Article by Pavel Hrmo,Slovak Ambassador to Korea. The Korea Times 2009. 04.20
3. Interview with Siho Jang, President of Samsung Electronics Hungary Zrt. 2010. 08 29. (website Industrial Park Jászfényszaru) in Hungarian

THE ANALYSIS OF AREAS OF ECONOMIC COOPERATION OF POLAND AND THE REPUBLIC OF KOREA

Helena Kościelniak, Joanna Nowakowska-Grunt [48]

Korea is becoming an increasingly strategic partner of Poland. It was one of the first countries that made a decision to invest in Poland after the year of 1990. Nowadays, according to the National Bank of Poland (NBP), the cumulative value of the Korean investments in Poland exceeds the amount of EUR 750 million. The largest Korean investments include the projects by the companies such as LG, Samsung, Daewoo Electronics, SK Chemicals, Mando and Humax. The aim of the paper is an attempt to analyze the structure and dynamics of areas of economic cooperation of Poland and the Republic of Korea. In the paper, the attention has been drawn to the barriers to economic cooperation between Poland and the Republic of Korea.

Key words: Poland, Korea, economic cooperation
JEL: E22, G32

1 INTRODUCTION

The cooperation between Poland and the Republic of Korea dates back to 1988. The most important legal acts regulating the cooperation between Poland and the Republic of Korea include:

- The Agreement on the Reciprocal Promotion and Protection of Investments, signed in Seoul on 1 November 1989,

- The Agreement on Scientific and Technical Cooperation, concluded on 29 October 1993,

- The Framework Agreement for Trade and Cooperation, concluded in Brussels on 19 March 2001 between the European Union and the Republic of Korea,

- The Agreement between Export Credit Insurance Corporation Joint Stock Company (KUKE S.A.) and Korea Export Insurance Corporation, concluded on 23 December 2004,

- The Agreement between the Government of the Republic of Poland and the Government of the Republic of Korea on Economic Cooperation, concluded in Warsaw on 3 December 2004,

- The Memorandum of Understanding between Main Veterinary Inspectorate of the Republic of Poland and National Veterinary Research and Quarantine Service (Korean veterinary surveillance) of the Republic of Korea, concluded on 12 March 2007,

- Free Trade Agreement between the European Union and the Republic of Korea (UE-Korea FTA), in force since 1 July 2011.

Currently, Korea has signed three agreements with the European Union; they concern the policy, safety and economy and have great impact on strengthening the cooperation with Poland. Strategic partnership is, most of all, a protective shield for economic cooperation and a strong impetus for other developing projects[49]. The condition of strategic partnership is:

- indirect exchange system based on high interdependence of enterprises,

- the achievement of strategic goals of the company leading to the improvement in competitiveness of enterprises,

---

[48] Helena Kościelniak, Ph.D. Czestochowa University of Technology, Faculty of Management, Czestochowa, Al. Armii Krajowej 19B, e-mail: helenak@zim.pcz.pl; Joanna Nowakowska-Grunt, Docent, Czestochowa University of Technology, Faculty of Management, Czestochowa, Al. Armii Krajowej 19B, e-mail: jnowakowskagrunt@onet.eu
[49] *Z Katowic patrzymy na Seul*, The European Economic Congress in Katowice, 22.04.2014.

- the application of relational standards in mutual cooperation, facilitating the development of trust[50].

In the processes of delimitation of the concept of strategic partnership of enterprises there are listed three approaches:

-functional, in which the object of analyses are the goals achieved due to cooperation and functions performed by enterprises

-institutional, in which the aspect of the research is the existing and newly created institutional forms of cooperation between enterprises and the selection of the appropriate form to minimize transaction costs,

-behavioral, in the area of which the main concentration is focused on social embeddedness of cooperation, including the applied social standards and rules.

Strategic partnership is treated as a special form of inter-organizational relationships, established and developed to strengthen competitive advantage of business partners. The implementation of cooperation strategies amounts to mutually beneficial actions through the use of resources and management structures in the common interest[51].

2 INTERNATIONAL TRADE OF POLAND AND THE REPUBLIC OF KOREA IN 2005-2014

In trade between Poland and the Republic of Korea, there occurs a significant and growing imbalance referring to goods. In recent years the Republic of Korea has been the third country, after China and Russia, Poland recorded the highest deficit in the course of trade with. This deficit amounted to USD 4.2 billion, compared to USD 12.1 billion in trade with China and USD 7.8 billion in trade with Russia.

It should be underlined that, within the last five years, Polish export to Korea has increased by more than 1.5 times, which brings about an annual increase of 25.2 %. At the same time, the import from the Republic of Korea has increased on average by more than 20% (see Table 1).

Table 1: The volume of trade between Poland and the Republic of Korea (in billions of USD)

Years	Export	Import	Balance
2005	0.1	1.2	-0.08
2006	0.2	2.6	-2.40
2007	0.3	3.4	-3.10
2008	0.3	4.1	-3.80
2009	0.2	4.1	-3.90
2010	0.3	4.3	-4.00
2011	0.4	4.0	-2.4
2012	0.4	2.8	-2.4
2013	0.5	3.1	-2.6

Source: Compiled by the author on the basis of *Korea International Trade Association*

The presented data indicate that there is significant imbalance in trade between Poland and the Republic of Korea. The difference results both from the scale and dynamics of trade in the considered period of ten years.

The grounds for this situation result from simultaneous occurrence of such factors as:

---

[50] Światowiec-Szczepańska J, *Ryzyko partnerstwa strategicznego przedsiębiorstw. Ujęcie modelowe*, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznań 2012, pp. 38 – 146.
[51] Ibidem, pp. 41-45

- The Republic of Korea belongs to the group of significant foreign investors in Poland; the value of investments in Poland declared by Korean companies amounts to about USD 2 billion. The policy of Korean companies investing outside the country assumes total dependence of the production of foreign branches on suppliers of components and the machine park from Korea,

- The Republic of Korea is a significant manufacturer of components for production and machines and equipment; it is a considerable supplier of capital goods into the Polish market,

- the economy of the Republic of Korea is mainly directed towards the production of export goods with high added value, most of all, electronics, automotive and shipbuilding industry. Therefore, among consumer products imported by Poland the leading positions are occupied by highly processed products such as household appliances and motor vehicles,

- Polish export is concentrated on the European Union market. The observations of Trade and Investment Promotion Section (WPHI) in Seoul implicate that Polish enterprises are not ready to take actions related to the activation of sales in distant Asian markets, which would require the necessity of investments to increase their production capacities. Moreover, a lot of companies indicate significant differences in preferences of Korean consumers compared to European markets. This brings about that the change in properties of products could be found too risky taking into account the potential volume of sales [52]

- The Republic of Korea belongs to the markets strongly protected against import with both tariff barriers (customs duties) and non-tariff barriers such as: administration, registration and quality barriers.

It should be pinpointed that, among new Member States of the European Union, Poland has the highest volume of trade with Korea.

Table 2: The volume of trade of the selected countries of the EU with the Republic of Korea (the data for 2014)

No	Specification	Share (%)[53]	
		Import from Korea	Export to Korea
1	Poland	33.2	29.6
2	Czech Republic	16.1	34.4
3	Hungary	10.5	26.9
4	Slovakia	40.2	9.1

Source: Compiled by the author on the basis of *Korea International Trade Association*

Polish export to Korea amounted to 29.6 % of the group of the analyzed EU countries (Czech Republic, Hungary, Slovakia); in export, Czech Republic is ahead of Poland by about 5 percentage points; Poland predominates in import from Korea. Only Slovakia is ahead of

---

[52] In this field there were taken actions (the seminar) at the level of the Ministry of Economy. The investment seminar - Poland-Korea Investment Cooperation Forum was held in the framework of the investment mission of Polish Information and Foreign Investment Agency (PAIiIZ) along with the partners of economic regions and zones. The seminar was organized by PAIiIZ in cooperation with WPHI. The local partners that supported the event in terms of promotion were: Korea Trade-Investment Promotion Agency (KOTRA), Export-Import Bank of Korea (EXIM Bank) and Korea International Trade Association (KITA). The selection of the local partners, being the leading Korean organizations supporting business and the scale of participation on the side of Poland turned out to be good; the seminar aroused great interest of Korean companies, which was reflected by a large number of participants. More than 100 people representing almost 80 companies took part in the meeting. The seminar was a part of the investment mission of PAIiIZ to Korea and Japan.

[53] Percentage share has been calculated in relation to the sum of import and export of the analyzed countries (Poland, Czech Republic, Hungary and Slovakia)

Poland in import from Korea; the share of Poland in import from Korea amounts to more than 33% and it is by 0.7% lower than in Slovakia (Table 2).

Poland is the leader in Central and Eastern Europe in attracting Korean investments and the fifth largest investment target among the EU countries. In spite of this, the Republic of Korea is only the nineteenth largest investor in Poland.

The statistics by Korea International Trade Association (KITA) show that the main product groups being the object of Polish export to South Korea include:
- diesel engines (HS code 8404),
- meat of swine, fresh, chilled or frozen (HS code 0203),
- ceramic wares for laboratory, chemical or other technical uses (HS code 6909),
- parts and accessories for motor vehicles (HS code 8708),
- discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or other data (HS code 8523).

Table 3: The structure of main product groups in Polish export to South Korea

No	Code	Product name	Share (%) in Polish export to Korea
1	84008	Diesel engines	29.4
2	0203	Meat of swine, fresh, chilled or frozen	12.3
3	6909	Ceramic wares for laboratory, chemical or other technical uses	5.3
4	8708	Parts and accessories for motor vehicles	4.5
5	8523	Discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or other data	3.3
6	8479	Machinery and mechanical appliances	2.9
7	7326	Other articles of iron and steel	2.7
8	8421	Centrifuges, including filtering or purifying dryers, machinery and apparatus for liquids or gases	2.4
9	8409	Parts suitable for use in internal combustion engines	1.9
10	9013	Liquid crystal devices	1.8
		Total	66.5 %

Source: Compiled by the author on the basis of *Korea International Trade Association*

The main product groups (five main product groups) in the trade of which there was recorded the highest growth in export from Poland to the Republic of Korea in the considered period were goods such as:
- diesel engines,
- meat of swine, fresh, chilled or frozen,
- ceramic wares for laboratory, chemical or other technical uses,
- parts and accessories for motor vehicles,
- discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or other data (Table 3).

According to the data of Export-Import Bank of Korea (EXIM), the total amount of money invested in Poland by Korean companies amounts to more than USD 1.5 billion; it is

the highest value of Korean investments in the countries being the Member States of the European Union since 1 May 2004. The reports by EXIM show that more than 150 Korean companies have registered business activity in Poland.

The most important Korean investors in Poland include:

- LG Group, LG company is present in Poland in two locations: in Mława (LG Electronics) and in Kobierzyce near Wrocław (LG Display). Both investments refer to the production of electronic goods (plasma, LCD TV sets and household appliances). Moreover, the investment in Kobierzyce is the largest greenfield project developed in Poland. The involvement of the capital of the LG company in Poland is estimated at more than EUR 1 billion with the employment of about 13 thousand people[54],

- SK Group, which is the third largest industrial conglomerate of Korea; it has two factories in Poland. SK Eurochem Sp. z o.o. in Włocławek (joint venture with the Polish Anwill company) was the first Korean investor in Poland. The production includes PET chips. The sister company - SKC invested in Wałbrzych Special Economic Zone in the production of films for LCD screens,

-Samsung, which opened the research and development center for software for LCD screens and cell phones produced in factories in Hungary and Slovakia,

-Mando, the largest Korean investment in Poland since 2011; the company is building the factory of braking systems and power steering systems in Wałbrzych,

-Deewoo Electronics, which produces TV sets in the factory in Pruszków near Warsaw,

-Humax, the largest Korean manufacturer of decoders for the reception of satellite and cable television, which possesses the factory in Bełchatów.

Table 4: The largest Korean investors in Poland (the data for January 2015)

No	Investor	Estimated value of investment in billions of USD
1	LG Philips LCD Poland Sp. z o.o.	378
2	LG Electronics Wroclaw Sp. z o.o.	217
3	Heesung Electronics Poland Sp. z o.o.	148
4	Mando Corporation Poland Sp. z o. o.	122
5	Samsung Electronics Poland Sp. z o.o.	101
6	SK Chemicals Co. Ltd.	94
7	Daewoo Electronics Poland Sp. z o.o	80
8	Razem	1700

Source: Compiled by the author on the basis of Polish Information and Foreign Investment Agency and KOTRA Warszawa.

South Korea takes the seventh position in the list of the countries the capital invested in Polish Special Economic Zones (SSE) comes from. At the end of June 2015 the value of Korean investments exceeded PLN 4 billion and by means of them nearly 12 thousand workplaces were created. Korean companies are present in Katowice, Starachowice, Tarnobrzeg, Wałbrzych and Varmia-Mazuria Special Economic Zones (Table 4).

---

[54] These numbers include the investments of the company suppliers i.e. the leading Korean companies from the electronic industry, such as: Heesung Electronics, Ochsung Display, Dong Yang Electronics, LG Innotek and Lucky SMT.

The data by Export–Import Bank of Korea indicate that in January 2015 the number of Korean investors against the European countries was the highest (152), which amounts to about 28% of the total share of the analyzed European countries (see: Table 5).

Table 5: The number of Korean investors in Europe (the data by Export–Import Bank of Korea (Korea EXIM) (January 2015)

No	Country	Number of Korean investors	Value of Korean investments (in millions of USD)
1	Poland	152	1700
2	Slovakia	93	1512
3	Czech Republic	55	1353
4	Romania	29	569
5	Hungary	72	476
6	Ukraine	32	323
7	Bulgaria	23	263
8	Austria	44	139
9	Sweden	17	92
10	Latvia	3	10
11	Slovenia	4	9
12	Finland	13	3
13	Lithuania	5	3

Source: Compiled by the author on the basis of Export–Import Bank of Korea and Polish Information and Foreign Investment Agency S.A.

Summing up, it should be concluded that Korea does not belong to the regions being the strategic investment goal of Polish entrepreneurs. Geographical distance and high labor costs in Korea are the main factors limiting the scope of foreign investments of Poland in this country. The Selena S.A. company (the construction chemicals sector), which has shares in the Korean Hamil Corporation, is a recognizable Polish investor in the Korean market.

By 2015 the total value of Korean investments has exceeded EUR 750 million. In the economic research it is underlined that Poland should particularly benefit from the Korean model of building the culture of innovation[55]; the largest research and development center in Poland belongs to Samsung which employs about 1500 engineers.

3 BARRIERS TO DEVELOPMENT OF ECONOMIC COOPERATION BETWEEN POLAND AND THE REPUBLIC OF KOREA

Trade exchange between Poland and Korea is limited by a range of market and administration factors. Among these factors there are mainly listed three, such as:

- market protection instruments applied by the Korean party,
- geographical distance and infrastructural barriers,
- cultural barriers.

Nowadays, the Republic of Korea belongs to the most protected markets among all the OECD countries. Among the protection instruments there are applied high customs duties and burdensome administration barriers. There have already been made some improvements in this field; they are provided by Free Trade Agreement between the European Union and the Republic of Korea (EU-Korea FTA).

---

[55] *Forum gospodarczego Polska - Korea Południowa (Poland-South Korea Economic Forum)*, which took place in the framework of the European Economic Congress 2015 in Katowice,

In spite of the developing economic cooperation there is no direct air connection between Poland and the Republic of Korea. This fact has large impact not only on the development of trade and investment cooperation but also inbound tourism to Poland. The opening of the direct air connection between Seoul and Prague in 2005 brought about an increase in the influx of Korean tourists to Czech Republic by 40 % within the first six months of the functioning of the connection.

Poland and Korea belong to different cultural groups which brings about significant consequences in business relations, e.g. in negotiations or work culture.

While discussing the barriers to development of cooperation between Poland and Korea there are listed the natural ones like language barrier or geographical distance; lack of knowledge of mutual motivation is also important. Koreans, deciding on entering a market, do in-depth research about it and while appearing on it, they have known a lot about it. In business relations between Poland and Korea it is essential to understand the way of taking business decisions. In Korean mentality it is important to respect authorities and elders, decisions of the superiors are not questioned, the plans once established are rarely departed from. This may pose some problems in relationships with Poles. However, it is underlined that these are not the barriers that could not be removed, that would prevent the achievement of success[56].

The cooperation between Poland and South Korea may be limited in the future for other reasons than the current economic situation in the world. This mostly results from the nature of the Korean economy which, to a certain extent, aims at reduction in trade exchange with external countries; since Korea aims at the highest export with minimum import. The Korean market is almost unavailable for foreign companies in some economic sectors. To achieve this there are applied special protection measures and long procedures of product registration. For Poland this means reduction in development of export of foodstuffs and chemicals, which constitute about 30% of Polish export to Korea. Entering the Korean market and/or strengthening the position of Polish enterprises there will largely depend on individual demands of customers in South Korea and relevant properties of products offered by Polish companies. Trade and Investment Promotion Section of the Embassy of the Republic of Poland in Seoul, on the basis of the in-depth analysis of trade statistics and opinions of experts, prepared the listing of the most far-reaching product groups of the industry of machinery and mechanical appliances and optical, measuring and precision instruments in export from Poland to Korea[57].

In recent years, Korea has changed the model of business promotion, over the years based on state-supported chaebols. Nowadays, there is promoted the economy based on knowledge and small and medium enterprises, which amount to as much as 99% of all companies operating in Korea. It is estimated that as early as in 2010, half of the value added of the Korean economy was created by the SME sector. Therefore, the representatives of small companies may hope for significant government grants, e.g. there has been set new budget of USD 3.8 billion designed for loans for start-ups, small companies may also hope for government loan guarantees of USD 76 billion. These alterations indicate positive changes in the opportunities for the cooperation between Poland and Korea.

4 CONCLUSIONS

Poland is the key trade partner in Central Europe for Korea, generating the highest volume of trade from among new Member States of the European Union. However, trade

---

[56] *Forum gospodarczego Polska - Korea Południowa*, Europejski Kongres Gospodarczy, Katowice 2015 .
[57] *Najbardziej perspektywiczne grupy wyrobów przemysłu maszyn i urządzeń mechanicznych w eksporcie do Republiki Korei*, suplement analizy Rynku maszyn i urządzeń mechanicznych w Republice Korei , Wydział Promocji Handlu i Inwestycji Ambasada Rzeczypospolitej Polskiej w Seulu, April 2010.

exchange is characterized by high deficit. Polish investments in Korea are also low – they are practically limited to the presence of Selena FM S.A., which has shares in the Korean Hamil Corporation. In 2015 PAIiIZ finished one Korean project in the household appliances industry. The investment of Samsung Electronics Poland Manufacturing in Wronki of EUR 92 million will provide 251 jobs. Nowadays, the Agency is handling 5 Korean projects, whose total value amounts to EUR 40 million, and the number of potential jobs - 700[58].

The improvement in mutual trade relationships requires the verification of high customs duties and liquidation of burdensome administration barriers; geographical distance, lack of air connection between Poland and South Korea and cultural differences in running a business also pose a problem.

All in all, in economic relations, Poland and Korea are to face a difficult history and very good future; the necessity to concentrate on similarities and discover new areas for cooperation such as wind energy.

REFERENCES:
1. GRANČAY, M. – DUDÁŠ, T. – GREŠŠ, M. (2014): *Teórie medzinárodných hospodárskych vzťahov – vybrané teórie*. Bratislava: Vydavateľstvo Ekonóm, 2014. ISBN 978-80-225-3921-0.
2. JANICKA, M. (2010): *Liberalizacja przepływów kapitałowych w gospodarce światowej. Przypadek Polski*. Lodz: Wydawnictwo Uniwersytetu Łódzkiego, 2010.
3. LIPKOVÁ, Ľ. (2013): Krizis v južnoj periferii Jevrozony - primer Kipra. In: *Actual problems of economics,* 2013, 14, 12, pp. 419-428.
4. LIPKOVÁ, Ľ. et al. (2013): *Svetová ekonomika - juhovýchodná Ázia I*. Bratislava: Vydavateľstvo Ekonóm, 2013. ISBN 978-80-225-3630-1.
5. MASSON, P. (2001): Globalization: Facts and Figures. In: *IMF Policy Discussion Papers*, 2001, no. 01/4.
6. MCKINLEY, T. (2006): The Monopoly of Global Capital Flows: Who Needs Structural adjustment Now? In: *International Poverty Centre, United Nations Development Programme, Working Papers*, 2006, no. 12.
7. PAIIIZ. (2015): *Polska Agencja Informacji i Inwestycji Zagranicznych S.A.* 2015. Available online: <http://www.paiz.gov.pl/pl>.
8. ŠKVRNDA, F. (2013): O bezpečnosti vo svetle vytvárajúcej sa kritickej teórie globálnej spoločnosti. In: *Filosofický časopis*, 2013, 61, 6, pp. 903-909.
9. ŚWIATOWIEC-SZCZEPAŃSKA, J. (2012): *Ryzyko partnerstwa strategicznego przedsiębiorstw. Ujęcie modelowe*. Poznan: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, 2012.
10. [S. a.]. (2010): *Najbardziej perspektywiczne grupy wyrobów przemysłu maszyn i urządzeń mechanicznych w eksporcie do Republiki Korei*. Seoul: Wydział Promocji Handlu i Inwestycji Ambasada Rzeczypospolitej Polskiej w Seulu, 2010
11. [S. a.]. (2014): *Looking on Seoul from Katowice*. Katowice> Europejski Kongres Gospodarczy w Katowicach, 22.04.2014.

---

[58] PAIiIZ 2015

Tourism between South Korea and the V4 region

Katarína Mrkvová[59]

The growing international prestige of the V4 has been transposed into increased interest among third European countries and global players in cooperation with Central European countries. The ambition of the Slovak Presidency is to build on this positive momentum by further developing the V4+ format. The Slovakia will search for opportunities to develop closer contacts between the V4 countries and other global partners. In particular, the Slovak Presidency intends to initiate ad – hoc high – level meetings with representatives of both developed and rising economies around the world, such as the Republic of Korea, India or Mexico.

Key words: tourism, Visegrad region, Central Europe, South Korea, tourism products, market, tourism activities, cooperation
JEL: L83

1 INTRODUCTION

The Visegrad Group (also known as the "Visegrad Four" or simply "V4") reflects the efforts of the countries of the Central European region to work together in a number of fields of common interest within the all-European integration. The Czech Republic, Hungary, Poland and Slovakia have always been part of a single civilization sharing cultural and intellectual values and common roots in diverse religious traditions, which they wish to preserve and further strengthen.

All the V4 countries aspired to become members of the European Union, perceiving their integration in the EU as another step forward in the process of overcoming artificial dividing lines in Europe through mutual support. They reached this aim in 2004 (1st May) when they all became members of the EU (Sario, 2015).

The V4 was not created as an alternative to the all-European integration efforts, nor does it try to compete with the existing functional Central European structures. Its activities are in no way aimed at isolation or the weakening of ties with the other countries. On the contrary the Group aims at encouraging optimum cooperation with all countries, in particular its neighbours, its ultimate interest being the democratic development in all parts of Europe (Vyšehradská štvorka, 1991).

The Visegrad Group wishes to contribute towards building the European security architecture based on effective, functionally complementary and mutually reinforcing cooperation and coordination within existing European and transatlantic institutions (Vyšehradská skupina, 2014).

In order to preserve and promote cultural cohesion, cooperation within the Visegrad Group will enhance the imparting of values in the field of culture, education, science and exchange of information.

All the activities of the Visegrad Group are aimed at strengthening stability in the Central European region. The participating countries perceive their cooperation as a challenge and its success as the best proof of their ability to integrate also into such structures, such as the European Union (The Visegrad Fund, 2014).

[59] University of Economics in Bratislava, Slovakia, Faculty of International Relations, Department of International Economic Relations and Economic Diplomacy, Ing. Katarína Mrkvová, PhD., katarina.mrkvova@euba.sk.

2 THE VISEGRAD GROUP TODAY

The V4 cooperation can currently be referred to as the most clearly profiled initiative in Central Europe. The backbone of this cooperation consists of mutual contacts at all levels—from the highest-level political summits to expert and diplomatic meetings, to activities of the non-governmental associations in the region, think-tanks and research bodies, cultural institutions or numerous networks of individuals (The Visegrad group, 2015).

Visegrad cooperation is not institutionalized in any manner. It is based solely on the principle of periodical meetings of its representatives at various levels (from the high-level meetings of prime ministers and heads of states to expert consultations). Official summits of V4 prime ministers takes place on an annual basis. Between these summits, one of the V4 countries holds presidency, part of which is the responsibility for drafting a one-year plan of action. Now, Slovak republic has a presidency.

3 SOUTH KOREA

The official name of South Korea is Korea Republic. Over the last 50 years the country has undergone enormous economic and societal changes. Despite the high growth potential of the Korean economy and the apparent structural stability, Korea suffers permanent damage to the credit rating of the stock market as a result of aggression by the North Korean military at a time of deep crisis. This negative impact was reflected in the financial markets in the Korean economy. The strength of the economy's resistance to a variety of economic crisis, low public debt and high fiscal reserves which can be rapidly mobilized to address emergency financial events. In 1997, the country has overcome the Asian economic crisis. Serious temporary effects on the Korean economy and to travel abroad should the global financial and economic crisis in 2008 – 2009. Foreign trade and industrial production fell sharply, then recovered quickly. South Korea was one of the few developed countries that have managed to avoid recession during the global economic crisis in 2010, economic growth reached even 6,1 %. The average disposable incomes are now high enough that wished to international tourism and gradually increasing, the average annual household income exceeds 15 000 USD. For year 2015 The International Monetary Fund expects for South Korea 3,7 % percent annual GDP growth.

Travel from South Korea internationally, it has increased dramatically since 1989, when it was fully liberalized at the same time increased the number of richer groups. It has become a normal part of her life and is now considered a priority natural lifestyle of these people. In 2013, tourism contributed directly to the country's GDP sum of 27 126.8 billion. KRW (the Korean Won), representing 2.1% of GDP, together with related sectors created 5.9% of GDP in the amount of 76 594.9 billion. KRW (the Korean Won). Tourism in South Korea directly creates 619,000 jobs, representing 2.5 % of total employment (Unctad, 2012).

Travel is now one of the priorities lifestyles of inhabitants of South Korea. In recent years, the largest increase can be seen in routes from South Korea to China and Japan. Europe is still considered exotic destinations you visit once in a lifetime. Annually it is visited less than one million Koreans.

4 TOURISM IN THE V4 REGION

The Visegrad Group countries make up a compact part of central and northern Europe bordering Ukraine, Russia, Lithuania and Romania on the east, Germany and Austria on the west and Slovenia, Croatia and Serbia on the south. This part of Europe offers a whole array of natural gems ranging from snow-topped mountains to lowlands with verdant fields and clear lakes and even a long coastline along the Baltic Sea. And the region's position as a crossroad between the west and the east has given each country many varied and unique cultural and historical sites (Sario, 2013).

"European Quartet" is the promotional name for joint marketing of the national tourist head offices of four Central European sovereign states – the Czech Republic, Hungary, Poland and Slovakia, under which they present themselves in the field of tourism (Lipková, 2011). The association of these countries, known as the Visegrad Four (V4), has actively been developing cooperation over the long term in fields of common interest and is intensively reinforcing its internal cooperation. The Visegrad initiative is an expression of the effort to develop the region of Central Europe within the wider framework of Europe-wide integration (Novák, Šustr, 2009). This is based on the joint historical roots or one civilisation which all four countries belong to, on a shared cultural tradition and similar historical development. At the same time however, each of the member countries has its own unique points and specifics, be these in the field of architecture, art, religion, folklore and traditions or nature. Thanks to this, visitors to the V4 region are surprised every step of the way and are most certainly not bored. The Visegrad area offers several unique UNESCO monuments, world famous spas, authentically preserved historical towns and places of natural beauty.

Spa and health – The Visegrad group countries can boast of a large variety of spas. Thermal waters and muds have a long tradition in the region, many of them known for centuries as centers of spa treatment and praised all over Europe and the rest of the world. Famous people from history such as Goethe, Strauss and Peter the Great spent time in the Central European spas and left traces behind them. Thousands of tourists visit the region's spas every year, making it one of the most important tourist attractions in the Visegrad group.

Cities and History – The Czech Republic, Hungary, Poland and Slovakia have always been part of a civilization that shares cultural and intellectual values as well as common religious traditions which they wish to preserve and strengthen. The cities are the most typical example of this cultural and intellectual cohesion: although different in many aspects, they vividly depict the most common features of the Central European region. The buildings embody all the known architectural styles and shapes and it can be said without exaggeration that each historic city in the region is a rare gem and a priceless treasure.

UNESCO Heritage – Numerous sights registered in the UNESCO World Cultural heritage list, including those of breath-taking beauty and levied with the burden of ages past, can be found throughout the countries of the Visegrad group. Among sites listed are villages, castles, towns, natural resorts and many others. The region has undergone a long historic development with many important events taking place therein.

Religious Heritage – All four countries went through very rich history whose evidence you can admire on nearly every step. Apart from castles and old houses many religious sites are preserved. The area of Visegrad Group was mostly formed by Christian culture which was spread here till the end of first millennium. Thousands of monuments such as cathedrals, churches, chapels or pilgrimage sites take pride in their beauty. But the region has also always been a haven for settlers, including those of Jewish religion. The history of Jewish settlement in the region goes back to the Middle Ages or even earlier. Jewish culture, being rich and deep at the time and embodying many religious and cultural traditions, has undoubtedly influenced the development of countries in the Visegrad Group. Despite the Holocaust, many Jewish sites have been preserved and are very attractive target for foreign visitors (Ministerstvo kultúry Slovenskej republiky, 2015).

4.1 V4 COOPERATION WITH EU MEMBER STATES, THIRD COUNTRIES AND OTHER REGIONAL GROUPINGS

The growing international prestige of the V4 has been transposed into increased interest among third European countries and global players in cooperation with Central European countries. The ambition of the Slovak Presidency is to build on this positive momentum by further developing the V4+ format.

The Slovak Presidency shall support the continuation of political and expert dialogue with the closest neighbours of the V4 within the greater Central European region. The contacts of the V4 countries with Bulgaria, Croatia, Romania and Slovenia are already extensive in different areas of common interest, and will continue. In close coordination with the Nordic and Baltic states the Slovak Presidency will focus on the preparation of the next informal V4+NB8 ministerial meeting in spring 2015. Following the recent revival of the V4 and Benelux cooperation at the expert level (European and Political Directors), possibilities for further promoting contacts at the political level will be sought. The V4 countries share long-standing interest in the deepening of strategic partnership with Germany and France as the leading driving forces of the European integration process. With other EU partners, e.g. Austria or the United Kingdom, common denominators can be looked for in specific European sectorial policies, such as the industrial policy or digital agenda.

The countries of the V4 support Turkey's EU accession process. Political dialogue between the V4 and Turkey has been launched by the previous Hungarian Presidency. The V4 countries are ready to keep communication channels with Turkey open particularly in areas such as energy infrastructure, defence/security and/or innovation.

In relations with the USA the most important global partner of the V4 it is our ambition to continue the regular dialogue at political level. Invitation to the U.S. side will be extended before the next V4+ Eastern Partnership ministerial meeting as US involvement is particularly significant given the critical phase of this project. We shall continue in the proven format of V4 coordination with the USA at the level of political directors and pursue further consultation among foreign policy planning staffs. It is in the interest of the Visegrad countries to take a proactive approach in facilitating the conclusion of the Transatlantic Trade and Investment Partnership and as soon as possible. It is also desirable to uphold the communication of the V4's joint position on the issue of possible LNG exports from the USA.

The structural cooperation with Japan has been further enlarged by initialization of the V4+Japan Exchange Year in 2014. Regular political dialogue will be continued for instance on the margins of the ASEM meeting. The Slovak Presidency also has the ambition to organize seminars with Japan on selected subjects of common interest within sector-specific activities.

The Slovakia will search for opportunities to develop closer contacts between the V4 countries and other global partners. In particular, the Slovak Presidency intends to initiate ad – hoc high – level meetings with representatives of both developed and rising economies around the world, such as the Republic of Korea, India or Mexico. In this context, the planned meetings of the MFA political directors with these countries are a good initial step to be followed up by meetings of the Ministers of Foreign Affairs in the near future. Expert dialogue focusing on specific areas of possible cooperation on ad hoc basis with China could be launched as well.

The Slovak Presidency will also focus attention on the Southern dimension of the EU Neighbourhood Policy, in particular by continuing V4 contacts with the Union for the Mediterranean.

At the level of V4 MFA Political Directors consultations on pertinent foreign and security policy issues shall be proposed in coordination with the partners in V4+ format depending on current needs and international developments. Apart from regular formats of political dialogue with third countries, Presidency might propose ad hoc political dialogues with other countries or regional groups, based on common interest and needs of foreign policy of V4 countries. Presidency will continue also the process of the ad hoc MFA V4 Political Directors political consultations with the partners or regional groups within the EU, such as V4+Benelux, V4+Baltic states.

Regular consultations at the level of analytical unit directors on topical foreign policy issues with invitation to selected partner countries will be continued. Consultation at the level of European Correspondents could be initiated as well.

5 SLOVAKIA'S ACTIVITIES IN THE MARKET IN KOREA

Slovak Tourism Agency under the long – term development of statistical indicators of Slovakia's visiting foreign participants of tourism, geographical position of the country, historical and socio-demographic ties are South Korea to the secondary market of tourism in Slovakia, particularly to remote markets with high market potential (Hošoff, Hvozdíková, 2009). In 2008, the Slovak Tourism Agency representatives attended tourism fair Korea World Travel Fair in Seoul, where they presented Slovakia as an attractive tourist destination. Since 2003 Slovakia also presents the Korean market through joint marketing and promotional activities of the V4 countries. The aim of this cooperation is to strengthen the position of associated member countries, getting their competitiveness and their enforcement on third markets overseas.

5.1 RECOMMENDED TOURISM PRODUCTS FOR A KOREAN MARKET

Slovak Tourism Agency has profiled the following tourism products for a market in Korea:

- Bratislava and environment
- Tours aimed at exploring the culture and history of Slovakia - the historic city and UNESCO Heritage
- Natural scenery in the Tatra Mountains

6 CONCLUSION

The present article was to identify the essential link V4 with third countries. Using the methods of analysis have been identified The Visegrad Group and using the methods of synthesis have been identified data about cooperation between The Visegrad countries and South Korea, with a focus on tourism.

The growing international prestige of the V4 has been transposed into increased interest among third European countries and global players in cooperation with Central European countries. The ambition of the Slovak Presidency is to build on this positive momentum by further developing the V4+ format. The Slovak Tourism Agency representatives attended tourism fair Korea World Travel Fair in Seoul, where they presented Slovakia as an attractive tourist destination. Slovakia also presents the Korean market through joint marketing and promotional activities of the V4 countries.

Now, Slovak Tourism Agency profiles three areas of tourism products for a market in Korea, which are for example – Bratislava and environment, UNESCO Heritage and Tatra Mountains.

REFERENCES:
1. LIPKOVÁ, Ľ. et al. (2011): *Ekonomika štátov Euróspekj únie.* Bratislava: Ekonóm, 2011. 306 pp. ISBN 978-80-225-3152-8.
2. HOŠOFF, B. – HVOZDÍKOVÁ, V. (2009): Analýza konkurencieschopnosti krajín V4 z pohľadu atraktivity pre PZI. In: *Working papers EÚ SAV*, 2009, 21, 1, pp 1 – 53, ISSN 1337-5598.
3. NOVÁK, M. – ŠUSTR, M. (2009): Faktory prílevu priamych zahraničných investícií do vybraných tranzitívnych ekonomík. In: *Ekonomické rozhľady*, 2009, 38, 1, pp. 71 – 80, ISSN 0323-262X.

4. MINISTERSTVO KULTÚRY SLOVENSKEJ REPUBLIKY. (2015): Vyšehradská skupina. [Online]. [cit. 26.5.2015]. Available online: <http://www.culture.gov.sk/posobnost-ministerstva/medzinarodna-spolupraca/multilateralna-spolupraca/vysehradska-skupina-v4-105.html>

5. THE VISEGRAD GROUP. (2015): Slovak Presidency.[Online.] Available online: http://www.visegradgroup.eu/documents/presidency-programs/20142015-slovak.

6. THE VISEGRAD FUND. (2014): About us.[Online.] Available online: http://visegradfund.org/about/

7. SARIO. (2013): Why Slovakia. Key facts why to choose Slovakia as your next investment destination. [Online]. [cit. 25.4.2015]. Available online: <http://www.sario.sk/sites/default/files/content/files/sario-why-slovakia-ENG-small.pdf>

8. SARIO. (2015): Štátna pomoc. [Online]. [cit. 24.4.2015]. Available online: <http://www.sario.sk/sk/investujte-na-slovensku/statna-pomoc>

9. VYŠEHRADSKÁ SKUPINA. (2014): Dejiny Vyšehradskej štvorky. [Online]. Available online: < http://www.visegradgroup.eu/historia-v4-110412>

10. VYŠEHRADSKÁ ŠTVORKA. (1991): Deklarácia o spolupráci Českej a Slovenskej federatívnej republiky, Poľskej republiky a Maďarskej republiky na ceste európskou integráciou. [Online]. [cit. 24.4.2015]. Available online: <http://www.visegradgroup.eu/v4-110412-2>

11. UNCTAD. (2012): Unctadstat. [Online]. Available online: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx